Chapter 6
CEQA Alternatives Analysis of Construction and Operation

6.1 Introduction

In accordance with the California Environmental Quality Act (CEQA), this chapter provides environmental analyses of the physical impacts that could result from implementation of the project. There is a separate section for each resource area analyzed. Each section contains a list of laws, regulations, policies, and plans that are relevant to the project; a description of the environmental setting; significance criteria and an explanation of methodology used in the impact analysis; a description of potential impacts; and, where feasible and appropriate, required avoidance, minimization, and mitigation measures (mitigation measures to reduce construction-period impacts are described in Chapter 5, *NEPA Alternatives Analysis of Construction*, and referenced in this chapter). Wherever applicable, potential for secondary impacts due to implementation of mitigation measures is also addressed.

Changes and corrections to the text of the Draft SEIS/SEIR in response to public comments and/or design changes are indicated by underline text for additions and ~~strikeout~~ for deletions. See Table 2-B in Chapter 2, *Alternatives*, for a summary of changes to tunnel methodologies since the release of the Draft SEIS/SEIR. Comments received on the Draft SEIS/SEIR are provided in Volume II, Chapter 2, *Responses to Comments*, of this Final SEIS/SEIR.

Details of construction methods and schedule for the BART Extension Alternative are also provided in Chapter 5. Cumulative and growth-inducing impacts are discussed in Chapter 7, *Other NEPA and CEQA Considerations*.

For the purposes of CEQA, three alternatives are evaluated in this chapter: the No Project Alternative, the BART Extension Alternative, and the BART Extension with TOJD Alternative.

6.1.1 Transit-Oriented Joint Development Construction Assumptions

Construction of transit-oriented joint development (TOJD) at station sites and retail at ventilation facility sites would involve typical construction activities associated with office, retail, residential, and other uses. The majority of TOJD within the BART station areas would occur after the BART facilities are completed. However, during construction of the BART facilities, additional work to facilitate TOJD would also be undertaken. This could involve utility relocation and additional structural support to accommodate TOJD. Because it would be at a much smaller scale than the TOJD at BART stations, TOJD at the ventilation

facility sites could be more closely coordinated with the ventilation facility construction activities.

Construction of TOJD is scheduled to commence as soon as each construction staging area becomes available, and there would be no interference with BART system testing. TOJD construction activities at each site would last approximately 18 months. Because the TOJD would be constructed on the staging areas for the BART facilities, all of the sites would be vacant and disturbed prior to construction. If approved, underground parking would be constructed first. This would be followed by construction of the foundations and then buildings.

Construction of the underground parking garages and their foundations would require excavation of soils. The TOJD station sites would have between one and three levels of underground parking. Additionally, there would be trenching in San Jose's and Santa Clara's rights-of-way in adjacent streets. There could also be some temporary lane closures.

6.1.1.1 Construction Security and Staging

Construction activities would be contained with a chain-link fence around each of the TOJD sites. Construction materials and equipment would be staged onsite.

6.1.1.2 Construction Hours

TOJD construction in San Jose would comply with the City ordinance that generally limits construction hours to 7:00 a.m. to 7:00 p.m. every day of the week, except holidays. TOJD construction in Santa Clara would comply with Section 9.10.040 of the City of Santa Clara City Code, which includes regulations related to noise generated by construction and stipulates that no construction activity would commence prior to 7:00 a.m. or continue later than 6:00 p.m. Monday through Friday, or prior to 9:00 a.m. and after 6:00 p.m. on Saturdays that are not holidays. Additionally, no noise-generating work shall be permitted on Sundays or holidays unless prior written approval is granted by the Chief Building Official.

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6.2 Transportation

6.2.1 Introduction

The existing conditions, regulatory setting, and methods of analysis for transportation under CEQA are described in Chapter 3, *NEPA and CEQA Transportation Operation Analysis*. Impacts that would result from operation of the BART Extension and BART Extension with Transit-Oriented Joint Development (TOJD) Alternative are also described in Chapter 3. Construction impacts are described in detail in Chapter 5, *NEPA Alternatives Analysis of Construction.* The CEQA conclusions presented in this section are based on the construction transportation impacts discussion provided in Chapter 5.

VTA's BART Silicon Valley—Phase II Extension Project Transportation Impact Analysis of the BART Extension Only (BART Extension TIA) and *VTA*'s *BART Silicon Valley – Phase II Extension Project Transportation Impact Analysis of the BART Extension and VTA's Transit-Oriented Joint Development* (BART Extension with TOJD TIA) (Hexagon 2017~~6~~a and 2017~~6~~b, respectively) provide detailed information on transportation analyses conducted.

In compliance with CEQA, the analysis for 2015 Existing conditions with the BART Extension with TOJD Alternative is also provided here for comparative purposes.

Revisions to the significance thresholds for CEQA that became effective on January 1, 2010, eliminated effects on parking. The revisions to the CEQA thresholds were based on the decision in *San Franciscans Upholding the Downtown Plan v. City & County of SF, 102 Cal.App.4th 65 (Sept. 30, 2002),* in which the court ruled that parking deficits are an inconvenience to drivers but not a significant physical impact on the environment. As a result of this change to the State CEQA Guidelines, VTA adopted new significance thresholds that did not include the effects of parking on November 4, 2010. Discussion of parking is provided in Chapters 3 and 5 for informational purposes for CEQA.

6.2.1.1 Affected Environment

Refer to Chapter 3, for a full description of the existing transportation conditions in the study area and a basis for the assessment of future transportation conditions.

6.2.2 Environmental Consequences and Mitigation Measures

6.2.2.1 No Build Alternative

The No Build Alternative consists of the existing transit and roadway networks and planned and programmed transportation improvements (see Chapter 2, Section 2.2.1, *NEPA No Build Alternative*, for a list of these projects) and other land development projects planned by the Cities of San Jose and Santa Clara.

The No Build Alternative projects could result in effects on transportation typically associated with transit, highway, bicycle, pedestrian facilities, and roadway projects, as well as land development projects. The transportation projects completed under the No Build Alternative would be consistent with local policies that encourage alternative transportation, but would not be as supportive of regional plans to promote BART and TOJD. Because BART would reduce traffic more than personal automobiles, the No Build Alternative would result in more traffic than both the BART Extension and BART Extension with TOJD Alternatives. All individual projects planned under the No Build Alternative would undergo separate environmental review to identify effects on transportation and provide appropriate mitigation measures. Review would include an analysis of impacts and identification of mitigation measures to reduce potential impacts.

6.2.2.2 BART Extension Alternative

Impact BART Extension CNST-TRA-1: Conflict with a transportation plan, ordinance, or policy

Construction

The construction of the BART Extension Alternative has the potential to affect local traffic, causing street closures and detours, and resulting in significant impacts on pedestrians, bicyclists, and vehicular traffic for Alum Rock/28th Street, 13th Street Ventilation Structure, Downtown San Jose, Diridon (all options), Stockton Avenue Ventilation Structure, and Santa Clara Stations for both Twin-Bore and Single-Bore Options. The Twin-Bore Option tunnel construction involves cut-and-cover construction of the Alum Rock/28th Street, Downtown San Jose (East or West Option), and Diridon (South or North Option) Stations and the downtown crossover and cross passages. Cut-and-cover construction required for the Single-Bore Option would be less than the Twin-Bore Option. Mitigation Measures TRA-CNST-A ~~through~~ and TRA-CNST-~~C~~ B will be implemented to address construction issues and to inform the public and other stakeholders of the construction schedule and associated activities (see Chapter 5). These mitigation measures would reduce the impacts at the two ventilation facilities and cross passages to *less than significant.* However, even with the implementation of mitigation measures, temporary construction impacts related to conflicts with a transportation plan, ordinance, or policy on pedestrians, bicyclists, and vehicular traffic would be *significant and unavoidable* for Alum Rock/28th Street, Downtown San Jose (East and West Options), Diridon (South and North Options), and Santa Clara Stations for both the Twin-Bore and Single-Bore Options.

Construction schedules for Newhall Maintenance Facility, West Portal, and Santa Clara Station would overlap, and construction activities would cause the addition of traffic from construction vehicles and trucks accessing the site and delivering supplies and materials to the construction site throughout the duration of construction. Construction vehicles and trucks carrying equipment, supplies, or tunnel muck (from West Portal for the Single-Bore Option) would access the site from Interstate (I-) 880 to Coleman Avenue. From Coleman

Avenue, construction vehicles would use either Newhall Drive or Brokaw Road to access the facility. Coleman Avenue, Newhall Drive, Newhall Street, and Brokaw Road would experience heavy construction vehicle traffic during construction. Mitigation Measures TRA-CNST-A and TRA-CNST-B will be implemented to reduce these impacts. However, even after mitigation, construction of the Newhall Maintenance Facility, West Portal, and Santa Clara Station would have a *significant and unavoidable* impact on pedestrians, bicyclists, and vehicular traffic for both the Twin-Bore Option and Single-Bore Option.

For the Twin-Bore Option only, construction activities for the Downtown San Jose Station West Option would interrupt VTA's light rail service at Santa Clara Street at both 1st and 2nd Streets due to cut-and-cover construction of the station box. Construction of the Downtown San Jose Station West Option would also require the long-term closure of bus stops. Impacts on transit (light rail) for the Downtown San Jose West Option (Twin-Bore Option only) would be significant. Mitigation Measures TRA-CNST-A and TRA-CNST-B will be implemented to reduce impacts on transit. However, impacts would remain *significant and unavoidable* under CEQA.

For both Twin-Bore and Single-Bore Options, closure of transit stops and route detours during construction in the vicinity of Downtown San Jose Station (East and West Options) and Diridon Station (South and North Options) would decrease performance and affect local bus service. This would result in a significant impact on transit (bus) at these locations. Mitigation Measures TRA-CNST-A and TRA-CNST-B will be implemented to reduce impacts on bus transit. However, impacts would remain *significant and unavoidable* under CEQA.

Caltrain service is provided at Diridon Caltrain Station. The Single-Bore Option tunnel would be approximately 70 feet below surface and the entrances would not impact the existing railroad tracks. Therefore Caltrain rail service above would not be affected during construction. ~~However, f~~For the Twin-Bore Option, construction of the Diridon BART Station North Option would occur under the Caltrain guideway~~affect existing Caltrain rail service~~. Construction methods described in Section 5.3.1.7, *Cut-and-Cover Construction*, would be used to ensure rail operations are not disrupted. ~~The eastern most track would need to be taken out of service during BART station construction. Service on this track would be temporarily shifted during construction to another track and would require coordination with Caltrain. Therefore, construction of the Twin-Bore Diridon Station North Option would affect Caltrain rail service during construction and mitigation would be required.~~

VTA will implement Mitigation Measure TRA-CNST-A to coordinate this construction and reduce impacts on Caltrain rail service. ~~Although VTA would implement Mitigation Measure TRA-CNST-A and coordinate with Caltrain (and any other operators that may be using the affected tracks) for construction activities, the Twin-Bore Diridon Station North Option construction could result in a *significant and unavoidable*~~ Therefore, construction of Diridon Station would result in a *less than significant with mitigation* impact under CEQA on Caltrain service and on any other operators that may be using the affected tracks.

Operation

See discussion under Chapter 3, Section 3.5.2.5. Based on this discussion, impacts would be *less than significant* under CEQA. No mitigation is required.

Impact BART Extension CNST-TRA-2: Conflict with the Congestion Management Program

Construction

As stated in Chapter 5, construction activities would result in an increase in construction vehicles as well as traffic detours. As explained in Impact BART Extension CNST-TRA-1 above, the construction of the BART Extension Alternative has the potential to affect local traffic, causing street closures and detours, and resulting in *significant and unavoidable* impacts on pedestrians, bicyclists, and vehicular traffic. Some of these traffic disruptions may affect Congestion Management Program (CMP) intersections. Although Mitigation Measures TRA-CNST-A and TRA-CNST-B would be implemented to reduce these impacts, given the long duration of construction and overlapping schedules for various elements, a *significant and unavoidable* impact would occur at CMP intersections.

Operation

See discussion under Chapter 3, Section 3.5.2.6. Based on this discussion, impacts would be *less than significant* under CEQA. No mitigation is required.

Impact BART Extension CNST-TRA-3: Cause changes in air traffic patterns

Construction

During construction, no structures or equipment would exceed the applicable height restrictions imposed by local regulations. Impacts would be *less than significant* under CEQA. No mitigation is required.

Operation

See discussion under Chapter 3, Section 3.5.2.7. Based on this discussion, impacts would be *less than significant* under CEQA. No mitigation is required.

Impact BART Extension CNST-TRA-4: Increase traffic hazards

Construction

As discussed in Chapter 4, Section 4.13, *Security and System Safety*, the BART Extension would be designed by VTA to comply with the pertinent codes and standards including BART Design Criteria Facilities Standards, which describe and specify design requirements for all new projects. Impacts would be *less than significant* under CEQA. No mitigation is required.

Operation

See discussion under Chapter 3, Section 3.5.2.8. Based on this discussion, impacts would be *less than significant* under CEQA. No mitigation is required.

Impact BART Extension CNST-TRA-5: Result in inadequate emergency access

Construction

As explained in Chapter 5, lane and road closures may be necessary for construction of the BART Extension Alternative that have the potential to impede movement of emergency service providers during construction resulting in a significant impact. Mitigation Measure TRA-CNST-~~D~~ C would be implemented to ensure that VTA works with local emergency providers regarding these closures and detour routes. This impact would be *less than significant with mitigation* under CEQA.

Operation

See discussion under Chapter 3, Section 3.5.2.9. Based on this discussion, impacts would be *less than significant* under CEQA. No mitigation is required.

Impact BART Extension CNST-TRA-6: Conflict with transit, bicycle, or pedestrian policies, plans, or programs

Construction

Construction-period impacts on transit, bicyclists, and pedestrians are described in Impact BART Extension CNST-TRA-1 above.

Impacts would be *significant and unavoidable* for Alum Rock/28th Street Station, Downtown San Jose Station (East and West Options), Diridon Station (South and North Options), Newhall Maintenance Facility, West Portal, and Santa Clara Station for pedestrians and bicyclists; therefore, construction at these locations would conflict with local bicycle and pedestrian policies, plans, or programs for both the Twin-Bore Option and Single-Bore Option tunnels.

Construction of Downtown San Jose Station West Option (Twin-Bore Option only) would result in a *significant and unavoidable* impact under CEQA on bus and light rail service, which would conflict with VTA's transit plans and policies.

The construction of Diridon Station North Option (Twin-Bore Option only) would occur under the Caltrain guideway, and construction methods would be used to ensure rail operations are not disrupted. VTA will implement Mitigation Measure TRA-CNST-A to coordinate this construction and reduce impacts on Caltrain rail service. Impacts would be *less than significant with mitigation* ~~result in a *significant and unavoidable* impact~~ under CEQA ~~on Caltrain service on the easternmost track, which would conflict with Caltrain's transit plans and policies~~.

Operation

See discussion under Chapter 3, Section 3.5.2.10. Based on this discussion, impacts would be *less than significant* under CEQA. No mitigation is required.

Impact BART Extension CNST-TRA-7: Interfere with activities at event centers

Construction

There are two major event facilities along the alignment: the SAP Center and Avaya Stadium. The SAP Center is across Santa Clara Street from the Diridon Station. The SAP Center holds a substantial number of events throughout the year, ~~primarily~~ on weekends and weekdays. The Avaya Stadium, which is the home of the San Jose Earthquakes soccer team, is at Coleman Avenue and Newhall Drive near the San Jose/Santa Clara City limit line. It is also close to the Newhall Maintenance Facility and Santa Clara Station. ~~Because potential interference with activities at event centers is not included in Appendix G of the State CEQA Guidelines, as listed in Chapter 3, Section 3.2.2, *Thresholds of Significance*, this discussion is provided for informational purposes for CEQA.~~

Construction activities for the BART Extension Alternative may result in lane or road closures in the vicinity of these facilities. However, similar to other businesses and property owners affected by construction, VTA will coordinate with the owners/operators of these event centers to provide information regarding lane closures and detours and provide wayfinding signs during construction.

Operation

See discussion under Chapter 3, Section 3.5.2.11. Based on this discussion, impacts would be *less than significant* under CEQA. No mitigation is required.

6.2.2.3 BART Extension with TOJD Alternative

Impact BART + TOJD CNST-TRA-1: Conflict with a transportation plan, ordinance, or policy

Construction

The TOJD would be constructed at four sites near the Alum Rock/28th Street, Downtown San Jose, Diridon, and Santa Clara Stations and two sites near the 13th Street and Stockton Avenue ventilation facilities. Although construction would temporarily increase trucks and employee vehicles on public roadways accessing the work sites, the impact on roadway traffic operation from increased trips would be substantial. Construction of the BART Extension would temporarily affect nearby businesses and residences along the alignment, including Downtown San Jose, which has constraints on available space for construction. This impact is potentially significant to vehicular traffic, bicyclists, and pedestrians. Impacts on transit (light rail and bus service) would be the same as described under Impact BART Extension CNST-TRA-1.

As discussed above under Impact BART Extension CNST-TRA-1, construction of the BART Extension Alternative has the potential to result in *significant and unavoidable* impacts on transportation plan, ordinance, or policy.

These impacts would be *significant and unavoidable* for construction of the BART Extension with TOJD Alternative at Alum Rock/28th Street Station, Downtown San Jose Station (East and West Options), Diridon Station (South and North Options), Santa Clara Station, Newhall Maintenance Facility, and West Portal. For 13th Street and Stockton Avenue~~Street~~ Ventilation Structures, these impacts can be reduced to a less-than-significant level with the implementation of Mitigation Measures TRA-CNST A ~~through~~ and TRA-CNST-~~C~~B.

Operation

See discussion under Chapter 3, Section 3.5.3.4. Based on this discussion, the impact at the De La Cruz Boulevard and Central Expressway intersection would be *significant and unavoidable* under CEQA.

Impact BART + TOJD CNST-TRA-2: Conflict with the Congestion Management Program

Construction

As explained under Impact BART Extension CNST-TRA-2 above, construction activities for the BART Extension Alternative would result in an increase in construction vehicles as well as traffic detours. Some of these impacts may affect CMP intersections. Although Mitigation Measures TRA-CNST-A and TRA-CNST-B would be implemented to reduce these impacts, given the long duration of construction and overlapping schedules for various elements, a *significant and unavoidable* impact would occur at CMP intersections. The TOJD construction would also temporarily increase trucks and employee vehicles on public roadways accessing the work sites, and the impact on roadway traffic operations from increased trips would be substantial. A *significant and unavoidable* impact under CEQA would occur.

Operation

See discussion under Chapter 3, Section 3.5.3.5. Based on this discussion, impacts would be *less than significant* under CEQA. No mitigation is required.

Impact BART + TOJD CNST-TRA-3: Cause changes in air traffic patterns

Construction

During construction, no structures or equipment would exceed the applicable height restrictions imposed by local regulations. Impacts would be *less than significant* under CEQA. No mitigation is required

Operation

See discussion under Chapter 3, Section 3.5.3.6. Based on this discussion, impacts would be *less than significant* under CEQA. No mitigation is required.

Impact BART + TOJD CNST-TRA-4: Increase traffic hazards

Construction

Construction of TOJD would not result in any unique or additional traffic hazards. Impacts under the BART Extension with TOJD Alternative would be similar to the BART Extension Alternative. Impacts related to substantially increasing hazards due to a design feature or incompatible uses would be *less than significant*, and no mitigation is required.

Operation

See discussion under Chapter 3, Section 3.5.3.7. Based on this discussion, impacts would be *less than significant* under CEQA. No mitigation is required.

Impact BART + TOJD CNST-TRA-5: Result in inadequate emergency access

Construction

Construction of TOJD would not result in any unique or additional circumstances for inadequate emergency access. Impacts under the BART Extension with TOJD Alternative would be similar to the BART Extension Alternative. Mitigation Measure TRA-CNST-~~D~~ C would be implemented to ensure that VTA works with local emergency providers regarding these closures and detour routes. This impact would be *less than significant with mitigation* under CEQA.

Operation

See discussion under Chapter 3, Section 3.5.3.8. Based on this discussion, impacts would be *less than significant* under CEQA. No mitigation is required.

Impact BART + TOJD CNST-TRA-6: Conflict with transit, bicycle, or pedestrian policies, plans, or programs

Construction

Impacts under the BART Extension with TOJD Alternative would be similar to the BART Extension Alternative.

The TOJD construction would not substantially add to these impacts for the BART Extension, but these impacts would remain *significant and unavoidable* for construction of the BART Extension with TOJD Alternative at the locations/options identified under Impact BART + TOJD CNST-TRA-1.

Operation

See discussion under Chapter 3, Section 3.5.3.9. Based on this discussion, impacts would be *less than significant* under CEQA. No mitigation is required.

Impact BART + TOJD CNST-TRA-7: Interfere with activities at event centers

Construction

See Impact BART Extension CNST-TRA-7 above. The construction of Diridon Station TOJD near the SAP Center would be short-term and not result in any unique or substantial traffic disruptions.

No TOJD is planned at the Newhall Maintenance Facility. The construction activities for the TOJD at Santa the Clara Station would not result in any unique or substantial traffic disruptions to the Avaya Stadium.

Similar to other businesses and property owners affected by construction, VTA will coordinate with the owners/operators of these event centers to provide information regarding lane closures and detours, and provide wayfinding signs during construction of the BART Extension with TOJD Alternative.

Operation

See discussion under Chapter 3, Section 3.5.3.10. Based on this discussion, impacts would be *less than significant* under CEQA. No mitigation is required.

CEQA Conclusions (Construction only)

During construction, the BART Extension Alternative and BART Extension with TOJD Alternative would result in a *significant and unavoidable* impact on pedestrians, bicyclists, and vehicular traffic at Alum Rock/28th Street Station, Downtown San Jose Station (East and West Options), Diridon Station (South and North Options), the Newhall Maintenance Facility, West Portal, and Santa Clara Station for both the Twin-Bore and Single-Bore Options.

During construction, the Downtown San Jose Station West Option (Twin-Bore Option only) would result in a *significant and unavoidable* impact under CEQA on existing transit bus and light rail service.

During construction of ~~,~~ the Diridon Station North Option (Twin-Bore Option only), VTA will implement Mitigation Measure TRA-CNST-A to coordinate this construction and reduce impacts on Caltrain rail service. Impacts would ~~result in a~~ be ~~*significant and unavoidable*~~ *less than significant with mitigation* ~~impact~~ under CEQA ~~on existing Caltrain service on the easternmost track~~.

The long-term/operational impact at the De La Cruz Boulevard and Central Expressway intersection would be *significant and unavoidable* under CEQA for the BART Extension with TOJD Alternative.

6.2.2.4 2015 Existing Plus BART Extension with TOJD Alternative

The BART Extension is approximately an 8-year construction project that is expected to open in late 2025/2026. The TOJD at Alum Rock/28th Street Station and Santa Clara Station and other locations would follow the BART Extension construction and could not be completed until late 2025 at the earliest. Therefore, it is not possible for the 2015 Existing Plus BART Extension with TOJD Alternative to occur. While numerous improvements to the transportation network are projected to occur by 2025, the 2015 Existing Plus BART Extension with TOJD Alternative scenario is included only for comparative purposes.

Transportation Network Under 2015 Existing Plus BART Extension Alternative

It is assumed in this analysis that the transportation network under 2015 Existing Plus BART Extension with TOJD Alternative would be the same as the existing transportation network.

2015 Existing Plus BART Extension with TOJD Traffic Volumes

The BART Extension with TOJD Alternative trips were added to existing traffic volumes to obtain 2015 Existing Plus BART Extension with TOJD Alternative traffic volumes. These include trips related to the TOJD, station drive access trips, and the shift in travel patterns as people switch from passenger vehicles to BART.

Intersection Levels of Service Under 2015 Existing Plus BART Extension with TOJD Alternative

Intersection LOS under 2015 Existing Plus BART Extension with TOJD Alternative was evaluated against City of San Jose, City of Santa Clara, and CMP LOS standards. The results of the intersection LOS analysis under 2015 Existing Plus BART Extension with TOJD Alternative are summarized below.

The determination of whether an intersection operates at an acceptable or unacceptable LOS (in accordance with the appropriate LOS standard) is a first step in determining whether or not a project would have a significant impact. For intersections that would operate at an unacceptable LOS under 2015 Existing Plus BART Extension with TOJD Alternative, the next step is to evaluate those intersections in relation to the 2015 Existing conditions and apply the appropriate significant impact criteria.

Alum Rock/28th Street Station

City of San Jose Level of Service Analysis

The results of the LOS analysis under 2015 Existing Plus BART Extension with TOJD Alternative show that, measured against the City of San Jose LOS standards, all 27 of the study intersections in the vicinity of the Alum Rock/28th Street Station would operate at an acceptable LOS (LOS D or better) during both the AM and PM peak hours of traffic.

CMP Level of Service Analysis

The results of the LOS analysis under 2015 Existing Plus BART Extension with TOJD Alternative show that, measured against the CMP standards, all of the study CMP intersections in the vicinity of the Alum Rock/28th Street Station would operate at an acceptable LOS (LOS E or better) during both the AM and PM peak hours of traffic.

Santa Clara Station

City of San Jose Level of Service Analysis

The results of the LOS analysis under 2015 Existing Plus BART Extension with TOJD Alternative show that, measured against the City of San Jose level of service policy, all of the 13 Santa Clara Station study intersections within San Jose would operate at an acceptable LOS (LOS D or better) during both the AM and PM peak hours of traffic.

City of Santa Clara Level of Service Analysis

The results of the LOS analysis under 2015 Existing Plus BART Extension with TOJD Alternative show that, measured against the City of Santa Clara LOS standards, all except two of the 22 Santa Clara Station study intersections within Santa Clara would operate at an acceptable LOS (LOS D or better at local intersections and LOS E or better at expressway and CMP intersections) during both the AM and PM peak hours of traffic. The following two intersections would operate at unacceptable LOS (LOS E or worse for local intersections and LOS F for expressways and CMP intersections shown with an "*") during at least one peak hour.

- ~~(#30)~~ De La Cruz Boulevard and Central Expressway* (LOS F: AM and PM peak hours)
- ~~(#33)~~ Coleman Avenue and Brokaw Road (LOS F: PM peak hour)

The unsignalized intersection of Lafayette Street and Harrison Street ~~(#48)~~ has two-way stop control. The LOS for this intersection, LOS F in the AM and PM peak hours, reflects the delay and the LOS for the stop-controlled approach with the highest delay, not the average of the entire intersection. Because the City of Santa Clara does not have an LOS standard for unsignalized intersections, this intersection cannot be said to operate at an unacceptable LOS.

CMP Level of Service Analysis

The results of the LOS analysis under 2015 Existing Plus BART Extension with TOJD Alternative show that, measured against the CMP LOS standards, all except one of the CMP study intersections in the vicinity of the Santa Clara Station would operate at an acceptable LOS (LOS E or better) during both the AM and PM peak hours of traffic. The following CMP intersection would operate at unacceptable LOS (LOS F) during at least one peak hour.

- De La Cruz Boulevard and Central Expressway* (LOS F: AM and PM peak hours)

Intersection Impacts under 2015 Existing Plus BART Extension with TOJD Alternative

This section evaluates whether the BART Extension with TOJD Alternative would result in a significant impact on the study intersections under the 2015 Existing Plus BART Extension with TOJD Alternative scenario based on the significant impact criteria of the City of San Jose, City of Santa Clara, and CMP. To determine whether the BART Extension with TOJD Alternative would have an impact under 2015 Existing Plus BART Extension with TOJD Alternative conditions, a comparison is made between 2015 Existing conditions and 2015 Existing Plus BART Extension with TOJD Alternative and the appropriate significant impact criteria are applied. Even though the significant impact criteria for the City of San Jose, City of Santa Clara, and CMP specify the comparison of 2025 Background and 2025 Background Plus BART Extension with TOJD Alternative, the same methodology and criteria can be applied to a comparison of 2015 Existing and 2015 Existing Plus BART Extension with TOJD Alternative. This comparison has been made and significant impacts identified for the 2015 Existing Plus BART Extension with TOJD Alternative.

Alum Rock/28th Street Station

City of San Jose Impact Analysis

Based on the significant impact criteria of the City of San Jose, the BART Extension with TOJD Alternative would not result in any significant impacts on the intersections in the vicinity of the Alum Rock/28th Street Station under the 2015 Existing Plus BART Extension with TOJD scenario.

CMP Impact Analysis

Based on the significant impact criteria of the CMP, the BART Extension with TOJD Alternative would not result in any significant impacts on the CMP intersections in the vicinity of the Alum Rock/28th Street Station under the 2015 Existing Plus BART Extension with TOJD scenario.

Santa Clara Station

City of San Jose Impact Analysis

Based on the significant impact criteria of the City of San Jose, the BART Extension with TOJD Alternative would not result in any significant impacts on the San Jose intersections in the vicinity of the Santa Clara Station under the 2015 Existing Plus BART Extension with TOJD scenario.

City of Santa Clara Impact Analysis

When measured against the City of Santa Clara significant impact criteria, the BART Extension with TOJD Alternative would potentially cause a significant impact at the following intersection near the Santa Clara Station under 2015 Existing Plus BART Extension with TOJD Alternative.

- ~~(#33)~~ Coleman Avenue and Brokaw Road

No mitigation is required for the significantly affected intersection because this analysis is presented for comparative purposes. Feasible mitigation exists to reduce the impact on this intersection to a less-than-significant level.

When measured against the City of Santa Clara significant impact criteria, the BART Extension with TOJD Alternative is not projected to cause an impact at the intersection of De La Cruz Boulevard and Central Expressway because the average delay under 2015 Existing Plus BART Extension with TOJD Alternative, when compared to 2015 Existing conditions, would decrease by 5.5 seconds in the AM peak hour and increase by only 0.6 second in the PM peak hour.

CMP Impact Analysis

Based on the significant impact criteria of the CMP, the BART Extension with TOJD Alternative would not result in any significant impacts on the CMP intersections in the vicinity of the Santa Clara Station under the 2015 Existing Plus BART Extension with TOJD scenario.

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6.3 Air Quality

6.3.1 Introduction

This section discusses existing conditions and the regulatory setting regarding air quality. In addition, it describes impacts under CEQA that would result from construction and operation of the CEQA Alternatives.

Ambient air quality in the region is affected by climatological conditions, topography, and the types and amounts of pollutants emitted. The primary pollutants of concern in the area are ozone, carbon monoxide (CO), particulate matter (PM) that is 10 microns in diameter or less (PM10) and that is 2.5 microns in diameter or less (PM2.5), and toxic air contaminants (TACs). The principal characteristics surrounding these pollutants, as well as monitored pollutant trends, are discussed in Chapter 4, Section 4.2.2.1, *Environmental Setting*, which also includes background information regarding TACs as well as an overview of climate and meteorological conditions relative to the area.

Information in this section is based on *VTA's BART Silicon Valley – Phase II Extension Project Air Quality Study* (Terry A. Hayes Associates Inc. 2017~~6~~), which is included with this SEIS/SEIR as a technical report, and which provides calculation details and air quality data.

6.3.1 Regulatory Setting

6.3.1.1 Regulatory Setting

Federal

As described in Chapter 4, Section 4.2.2.2, *Regulatory Setting*, the Clean Air Act (CAA) governs federal air quality management in the United States. The U.S. Environmental Protection Agency (EPA) is responsible for enforcing the CAA and establishing the National Ambient Air Quality Standards (NAAQS) (see Table 4.2-2). EPA develops and enforces regulations to protect the public from exposure to airborne contaminants that are known to be hazardous to human health. Please refer to Section 4.2.2.2 for additional information on federal air quality management.

State

California Clean Air Act

In addition to being subject to the requirements of CAA, air quality in California is governed by more stringent regulations under the California Clean Air Act (California CAA). The California CAA is administered by the California Air Resources Board (ARB) at the state level and the air quality management districts and air pollution control districts at the regional and local levels. ARB is responsible for meeting the state requirements of the CAA,

administering the California CAA, and establishing the California Ambient Air Quality Standards (CAAQS). The California CAA requires all air districts in the state to endeavor to achieve and maintain the CAAQS, which are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. ARB is responsible for setting emission standards for vehicles sold in California and other emission sources, such as consumer products and certain off-road equipment. For example, ARB established passenger vehicle fuel specifications. ARB oversees the functions of local air pollution control districts and air quality management districts, which, in turn, administer air quality activities at the regional and county levels. Table 4.2-2 summarizes state standards.

The California CAA requires ARB to designate areas within California as either attainment or nonattainment areas for each criteria pollutant, based on whether the CAAQS have been achieved. Under the California CAA, areas are designated as nonattainment areas for a criteria pollutant if air quality data show that a state standard for the pollutant was violated at least once during the previous 3 calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a state standard and are not used as a basis for designating areas as nonattainment areas.

State Toxic Air Contaminant Programs

California regulates TACs primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588).

AB 1807 sets forth a formal procedure for ARB to designate substances as TACs. This includes research, public participation, and scientific peer review before ARB can designate a substance as a TAC. To date, ARB has identified more than 21 TACs, including diesel particulate matter (DPM). Once a TAC is identified, ARB then adopts airborne toxic control measures (ATCMs) for sources that emit that particular TAC.

None of the TACs identified by ARB have a safe threshold; exposure to these TACs is therefore considered in terms of the long-term elevated health risk.

AB 2588 requires existing facilities that emit toxic substances above specified levels to:

- Prepare a toxic emission inventory.
- Prepare a risk assessment if emissions are significant.
- Notify the public of significant risk levels.
- Prepare and implement risk reduction measures.

ARB has adopted diesel exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses and certain other diesel-powered equipment.

Over time, the replacement of older vehicles will result in a vehicle fleet that produces fewer TACs compared with current conditions. Mobile-source emissions of TACs (e.g., benzene, 1,3-butadiene, DPM) have been reduced significantly over the last decade and will be reduced further in California through a progression of regulatory measures (e.g., low-emission vehicle/clean fuels, Phase II reformulated gasoline regulations) and control technologies. With implementation of ARB's Risk Reduction Plan, it is expected that DPM concentrations will be reduced by 85 percent by 2020 compared with 2000 levels (BAAQMD 2010). Adopted regulations are also expected to continue to reduce formaldehyde emissions from cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

Regional

Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD) attains and maintains air quality conditions in the San Francisco Bay Area Air Basin (SFBAAB) through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. BAAQMD has jurisdiction over an approximately 5,600-square-mile area of the SFBAAB, including all of Santa Clara County.

BAAQMD established a climate protection program to reduce pollutants that contribute to global climate change and affect air quality in the SFBAAB. The climate protection program includes measures that promote energy efficiency, reduce vehicle miles traveled (VMT), and develop alternative sources of energy, all of which assist in reducing emissions of greenhouse gases (GHGs) and air pollutants that affect the health of residents. BAAQMD also seeks to support current climate protection programs in the region and stimulate additional efforts through public education and outreach, technical assistance to local governments and other interested parties, and the promotion of collaborative efforts among stakeholders.

The clean air strategy of BAAQMD includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. BAAQMD also inspects stationary sources of air pollution and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the CAA and the California CAA.

As stated above, BAAQMD prepares plans to attain ambient air quality standards in the SFBAAB. BAAQMD prepares ozone attainment plans for the national ozone standard and clean air plans (CAPs) for the California standard, both in coordination with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments.

With respect to applicable air quality plans, BAAQMD prepared the 2010 Clean Air Plan (2010 CAP) to address nonattainment of the national 1- and 8-hour ozone standards in the SFBAAB. The purpose of the 2010 CAP is to:

- Update the Bay Area 2005 Ozone Strategy in accordance with the requirements of the California CAA and implement all feasible measures to reduce ozone.
- Consider the impacts of ozone control measures on PM, air toxics, and GHGs in a single integrated plan.
- Review progress in improving air quality in recent years.
- Establish emission control measures to be adopted or implemented in the 2009–2012 timeframe.

To achieve the core purposes of the 2010 CAP, the control strategies proposed are designed to:

- Reduce emissions of ozone precursors, PM, air toxics, and GHGs.
- Continue progress toward attainment of state ozone standards.
- Reduce the transport of ozone precursors to neighboring air basins.
- Protect public health by reducing exposure to the most harmful air pollutants.
- Protect the climate.

Similarly, BAAQMD prepared the 2010 CAP to address nonattainment of the CAAQS.

The project is subject to the following BAAQMD rules.

- **Regulation 6, Rule 1 (Particulate Matter).** This regulation restricts emissions of PM darker than No. 1 on the Ringlemann Chart to less than 3 minutes in any 1 hour.
- **Regulation 7 (Odorous Substances).** This regulation establishes general odor limitations on odorous substances and specific emission limitations on certain odorous compounds.
- **Regulation 8, Rule 3 (Architectural Coatings).** This regulation limits the quantity of reactive organic gases (ROGs) in architectural coatings supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within the district.
- **Regulation 8, Rule 15 (Emulsified and Liquid Asphalts).** This regulation limits emissions of volatile organic compounds (VOCs) from paving materials.
- **Regulation 9, Rule 8 (Stationary Internal Combustion Engines).** This regulation limits emissions of nitrogen oxides (NO_X) and CO from stationary internal combustion engines of more than 50 horsepower.
- **Regulation 11, Rule 2 (Naturally Occurring Asbestos).** This regulation addresses asbestos demolition renovation, manufacturing, and standards for asbestos-containing serpentine. The purpose of Regulation 11, Rule 2, is to control emissions of asbestos to the atmosphere during demolition, renovation, milling, and manufacturing and establish appropriate waste disposal procedures (BAAQMD 1998). ARB defines naturally occurring asbestos (NOA) as a TAC. NOA is found in many parts of California and commonly associated with certain rocks in the Bay Area (California Geological Survey

2002). BAAQMD's NOA program requires that applicable notification forms be submitted by qualifying operations in accordance with the procedures detailed in the ATCM Inspection Guidelines, Policies, and Procedures, which require regulated operations that engage in road construction and maintenance activities, construction and grading operations, and quarrying and surface mining operations in areas where NOA is likely to be found to employ the best available dust mitigation measures to reduce and control dust emissions.

- **Regulation 2, Rule 2, New Source Review.** Applies to new or modified sources and contains requirements for best available control technology and emission offsets. Rule 2 implements federal New Source Review and Prevention of Significant Deterioration requirements. According to this rule, new and modified sources with hazardous air pollutant emissions may also be subject to the maximum achievable control technology requirement.
- **Regulation 9, Rule 8, Stationary Internal Combustion Engines.** This regulation limits emissions of NO_X and CO from stationary internal combustion engines of more than 50 horsepower.

BAAQMD has regulated TACs since the 1980s. At the local level, air pollution control or management districts may adopt and enforce ARB control measures. Under BAAQMD Regulation 2-1 (General Requirements), Regulation 2-2 (New Source Review), and Regulation 2-5 (New Source Review of Toxic Air Contaminants), all nonexempt sources with the potential to emit TACs are required to obtain permits from BAAQMD. Permits may be granted if construction and operations occur in accordance with applicable regulations, including New Source Review standards and ATCMs. BAAQMD limits emissions and public exposure to TACs through a number of programs. BAAQMD prioritizes TAC-emitting stationary sources according to the quantity and toxicity of the emissions and the proximity of the facilities to sensitive receptors. In addition, BAAQMD has adopted Regulation 11, Rules 2 and 14, to address asbestos-related demolition, renovation, and manufacturing and establish standards for asbestos-containing serpentine.

Metropolitan Transportation Commission

MTC is the transportation planning agency for the Bay Area. MTC is responsible for preparing the Regional Transportation Plan (RTP) and blueprints for mass transit, highway, airport, seaport, railroad, and bicycle and pedestrian facilities. It also screens requests from local agencies for state and federal grants for transportation projects. The most recent edition of the RTP, adopted in June 2013, is the Plan Bay Area. The RTP provides a long-range framework for minimizing transportation impacts on the environment, improving regional air quality, protecting natural resources, and reducing GHG emissions.

Local

City of San Jose

The City of San Jose General Plan (2011) includes the following policies to minimize air pollutant emissions from new and existing development.

- **Air Quality Policy MS-10-1:** Assess projected air emissions from new development in conformance with the BAAQMD CEQA Guidelines and relative to state and federal standards. Identify and implement feasible air emission reduction measures.
- **Air Quality Policy MS-10-2:** Consider the cumulative air quality impacts from proposed developments for proposed land use designation changes and new development, consistent with the region's CAP and state law.
- **Air Quality Policy MS-10-3:** Promote the expansion and improvement of public transportation services and facilities, where appropriate, to both encourage energy conservation and reduce air pollution.
- **Air Quality Policy MS-10-5:** In order to reduce vehicle miles traveled and traffic congestion, require new development within 2,000 feet of an existing or planned transit station to encourage the use of public transit and minimize the dependence on the automobile through the application of site design guidelines and transit incentives.
- **Air Quality Policy MS-10-6:** Encourage mixed land use development near transit lines and provide retail and other types of service-oriented uses within walking distance to minimize automobile-dependent development.
- **Air Quality Policy MS-10-7:** Encourage regional and statewide air pollutant emission reduction through energy conservation to improve air quality.
- **Toxic Air Contaminants MS-11-1:** Require completion of air quality modeling for sensitive land uses such as new residential developments that are located near sources of pollution such as freeways and industrial uses. Require new residential development projects and projects categorized as sensitive receptors to incorporate effective mitigation into project designs or be located an adequate distance from sources of toxic air contaminants [TACs] to avoid significant risks to health and safety.
- **Toxic Air Contaminants MS-11-4:** Encourage the installation of appropriate air filtration at existing schools, residences, and other sensitive receptor uses adversely affected by pollution sources.
- **Toxic Air Contaminants MS-11-7:** Consult with BAAQMD to identify stationary and mobile TAC sources and determine the need for and requirements of a health risk assessment for proposed developments.
- **Toxic Air Contaminants MS-11-8:** For new projects that generate truck traffic, require signage that reminds drivers that the state idling law limits truck idling to 5 minutes.

- **Construction Air Emissions MS-13-1:** Include dust, PM, and construction equipment exhaust control measures as conditions of approval for subdivision maps, site development and planned development permits, grading permits, and demolition permits. At a minimum, conditions shall conform to construction mitigation measures recommended in the current BAAQMD CEQA Guidelines for the relevant project size and type.
- **Construction Air Emissions MS-13-2:** Construction and/or demolition projects that have the potential to disturb asbestos (from soil or building material) shall comply with all the requirements of ARB's air toxics control measures for construction, grading, quarrying, and surface mining operations.

City of Santa Clara

The City of Santa Clara General Plan (2010) includes the following policies to improve air quality in Santa Clara and the region.

- **Air Quality Policy 5.10.2-1:** Support alternative transportation modes and efficient parking mechanisms to improve air quality.
- **Air Quality Policy 5.10.2-2:** Encourage development patterns that reduce VMT and air pollution.
- **Air Quality Policy 5.10.2-3:** Encourage implementation of technological advances that minimize public health hazards and reduce the generation of air pollutants.
- **Air Quality Policy 5.10.2-5:** Promote regional air pollution prevention plans for local industry and businesses.
- **Air Quality Policy 5.10.2-6:** Require best management practices for construction dust abatement.

6.3.2 CEQA Methods of Analysis

6.3.2.1 Construction

Criteria Pollutants

Construction activities would generate criteria pollutant emissions from the following activities: relocation of underground and overhead utilities along the corridor; site preparation/excavation for the three underground stations (i.e., Alum Rock/28th Street, Downtown San Jose, Diridon); cut-and-cover operations and excavation of tunnels with use of one or more tunnel boring machines; demolition of existing structures, buildings, pavement, and other site features; construction of ventilation facilities, system facilities, station boxes, track work including crossovers, station campuses, and the Newhall Maintenance Facility; construction workers traveling to and from construction sites; deliveries of supplies to construction sites; and hauling debris from construction sites. These construction activities would generate dust (i.e., PM), fumes, equipment exhaust, and other air contaminants.

According to the schedule, construction of the BART Extension Alternative or BART Extension with TOJD Alternative would start in 2017 and take approximately 8 years to complete. Two options have been proposed for the construction of the tunnel: the Twin-Bore Option and the Single-Bore Option.

Exhaust emissions associated with construction of the project were estimated using a spreadsheet methodology and the emission factors and rates obtained from ARB's EMFAC2014 for on-road vehicles and the *Air Quality Study* included with this SEIS/SEIR (i.e., CalEEMod, version 2013.2.2, data tables for off-road construction equipment). EMFAC is ARB's model for estimating emissions from on-road vehicles in California, and CalEEMod is a statewide land use emissions computer model that provides a uniform platform for government agencies, land use planners, and environmental professionals. CalEEMod is used to quantify potential criteria pollutants emissions from a variety of land use projects to address direct and indirect impacts.

Fugitive dust would be generated by demolition of existing roadways and site grading. Emissions were calculated by assuming that 20 pieces of heavy-duty construction equipment would be operating simultaneously 16 hours a day along the corridor. Offsite hauling emissions associated with the tunnel construction under the Twin-Bore and Single-Bore Options were based on the estimated total number of truck trips, as shown in Table 6.3-1. Emission factors were based on assumed EMFAC2014 vehicle categories, with all haul trucks and material delivery vehicles assumed to be EMFAC Heavy-Heavy-Duty Diesel Tractor Trucks.

Table 6.3-1: Haul Road Volumes and Number of Truck Trips for the BART Extension Alternative

Station/Structure	Haul Volume (Cubic Yards)	Number of Truck Trips	Peak-Hour Truck Volumes
Twin-Bore Option Tunnel			
Alum Rock/28th Street Station	170,000–180,000	8,500–9,000	4
Downtown San Jose Station and Crossover Structure (both options)	285,000–295,000	28,500–29,500	8
Diridon Station (South and North Options)	175,000–185,000	17,500–18,500	8
13th Street Ventilation Facility	20,000–25,000	2,000–2,500	4
Stockton Avenue Ventilation Facility	20,000–25,000	2,000–2,500	4
West Portal	90,000–95,000	4,500–4,750	7
East Portal	70,000–75,000	3,500–3,750	11
Tunnel (muck) – West Portal to Downtown San Jose Station	315,000–325,000	15,750–16,250	5
Tunnel (muck) – East Portal to Downtown San Jose Station	305,000–315,000	15,250–15,750	5
TOTALS	**1,450,000–1,520,000**	**97,500–102,500**	—
Single–Bore Option Tunnel			
Alum Rock/28th Street Station	25,000	1,250	4
Downtown San Jose Station (East and West Options)	25,000	1,250	4
Diridon Station (South and North Options)	25,000	1,250	4

Station/Structure	Haul Volume (Cubic Yards)	Number of Truck Trips	Peak-Hour Truck Volumes
13th Street Ventilation Structure	4,000	400	2
Stockton Avenue Ventilation Structure	4,000	400	2
West Portal	100,000	5,000	7
East Portal	100,000	5,000	7
Tunnel (muck) – West Portal to East Portal	1,550,000	77,500	22
TOTALS	**1,833,000**	**92,050**	—

Source: VTA 2015.

Note:

The haul volumes, number of trucks, and peak hour trucks are rough estimates and could be up to 20 percent greater depending on construction methodology

Construction emissions from VTA's transit-oriented joint development (TOJD) were estimated using CalEEMod. Inputs to the model include each land use type and size in terms of building area, the number of dwelling units, and the vehicle trip generation numbers for each land use. ROG emissions from architectural coatings were adjusted to 150 grams per liter to account for BAAQMD's Regulation 8, Rule 3, which applies to the VOC content of paints and solvents sold and used in the region. When data were not available, default CalEEMod settings were used. Details regarding the emissions analysis, including calculation sheets and assumptions used for the CalEEMod model runs, are provided in the *Air Quality Study* included with this SEIS/SEIR.

Toxic Air Contaminants

The construction health risk analysis assessed exposure to PM2.5 and DPM. Due to the length of the alignment and the number of stations, one representative location was chosen to inform the risk. The Alum Rock/28th Street Station location was selected based on the intensity of the subterranean station construction activity, size of the planned development, and proximity to sensitive receptors (e.g., Five Wounds Portuguese National Church and Elementary School approximately 65 feet southeast of the construction zone). It is anticipated that the construction-related health risk would be comparable at other subterranean station locations based on similar construction activities.

Exposure to construction-related DPM was assessed by predicting the health risks in terms of excess cancer and non-cancer hazard impacts, and elevated PM2.5 concentrations. EPA's AERMOD dispersion model was used to predict DPM and PM2.5 hourly concentrations at sensitive land uses, based on daily PM10 and PM2.5 exhaust mass emissions, with exhaust emissions of PM10 used as a surrogate for DPM. Estimates of project-level cancer risk, non-cancer Health Index, and annual PM2.5 concentrations were based on annual concentrations from AERMOD, and anticipated construction durations.

The maximum incremental cancer risk from exposure to DPM was calculated by estimating exposure to carcinogenic chemicals and multiplying the dose times the cancer potency factor. The following equation is used to determine cancer risk.

Cancer Risk = Dose × CPF × ASF × ED / AT × FAH

where:

Cancer Risk = risk (potential chances per million)

Dose = dose through inhalation (milligrams per kilogram-day)

CPF = Inhalation Cancer Potency Factor

ASF = Age Sensitivity Factor for a specified age group (unitless)

ED = exposure duration (duration of construction)

AT = averaging time (25,550 days or 70 years)

FAH = Fraction of time spent at home (unitless)

Dose was estimated using the following equation.

Dose = Cair × {BR/BW} × A × EF × CF

where:

Dose = dose through inhalation (milligrams per kilogram-day)

Cair = annual air concentration (micrograms per cubic meter)

{BR/BW}= daily breathing rate (liter per kilogram body weight per day)

A = Inhalation absorption factor, 1.0

EF = exposure frequency (350 days per year)

CF = conversion factor (10-6 ([milligrams pre microgram] x [cubic meters per liter])

The potential for exposure to result in chronic non-cancer effects is evaluated by comparing the estimated annual average air concentrations to the chemical-specific, non-cancer chronic reference exposure levels (RELs). The chronic REL is the inhalation exposure concentration at which no adverse chronic health effects would be anticipated following exposure. When calculated for a single chemical, the comparison yields a ratio termed a *hazard quotient*. The risk level is calculated as follows.

Non-Cancer Hazard Index = Cair / REL

where:

Cair = annual concentration (micrograms per cubic meter)

REL = chronic/acute non-cancer REL (micrograms per cubic meter)

6.3.2.2 Operation

Criteria Pollutants

The operational analysis for the BART Extension considers emissions benefits associated with vehicle mode shift. It is anticipated that the BART Extension would increase ridership, thereby decreasing regional passenger VMT through mode shift from private automobiles to transit. Accounting for emissions reductions associated with mode shift is consistent with recommendations from the American Public Transportation Association (2009).

Emissions from changes in regional VMT were estimated using EMFAC2014 and daily VMT data obtained from *VTA's BART Silicon Valley – Phase II Extension Project Traffic Impact Analysis of the BART Extension Only* (Hexagon 2017~~6~~a) and *VTA's BART Silicon Valley—Phase II Extension Project Transportation Impact Analysis of the BART Extension and VTA's Transit-Oriented Joint Development* (Hexagon 2017~~6~~b). The VMT data were provided in 5-mile-per-hour (mph) speed bins (or ranges) for the 2015 Existing, 2025 Opening Year, and 2035 Forecast Year under the No Build Alternative, BART Extension Alternative, and BART Extension with TOJD Alternative. Re-entrained road dust was calculated by following the EPA AP-42 approach for calculating emissions of dust from paved roads.

Detailed information regarding the TOJD was not available at the time of the analysis. Emissions were estimated by using CalEEMod default assumptions, which are based on the size of development, except for mobile-source emissions. Mobile source emissions associated with the TOJDs are included in the regional VMT analysis utilized to estimate the change in regional emissions associated with the reduction in VMT due to increased ridership of BART.

Toxic Air Contaminants/Mobile-Source Air Toxics

The Federal Highway Administration's *Interim Guidance Update on Mobile-Source Air Toxic Analysis in NEPA Documents* (2012) was used to evaluate potential mobile-source air toxic emissions associated with the BART Extension Alternative, as described in Section 4.2.3.2, *Local Air District Thresholds*. The TOJDs would not represent a substantial source of DPM emissions. Accordingly, health risks associated with the TOJDs are not discussed further.

Localized CO Hot-Spots

The potential for operation of the BART Extension to result in localized CO hot-spots was evaluated based on the CO screening criteria established by BAAQMD (BAAQMD 2010). The criteria provide a conservative indication of whether a project will generate new air quality violations, worsen existing violations, or delay attainment of the NAAQS and CAAQS with regard to CO. If the screening criteria are met, a quantitative analysis of project-related CO emissions would not be necessary because the project would not result in a CO hot-spot.

6.3.3 CEQA Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the project would have a significant impact if it would result in any of the conditions listed below.

- Conflict with or obstruct implementation of an air quality plan.
- Violate an air quality standard or contribute substantially to an existing or projected air quality violation.
- Result in a cumulatively considerable net increase in any criteria pollutant and the region being classified as a nonattainment area under a federal or state ambient air quality standard, including through a release of emissions that exceed quantitative thresholds for ozone precursors.
- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors that would affect a substantial number of people.

As discussed above, BAAQMD is responsible for ensuring that state and federal ambient air quality standards are not violated within the SFBAAB. Analysis requirements for pollutant emissions from project-related construction and operations are contained in BAAQMD's 2010 Air Quality Guidelines. The guidelines also contain thresholds of significance for criteria pollutants, TACs, and odors, which are summarized in Table 6.3-2.

Table 6.3-2: BAAQMD Thresholds of Significance

Analysis	Construction	Operation
Criteria Pollutants	ROG: 54 pounds per day NO_X: 54 pounds per day PM10: 82 pounds per day (exhaust only) PM2.5: 54 pounds per day (exhaust only) Dust: Failure to implement best management practices	ROG: 54 pounds per day, 10 tons per year NO_X: 54 pounds per day, 10 tons per year PM10: 82 pounds per day, 15 tons per year PM2.5: 54 pounds per day, 10 tons per year CO: Violation of a CAAQS[a]
Toxic Air Contaminants (Individual Project)	Increased cancer risk: 10 in 1 million Increased non-cancer hazard index: > 1 Exhaust PM2.5: > 0.3 $\mu g/m^3$	Same as construction
Toxic Air Contaminants (Cumulative Thresholds)	Increased cancer risk: 100 in 1 million Increased non-cancer hazard index: > 10 Exhaust PM2.5: > 0.8 $\mu g/m^3$	Same as construction
Odors	--	Five complaints per year averaged over 3 years

Source: BAAQMD 2010.

[a] BAAQMD has adopted screening criteria to determine whether a project could lead to a violation of the CAAQS. The screening criteria are as follows.

- Consistency with an applicable congestion management program established by the county congestion management agency for designated roads or highways, a regional transportation plan, and local congestion management agency plans.
- Increased traffic volumes at affected intersections with more than 44,000 vehicles per hour.

Note: *California Building Industry Association v. Bay Area Air Quality Management District* (December 17, 2015) challenged BAAQMD's thresholds for determining whether a project's exposure to existing levels of TACs would result in a significant impact. The Supreme Court agreed with the California Building Industry Association and concluded that "CEQA generally does not require an analysis of how existing environmental conditions will impact a project's future users or residents." However, the court identified several exceptions to this "general rule," including when a project exacerbates existing environmental hazards.

$\mu g/m^3$ = micrograms per cubic meter.

The BART Extension would result in a significant impact if any of the thresholds in Table 6.3-2 were to be exceeded.

6.3.4 Environmental Consequences and Mitigation Measures

This section identifies impacts on air quality under CEQA and mitigation measures to reduce the level of potentially significant impacts.

6.3.4.1 No Build Alternative

The No Build Alternative consists of the existing transit and roadway networks and planned and programmed transportation improvements (see Chapter 2, Section 2.2.1, *NEPA No Build Alternative*, for a list of these projects) and other land development projects planned by the Cities of San Jose and Santa Clara.

The No Build Alternative projects could result in effects on air quality typically associated with transit, highway, bicycle, and pedestrian facilities, and roadway projects, as well as land development projects. Given the mix of projects, some projects may reduce air quality and GHG emissions by providing transit, bicycle, and pedestrian improvements and reducing congestion. Other projects may result in short-term exceedances of air quality standards during construction. Several of these projects have already been programmed in the RTPs.

All individual projects planned under the No Build Alternative would undergo separate environmental review to identify effects on air quality. Review would include an analysis of impacts and identification of mitigation measures to reduce potential impacts.

6.3.4.2 BART Extension Alternative

Impact BART Extension AQ-1: Conflict with an air quality plan

Santa Clara County is currently designated as a nonattainment area for the federal 8-hour ozone and PM2.5 standards and as a maintenance area for the federal CO standard (see Table 4.2-2). BAAQMD has developed air quality attainment plans (i.e., the 2001 Ozone Attainment Plan and the 1994 CO Redesignation Request and Maintenance Plan) and adopted the 2010 CAP, which provides an integrated strategy to control ozone, PM, TACs, and GHG emissions. BAAQMD plans estimate future emissions and determine strategies to reduce

emissions through regulatory controls. Emissions projections are based on population, vehicle, and land use trends. These are typically developed by BAAQMD, MTC, and the Association of Bay Area Governments.

The BART Extension would improve regional connectivity and encourage transit ridership. As shown in Tables 4.2-3 and 4.2-4, the BART Extension would reduce VMT and associated regional emissions.

Based on the above analysis, the BART Extension would not conflict with the current BAAQMD air quality plans. The BART Extension would contribute to regional goals that support alternative modes of transportation. Accordingly, the BART Extension would not conflict with or obstruct implementation of any air quality plan. Therefore, the impact would be *less than significant*, and no mitigation is required.

Impact BART Extension AQ-2: Violate an air quality standard or contribute to an air quality violation

Construction

Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, prevailing weather conditions. Construction of the BART Extension has the potential to create air quality impacts from the use of heavy-duty construction equipment and haul trucks as well as vehicle trips generated by construction workers while traveling to and from the various construction sites along the alignment. NO_X emissions would result primarily from the use of construction equipment and haul trucks.

Table 6.3-3 shows equipment (onsite) and truck exhaust (offsite) emissions associated with construction of the BART Extension. Maximum emissions would exceed the BAAQMD significance threshold for NO_X under the Twin-Bore and Single-Bore Options. This is a potentially significant impact.

Table 6.3-3: Construction Emissions Related to the BART Extension Alternative

	Pounds per Day				
Criteria Pollutant or Ozone Precursor	**ROGs**	**NO_X**	**CO**	**PM10**	**PM2.5**
Onsite Emissions (Equipment Exhaust) – Twin-Bore and Single-Bore Options					
Unmitigated	18	180	129	9	8
Mitigated (Tier 4 Exhaust Standards)	3	2	128	<1	<1
Offsite Emissions (Haul Truck Exhaust) – Twin-Bore Option					
Alum Rock/28th Street Station	1	20	4	< 1	< 1
Downtown San Jose Station and Crossover Structure	1	41	8	1	1
Diridon Station (South and North Options)	1	41	8	1	1
13th Street Ventilation Facility	1	20	4	< 1	< 1
Stockton Avenue Ventilation Facility	1	20	4	< 1	< 1
West Portal	1	36	7	1	< 1
East Portal	2	56	11	1	1

Criteria Pollutant or Ozone Precursor	Pounds per Day				
	ROGs	**NO_X**	**CO**	**PM10**	**PM2.5**
Tunnel (muck) – West Portal to Downtown San Jose Station	1	26	5	1	< 1
Tunnel (muck) – East Portal to Downtown San Jose Station	1	26	5	1	< 1
Offsite Emissions (Haul Truck Exhaust) – Single-Bore Option					
Alum Rock/28th Street Station	1	20	4	< 1	< 1
Downtown San Jose Station (East and West Options)	1	20	4	< 1	< 1
Diridon Station (South and North Options)	1	20	4	< 1	< 1
13th Street Ventilation Structure	< 1	10	2	< 1	< 1
Stockton Avenue Ventilation Structure	< 1	10	2	< 1	< 1
West Portal	1	36	7	1	< 1
East Portal	1	36	7	1	< 1
Tunnel (muck) – West Portal to East Portal	4	112	22	3	1
Offsite Emissions (Concrete Truck exhaust) – Twin-Bore and Single-Bore Options					
Various Locations	1	16	3	< 1	< 1
Total Twin-Bore Option					
Maximum Daily Emissions – Unmitigated	21	252	143	10	9
Maximum Daily Emissions – Mitigated	5	74	142	2	1
BAAQMD Construction Significance Thresholds	54	54	—	82	54
Exceed Threshold?	No	Yes	—	No	No
Total Single-Bore Option					
Maximum Daily Emissions – Unmitigated	23	308	154	12	9
Maximum Daily Emissions – Mitigated	2	130	153	3	2
BAAQMD Construction Significance Thresholds	54	54	—	82	54
Exceed Threshold?	No	Yes	—	No	No
Source: ARB, EMFAC2014, CalEEMod version 2013.					

Mitigation Measure AQ-CNST-A (see Chapter 5, Section 5.5.3, *Air Quality*) is required to control fugitive dust including the dust from the concrete batch plant (for Single-Bore Tunnel Option only), pursuant to BAAQMD requirements. Mitigation Measures AQ-CNST-B through AQ-CNST-H, which are required to reduce NO_X emissions, include Tier 4 engine exhaust standards and idling limitations. Implementation of Tier 4 engine exhaust controls would reduce equipment-related NO_X emissions from 252 to approximately 74 pounds per day under the Twin-Bore Option and from 308 to 149 pounds per day under the Single-Bore Option. However, NO_X emissions would still be greater than the BAAQMD significance threshold of 54 pounds per day. Therefore, construction of the BART Extension Alternative would result in a *significant and unavoidable impact* by violating this BAAQMD air quality standard under both Twin-Bore and Single-Bore Options.

Operation

The operational analysis for the BART Extension considers emissions benefits associated with vehicle mode shift. It is anticipated that the BART Extension would increase ridership, thereby decreasing regional passenger VMT through mode shift from private automobiles to

transit. Accounting for emissions reductions associated with mode shift is consistent with recommendations from the American Public Transportation Association (2009).

Tables 4.2-3 and 4.2-4 summarize regional VMT and estimated criteria pollutant emissions associated with operation of the BART Extension. As shown in Table 4.2-4, the BART Extension would reduce regional criteria pollutant emissions. Therefore, implementation of the BART Extension would result in a regional air quality benefit by encouraging a modal shift from single-occupancy vehicles toward transit. Emissions would be below BAAQMD's operational thresholds of significance. This impact would be *less than significant*, and no mitigation is required.

Impact BART Extension AQ-3: Cause a cumulatively considerable net increase in a criteria pollutant

BAAQMD has identified project-level thresholds to evaluate criteria pollutant impacts (see Table 6.3-2). In developing these thresholds, BAAQMD considered levels at which a project's emissions would be cumulatively considerable. As noted in the BAAQMD CEQA Guidelines (2011):

> In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. Therefore, additional analysis to assess cumulative impacts is unnecessary.

The criteria pollutant thresholds presented in Table 6.3-2 represent the maximum level of emissions the BART Extension may generate before contributing to a cumulative impact on regional air quality. Consequently, exceedances of the project-level thresholds would be cumulatively considerable.

Construction

As discussed under Impact BART Extension AQ-2, construction-related NO_X emissions would exceed BAAQMD thresholds for the Twin-Bore and Single-Bore Options, even after implementation of mitigation. Although NO_X emissions would be temporary, they would exceed emissions standards and may contribute to air quality degradation and impede the region's ability to attain air quality standards. Therefore, the BART Extension would result in significant cumulative air quality impacts during construction. Under the Twin-Bore and Single-Bore Options, the impacts would be *significant and unavoidable*.

Operation

As discussed under Impact BART Extension AQ-2, operation of the BART Extension would reduce regional VMT and associated emissions. Therefore, the BART Extension Alternative would not result in significant cumulative air quality impacts during operation. The impact would be *less than significant*, and no mitigation is required.

Impact BART Extension AQ-4: Expose sensitive receptors to substantial pollutant concentrations

Diesel Particulate Matter

Construction

BAAQMD guidance states that construction activities do not lend themselves to analysis of long-term health risks because of their temporary and variable nature. Due to the variable nature of construction activity, the generation of TAC emissions in most cases would be temporary, especially considering the short amount of time such equipment is typically within an influential distance that would result in the exposure of sensitive receptors to substantial concentrations. Concentrations of mobile-source DPM emissions are typically reduced by 70 percent at a distance of approximately 500 feet. In addition, current models and methodologies for conducting health risk assessments are associated with longer-term exposure periods of 9, 40, and 70 years, which do not correlate well with the temporary and highly variable nature of construction activities. This results in difficulties with producing accurate estimates of health risk. Project-level analyses of construction activities have a tendency to produce overestimated assessments of long-term health risks. However, dispersion modeling was completed to assess construction-related health risks based on available guidance.

As previously discussed in the methodology, emissions exposure was estimated for construction of the Alum Rock/28th Street Station. The analysis assumed that station construction would be similar under the Twin-Bore and Single-Bore Options. The results of the risk assessment for an offsite maximally exposed receptor (i.e., Five Wounds Portuguese National Church and Elementary School approximately 65 feet to the southeast) are presented in Table 6.3-4. The annual increase in PM2.5 concentrations and cancer risk would exceed the BAAQMD significance thresholds. Mitigation Measure AQ-CNST-B would require Tier 4 exhaust controls, and would reduce PM2.5 concentrations and the cancer risk to below the threshold. Therefore, the BART Extension would result in *less-than-significant impacts* related to construction health risk, and no mitigation is required.

Table 6.3-4: Construction Health Risk Assessment: BART Extension

Risk	Unit	Threshold	Unmitigated Risk	Mitigated Risk
Excess Cancer Risk	Probability per One Million Population	10	24.7	0.93
Chronic Health Non-Cancer Risk	Health Index	1.0	0.24	0.02
Increase in PM2.5 Concentration	Average Annual (μg/m³)	0.3	1.17	0.12
Source: Terry A. Hayes Associates Inc. 2017~~6~~.				

Operation

New bus transfer points would be located at the Alum Rock/28th Street Station and Santa Clara Station. In addition, the Diridon Station (South and North Options) includes an existing bus transit facility. The No Build Alternative bus fleet includes services to shuttle passengers between the Berryessa/North San Jose Station and downtown destinations. This shuttle service would be eliminated with the BART Extension, resulting in a decrease in bus activity. Based on a bus demand study completed by VTA, the Santa Clara Station would experience a decrease of 96 buses in late 2025/2026 and 160 buses in 2035. The Alum Rock/28th Street Station would experience no change in daily late 2025/2026 or 2035 bus volumes. Similar to the Santa Clara Station, the Diridon Station would experience a decrease of 96 buses in late 2025/2026 and 192 buses in 2035. In addition, VTA operates diesel hybrid buses that generate fewer diesel emissions than standard buses. Although bus idling would increase localized emissions, idling time is typically limited to less than 1 minute per vehicle. Based on the above qualitative analysis, diesel hybrid bus activity would not be a significant source of TACs.

The Newhall Maintenance Facility, including vehicle storage capacity at the facility, would not be a significant source of combustion-related TACs (e.g., heavy-duty diesel trucks or active power generators). The maintenance facility would use chemicals related to repair and cleaning activities, which would result in evaporative emissions. Chemicals would be stored in accordance with BAAQMD permitting requirements and state safety guidelines, and the majority of related activities would occur within maintenance facilities. In addition, although unspecified at this time, there would likely be operations involved that would require air permits from the BAAQMD. Permits will ensure compliance with BAAQMD rules and regulations. This would reduce the potential for exposure to substantial TAC concentrations. Based on the above qualitative analysis, the maintenance facility would not be a significant source of TACs. The impact would be *less than significant*, and no mitigation is required.

Carbon Monoxide Hot Spots

As discussed in Section 4.2.3.2, *Local Air District Thresholds*, BAAQMD has published a screening methodology for determining the possibility for a CO hot spot. According to *VTA's BART Silicon Valley – Phase II Extension Project Traffic Impact Analysis of the BART Extension Only* (Hexagon 2017~~6~~a), the BART Extension would not increase traffic volumes at any intersection in the traffic study area to more than 24,000 vehicles per hour. Accordingly, the BART Extension would not conflict with BAAQMD's screening criteria or expose receptors to localized CO hot spots. This impact would be *less than significant*, and no mitigation is required.

Impact BART Extension AQ-5: Create objectionable odors that would affect a substantial number of people

Construction

Potential odor sources during construction activities include diesel exhaust from heavy-duty equipment. The BART Extension would utilize typical construction techniques for the Twin-Bore and Single-Bore Options; therefore, any odors would be typical for construction sites. Construction near existing receptors would be temporary in nature, and construction activities would not be likely to result in nuisance odors that would violate BAAQMD Regulation 7 (Odorous Substances). Therefore, the BART Extension Alternative would result in a *less-than-significant impact* related to construction odors, and no mitigation is required.

Operation

Although offensive odors rarely cause any physical harm, they can be unpleasant and lead to considerable distress for the public. This distress may generate citizen complaints to local governments and air districts.

The land uses and industrial operations that are typically associated with odor complaints include wastewater treatment plants, landfills, confined animal facilities, composting stations, food manufacturing plants, refineries, and chemical plants. The BART Extension operations would not include activities that typically generate adverse odors. However, there would likely be Newhall Maintenance Facility activities (e.g., car cleaning) that would generate odors and require air permits from the BAAQMD. While fuel combustion by generators and other sources may also create odors, permitting conditions will ensure compliance with BAAQMD rules and regulations related to public nuisances (including odors). Diesel hybrid buses at the transit stations may also emit detectable odors. However, these odors would be transient and would quickly disperse under typical meteorological conditions. Therefore, the BART Extension Alternative would have a *less-than-significant impact* related to odors, and no mitigation is required.

6.3.4.3 BART Extension with TOJD Alternative

Impact BART Extension + TOJD AQ-1: Conflict with an air quality plan

The BART Extension with TOJD Alternative would improve regional connectivity and encourage transit ridership. It would also include TOJD at four stations, along with two ventilation facilities. The TOJD would be constructed at the station locations to promote ridership. Zoning changes would be required at the Alum Rock/28th Street, Diridon (South and North Options), and Santa Clara Stations to permit the residential, retail and office uses. Once the zoning amendments are approved, the BART Extension with TOJD Alternative would be consistent with applicable city zoning regulations. However, even if the zoning changes do not occur, the sites would still be developed at some time consistent with the current zoning.

The BART Extension with TOJD Alternative would improve service and increase ridership locally and in the region. However, this increased service would not materially increase overall growth pressure on communities. Rather, implementation of the BART Extension with TOJD Alternative would support expected growth and development that is already underway along the alignment. The planned residential developments in the cities of San Jose and Santa Clara would increase the population by 880 and 583 residents, respectively. This growth would not exceed regional planning forecasts.

Given the above analysis, the BART Extension with TOJD Alternative would not conflict with current BAAQMD air quality plans. The BART Extension with TOJD Alternative would contribute to regional goals that support alternative modes of transportation and transit-orientated development. Accordingly, the BART Extension with TOJD Alternative would not conflict with or obstruct implementation of any air quality plan. Therefore, the impact would be *less than significant*, and no mitigation is required.

Impact BART Extension + TOJD AQ-2: Violate an air quality standard or contribute to an air quality violation

Construction

As mentioned earlier, construction of the BART Extension with TOJD Alternative has the potential to create air quality impacts resulting from the use of heavy-duty construction equipment and haul trucks as well as vehicle trips generated by construction workers while traveling to and from the various construction sites along the alignment.

The TOJD would be constructed at four sites near the Alum Rock/28th Street, Downtown San Jose (East and West Options), Diridon (South and North Options), and Santa Clara Stations and two sites near the 13th Street and Stockton Avenue ventilation facilities. Construction emissions were estimated using CalEEMod default assumptions, which are based on the size of a development. The specific construction timing for the TOJD could shortly follow the BART Extension. Therefore, it was assumed that construction of the BART Extension would be overlapped by construction of two TOJDs. The analysis used the two TOJDs that would generate the maximum level of emissions to provide a conservative estimate of overlapping emissions.

Estimated construction emissions are shown in Table 6.3-5.

Table 6.3-5: Construction Emissions Related to the BART Extension with TOJD Alternative: Unmitigated Emissions

Component	Pounds per Day			
	ROGs	**NO_X**	**PM10**	**PM2.5**
Alum Rock/28th Street Station				
Demolition	4	46	2	2
Site Preparation	5	55	3	3
Grading	7	75	4	3
Building Construction	10	59	2	2
Paving	2	20	1	1
Architectural Coating	366	3	< 1	< 1
Maximum Daily Emissions	**366**	**75**	**4**	**3**
13th Street Ventilation Facility				
Demolition	1	11	1	1
Site Preparation	1	13	1	1
Grading	1	11	1	1
Building Construction	1	13	1	1
Paving	1	10	1	1
Architectural Coating	14	2	< 1	< 1
Maximum Daily Emissions	**14**	**13**	**1**	**1**
Downtown San Jose Station East Option				
Demolition	4	43	2	2
Site Preparation	5	52	3	3
Grading	4	36	2	2
Building Construction	7	49	2	2
Paving	1	14	1	1
Architectural Coating	280	2	< 1	< 1
Maximum Daily Emissions	**280**	**52**	**3**	**3**
Downtown San Jose Station West Option				
Demolition	1	11	1	1
Site Preparation	1	14	1	1
Grading	1	11	1	1
Building Construction	2	16	1	1
Paving	1	11	1	1
Architectural Coating	51	2	< 1	< 1
Maximum Daily Emissions	**51**	**16**	**1**	**1**
Diridon Station (South and North Options)				
Demolition	4	43	2	2
Site Preparation	5	52	3	3
Grading	4	36	2	2
Building Construction	6	41	2	2
Paving	1	14	1	1
Architectural Coating	228	2	< 1	< 1

Component	Pounds per Day			
	ROGs	**NO_X**	**PM10**	**PM2.5**
Maximum Daily Emissions	**228**	**52**	**3**	**3**
Stockton Avenue Ventilation Facility				
Demolition	1	11	1	1
Site Preparation	1	14	1	1
Grading	1	11	1	1
Building Construction	1	14	1	1
Paving	1	11	1	1
Architectural Coating	32	2	< 1	< 1
Maximum Daily Emissions	**32**	**14**	**1**	**1**
Santa Clara Station				
Demolition	4	43	2	2
Site Preparation	5	52	3	3
Grading	4	36	2	2
Building Construction	9	53	2	2
Paving	2	17	1	1
Architectural Coating	357	3	< 1	< 1
Maximum Daily Emissions	**357**	**53**	**3**	**3**
Estimated Total Overlapping Emissions from Construction of Two TOJD Sites[a]	723	128	7	6
Estimated Emissions from Construction of BART Extension (Single-Bore Option)[b]	23	308	12	9
Estimated Emissions from Construction of BART Extension (Twin-Bore Option)[b]	21	252	10	9
Estimated Total (BART Extension + TOJD) Emissions (Single-Bore Option)	746	436	19	15
Estimated Total (BART Extension + TOJD) Emissions (Twin-Bore Option)	744	380	17	15
BAAQMD Construction Significance Thresholds	54	54	82	54
Exceed Threshold?	Yes	Yes	No	No

Source: ARB, CalEEMod version 2013.

[a] The maximum overlapping emissions during construction of the TOJD sites are estimated by assuming that the two construction activities with the highest criteria pollutant emissions would occur simultaneously. For example, construction of the TOJDs at the Alum Rock/28th Street Station and Santa Clara Station North Option would result in the highest daily NO_X emission rates (75 and 53 pounds per day, respectively). Therefore, the highest NO_X emission is estimated to be 128 pounds per day.

[b] The emission calculations account for emissions generated by onsite and offsite construction equipment, emissions from hauling trips, and vendor trips.

As shown in Table 6.3-5, combined construction emissions from the BART Extension with TOJD Alternative (Twin-Bore and Single-Bore Options) would exceed BAAQMD regional significance thresholds for NO_X and ROG. Mitigation Measure AQ-CNST-A is required to control fugitive dust, pursuant to BAAQMD requirements. Mitigation Measures AQ-CNST-B through AQ-CNST-H, which are required to reduce NO_X emissions, include Tier 4 engine exhaust standards and idling limitations. Mitigation Measure AQ-CNST-I would reduce ROG

emissions through the use of architectural coatings with a low VOC content. Despite application of these measures, ROG and NO_X emissions would still be greater than the BAAQMD significance threshold of 54 pounds per day (see Table 6.3-6). Therefore, construction of the BART Extension with TOJD Alternative (Twin-Bore and Single-Bore Options) would result in a *significant and unavoidable impact* by violating the BAAQMD ROG and NO_X air quality emission standards.

Table 6.3-6: Construction Emissions Related to the BART Extension with TOJD Alternative: Mitigated Emissions

Component	Pounds per Day			
	ROGs	**NO_X**	**PM10**	**PM2.5**
Alum Rock/28th Street Station				
Demolition	1	2	<1	<1
Site Preparation	1	2	<1	<1
Grading	1	3	<1	<1
Building Construction	6	29	<1	<1
Paving	<1	1	<1	<1
Architectural Coating	366	1	<1	<1
Maximum Daily Emissions	**366**	**29**	**<1**	**<1**
13th Street Ventilation Facility				
Demolition	<1	1	<1	<1
Site Preparation	<1	1	<1	<1
Grading	<1	1	<1	<1
Building Construction	<1	1	<1	<1
Paving	<1	1	<1	<1
Architectural Coating	14	<1	<1	<1
Maximum Daily Emissions	**14**	**1**	**<1**	**<1**
Downtown San Jose Station East Option				
Demolition	1	2	<1	<1
Site Preparation	1	2	<1	<1
Grading	<1	2	<1	<1
Building Construction	5	25	<1	<1
Paving	<1	1	<1	<1
Architectural Coating	279	1	<1	<1
Maximum Daily Emissions	**279**	**25**	**<1**	**<1**

Component	Pounds per Day			
	ROGs	**NO_X**	**PM10**	**PM2.5**
Downtown San Jose Station West Option				
Demolition	<1	1	<1	<1
Site Preparation	<1	1	<1	<1
Grading	<1	1	<1	<1
Building Construction	<1	2	<1	<1
Paving	<1	1	<1	<1
Architectural Coating	50	<1	<1	<1
Maximum Daily Emissions	**50**	**2**	**<1**	**<1**
Diridon Station (South and North Options)				
Demolition	1	2	<1	<1
Site Preparation	1	2	<1	<1
Grading	<1	2	<1	<1
Building Construction	3	18	<1	<1
Paving	<1	1	<1	<1
Architectural Coating	228	<1	<1	<1
Maximum Daily Emissions	**228**	**18**	**<1**	**<1**
Stockton Avenue Ventilation Facility				
Demolition	<1	1	<1	<1
Site Preparation	<1	1	<1	<1
Grading	<1	1	<1	<1
Building Construction	<1	1	<1	<1
Paving	<1	1	<1	<1
Architectural Coating	31	<1	<1	<1
Maximum Daily Emissions	**31**	**1**	**<1**	**<1**
Santa Clara Station				
Demolition	1	2	<1	<1
Site Preparation	1	2	<1	<1
Grading	<1	2	<1	<1
Building Construction	6	29	<1	<1
Paving	<1	1	<1	<1
Architectural Coating	357	1	<1	<1
Maximum Daily Emissions	**357**	**29**	**<1**	**<1**
Estimated Total Overlapping Emissions from Construction of the TOJD Sites[a]	723	58	<1	<1
Estimated Emissions from Construction of BART Extension (Single-Bore Option)[b]	7	130	3	2
Estimated Emissions From Construction of BART Extension (Twin-Bore Option)[b]	5	74	2	1
Estimated Total (BART Extension + TOJD) Emissions (Single-Bore Option)	730	132	2	1
Estimated Total (BART Extension + TOJD) Emissions (Twin-Bore Option)	728	262	5	3

Component	Pounds per Day			
	ROGs	NO_X	PM10	PM2.5
BAAQMD Construction Significance Thresholds	54	54	82	54
Exceed Threshold?	Yes	Yes	No	No

[a] The maximum overlapping emissions during construction of the TOJDs are estimated assuming that two construction activities with the highest criteria pollutant emissions would occur simultaneously. For example, constructions of the TOJDs at the Alum Rock/28th Street Station and Santa Clara Station North Option would result in the highest daily NO_X emission rates of 29 and 29 pounds per day, respectively. Therefore, the highest NO_X emission is estimated to be 58 pounds per day.

[b] The emission calculations account for emissions generated by onsite and offsite construction equipment, emissions from hauling trips, and vendor trips.

SOURCE: ARB, CalEEMod version 2013.

Mitigation Measures AQ-CNST-A through AQ-CNST-I (see Chapter 5) would also apply to the BART Extension with TOJD Alternative.

Operation

The operational analysis for the BART Extension with TOJD Alternative includes emissions associated with the BART Extension and occupation of the TOJDs, as well as emissions benefits associated with vehicle mode shift. It is anticipated that the BART Extension would increase ridership, thereby decreasing regional passenger VMT through mode shift from private automobiles to transit. Accounting for emissions reductions associated with mode shift is consistent with recommendations from the American Public Transportation Association (2009).

Estimates of mobile-source emissions were based on regional VMT data, as shown in Table 6.3-7. The regional VMT accounted for future developments in the County, including the TOJD. It is assumed that the Downtown San Jose Station East and West Options would result in the same regional VMT reduction. The VMT is presented for the 2015 Existing, 2025 Opening Year, and 2035 Forecast Year. Given this methodology, mobile-source emissions were not presented separately for individual TOJDs.

The TOJDs would also generate emissions from area sources (e.g., consumer products) and natural gas consumption. These emissions were estimated using CalEEMod.

Table 6.3-7: Regional Vehicle Miles Traveled: BART Extension with TOJD Alternative

Analysis Year	Vehicle Miles Traveled (miles per day)		% VMT Change from No Build Alternative	% VMT Change from Existing
	No Build Alternative	BART Extension with TOJD Alternative		
2015 Existing	51,893,183	51,795,427	(-0.19%)	—
2025 Opening Year	54,981,379	54,905,065	(-0.14%)	6%
2035 Forecast Year	59,777,409	59,703,751	(-0.12%)	15%
Source: Hexagon 2017~~6~~b.				

Tables 6.3-8 and 6.3-9 show annual and daily emissions, respectively. The emissions for the TOJD are presented first, followed by emissions for the BART Extension. The direct emissions from the TOJD would not change significantly over time. The required CalEEMod assumptions (e.g., energy use) remain constant over the course of many years. Therefore, the TOJDs were modeled in one year (i.e., 2025), and the emissions were added to the emissions scenarios for the BART Extension during the 2015 Existing plus BART Extension with TOJD Alternative, 2025 Opening Year, and 2035 Forecast Year. The results show that emissions would be less than the BAAQMD significance thresholds, except for ROG emissions. Significant emissions would be related to residential consumer product use (e.g., aerosol sprays) at the Alum Rock/28th Street Stations, Downtown San Jose (East and West Options), Diridon (South and North Options), and Santa Clara Stations. There is no feasible mitigation to reduce or control the use of consumer products within private residences. Therefore, ROG emissions associated with TOJDs would result in a *significant and unavoidable impact*.

Table 6.3-8: Net Annual Operational Emissions for the BART Extension with TOJD Alternative

	Tons per Year				
TOJD	**ROGs**	**NO_X**	**CO**	**PM10**	**PM2.5**
Alum Rock/28th Street Station					
Area	7	< 1	2	< 1	< 1
Energy	< 1	1	< 1	< 1	< 1
Waste	< 1	< 1	< 1	< 1	< 1
Water	< 1	< 1	< 1	< 1	< 1
Total	**7**	**1**	**2**	**< 1**	**< 1**
13th Street Ventilation Facility					
Area	< 1	< 1	< 1	< 1	< 1
Energy	< 1	< 1	< 1	< 1	< 1
Waste	< 1	< 1	< 1	< 1	< 1
Water	< 1	< 1	< 1	< 1	< 1
Total	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**
Downtown San Jose Station East Option					
Area	6	< 1	< 1	< 1	< 1
Energy	< 1	1	< 1	< 1	< 1
Waste	< 1	< 1	< 1	< 1	< 1
Water	< 1	< 1	< 1	< 1	< 1
Total	**6**	**1**	**< 1**	**< 1**	**< 1**
Downtown San Jose Station West Option					
Area	< 1	< 1	< 1	< 1	< 1
Energy	< 1	< 1	< 1	< 1	< 1
Waste	< 1	< 1	< 1	< 1	< 1
Water	< 1	< 1	< 1	< 1	< 1
Total	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**

TOJD	Tons per Year				
	ROGs	**NO_X**	**CO**	**PM10**	**PM2.5**
Diridon Station (South and North Options)					
Area	4	< 1	< 1	< 1	< 1
Energy	< 1	1	< 1	< 1	< 1
Waste	< 1	< 1	< 1	< 1	< 1
Water	< 1	< 1	< 1	< 1	< 1
Total	**4**	**1**	**< 1**	**< 1**	**< 1**
Stockton Avenue Ventilation Facility					
Area	< 1	< 1	< 1	< 1	< 1
Energy	< 1	< 1	< 1	< 1	< 1
Waste	< 1	< 1	< 1	< 1	< 1
Water	< 1	< 1	< 1	< 1	< 1
Total	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**
Total TOJD Emissions	**24**	**4**	**4**	**< 1**	**< 1**
2015 Existing plus BART Extension with TOJD Alternative Condition					
BART Extension with TOJD (Mobile Source Emissions)	(1)	3	(54)	(2)	(1)
TOJD – Area Sources	24	4	4	< 1	< 1
Total	**23**	**7**	**(50)**	**(2)**	**(1)**
BAAQMD Operational Significance Thresholds	10	10	—	15	10
Exceed Threshold?	*Yes*	*No*	—	*No*	*No*
2025 Opening Year					
BART Extension plus TOJD (Mobile-Source Emissions)	(1)	0	(19)	(1)	(1)
TOJD (Area Sources)	24	4	4	< 1	< 1
Total	**23**	**4**	**(`5)**	**(1)**	**(1)**
BAAQMD Operational Significance Thresholds	10	10	—	15	10
Exceed Threshold?	*Yes*	*No*	—	*No*	*No*
2035 Forecast Year					
BART Extension plus TOJD (Mobile Source Emissions)	0	1	(12)	(1)	(0)
TOJD (Area Sources)	24	4	4	< 1	< 1
Total	**24**	**5**	**(8)**	**(1)**	**< 1**
BAAQMD Operational Significance Thresholds	10	10	—	15	10
Exceed Threshold?	*Yes*	*No*	—	*No*	*No*

Source: ARB, CalEEMod version 2013.

Table 6.3-9: Net Daily Operational Emissions for the BART Extension with TOJD Alternative

TOJD	Pounds per Day				
	ROGs	**NO_X**	**CO**	**PM10**	**PM2.5**
Alum Rock/28th Street Station					
Area	41	< 1	23	< 1	< 1
Energy	< 1	3	2	< 1	< 1
Waste	< 1	< 1	< 1	< 1	< 1
Water	< 1	< 1	< 1	< 1	< 1
Total	**41**	**3**	**25**	**< 1**	**< 1**
13th Street Ventilation Facility					
Area	< 1	< 1	< 1	< 1	< 1
Energy	< 1	< 1	< 1	< 1	< 1
Waste	< 1	< 1	< 1	< 1	< 1
Water	< 1	< 1	< 1	< 1	< 1
Total	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**
Downtown San Jose Station East Option					
Area	32	< 1	< 1	< 1	< 1
Energy	< 1	3	2	< 1	< 1
Waste	< 1	< 1	< 1	< 1	< 1
Water	< 1	< 1	< 1	< 1	< 1
Total	**32**	**3**	**2**	**< 1**	**< 1**
Downtown San Jose Station West Option					
Area	2	< 1	< 1	< 1	< 1
Energy	< 1	< 1	< 1	< 1	< 1
Waste	< 1	< 1	< 1	< 1	< 1
Water	< 1	< 1	< 1	< 1	< 1
Total	**2**	**< 1**	**< 1**	**< 1**	**< 1**
Diridon Station (South and North Options)					
Area	21	< 1	< 1	< 1	< 1
Energy	< 1	3	3	< 1	< 1
Waste	< 1	< 1	< 1	< 1	< 1
Water	< 1	< 1	< 1	< 1	< 1
Total	**21**	**3**	**3**	**< 1**	**< 1**
Stockton Avenue Ventilation Facility					
Area	< 1	< 1	< 1	< 1	< 1
Energy	< 1	< 1	< 1	< 1	< 1
Waste	< 1	< 1	< 1	< 1	< 1
Water	< 1	< 1	< 1	< 1	< 1
Total	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**

TOJD	Pounds per Day				
	ROGs	**NO_X**	**CO**	**PM10**	**PM2.5**
Santa Clara Station					
Area	40	< 1	18	< 1	< 1
Energy	< 1	3	2	< 1	< 1
Waste	< 1	< 1	< 1	< 1	< 1
Water	< 1	< 1	< 1	< 1	< 1
Total	**40**	**3**	**20**	**< 1**	**< 1**
Total TOJD Emissions	136	12	50	< 1	< 1
2015 Existing plus BART Extension with TOJD Alternative Condition					
BART Extension plus TOJD (Mobile-Source Emissions)	(5)	19	(296)	(8)	(3)
TOJDs (Area Sources)	136	12	50	< 1	< 1
Total	**131**	**31**	**246**	**(8)**	**(3)**
BAAQMD Operational Significance Thresholds	54	54	—	82	54
Exceed Threshold?	*Yes*	*No*	—	*No*	*No*
2025 Opening Year					
BART Extension plus TOJD (Mobile-Source Emissions)	(1)	2	(105)	(7)	(3)
TOJD (Area Sources)	136	12	50	< 1	< 1
Total	**135**	**17**	**(55)**	**(7)**	**(3)**
BAAQMD Operational Significance Thresholds	54	54	—	82	54
Exceed Threshold?	*Yes*	*No*	—	*No*	*No*
2035 Forecast Year (2035)					
BART Extension plus TOJD (Mobile-Source Emissions)	0	4	(65)	(6)	(3)
TOJD (Area Sources)	136	12	50	< 1	< 1
Total	**136**	**16**	**(15)**	**(6)**	**(3)**
BAAQMD Operational Significance Thresholds	54	54	—	82	54
Exceed Threshold?	*Yes*	*No*	—	*No*	*No*

SOURCE: ARB, CalEEMod version 2013.

Impact BART Extension + TOJD AQ-3: Cause a cumulatively considerable net increase in a criteria pollutant

The criteria pollutant thresholds presented in Table 6.3-2 represent the maximum emissions the BART Extension with TOJD Alternative may generate before contributing to a cumulative impact on regional air quality. Consequently, exceedances of the project-level thresholds would be cumulatively considerable.

Construction

As discussed under Impact BART Extension + TOJD AQ-2, ROG and NO_X emissions under the Twin-Bore and Single-Bore Options would exceed BAAQMD thresholds, even after implementation of mitigation. Although emissions would be temporary, they would exceed

emissions standards and may contribute to air quality degradation and impede the region's ability to attain air quality standards. Therefore, the BART Extension with TOJD Alternative (Twin-Bore and Single-Bore Options) would result in significant cumulative air quality impacts during construction. This impact would be *significant and unavoidable*.

Operation

As discussed under Impact BART Extension + TOJD AQ-2, operation of the BART Extension would reduce regional VMT and associated emissions. The TOJD would be consistent with regional air quality plans and local (i.e., Santa Clara and San Jose) general plans, which seek to locate infill residential and office development near transit lines. However, when combined with emissions from the new residences within the TOJDs, ROG emissions from the use of consumer products would exceed the BAAQMD significance thresholds. Therefore, the BART Extension with TOJD Alternative would result in significant cumulative air quality impacts during operations. This impact would be *significant and unavoidable*.

Impact BART Extension + TOJD AQ-4: Expose sensitive receptors to substantial pollutant concentrations

Construction

Toxic Air Contaminants

As previously discussed in the methodology, emissions exposure was estimated for construction of the Alum Rock/28th Street Station and TOJD. The analysis assumed that station construction would be similar under the Twin-Bore and Single-Bore Options. The results of the risk assessment for an offsite maximally exposed receptor (i.e., Five Wounds Portuguese National Church and Elementary School approximately 65 feet to the southeast) are presented in Table 6.3-10. The annual increase in PM2.5 concentrations and cancer risk would exceed the BAAQMD significance thresholds. Mitigation Measure AQ-CNST-B would require Tier 4 exhaust controls and would reduce PM2.5 concentrations and cancer risk to below the threshold. Therefore, the BART Extension with TOJD Alternative would result in a *less-than-significant impact* related to construction health risk following implementation of mitigation.

Table 6.3-10: Construction Health Risk Assessment: BART Extension with TOJD Alternative

Risk	Unit	Threshold	Unmitigated Risk	Mitigated Risk
Excess Cancer Risk	Probability per One Million Population	10	27.2	1.56
Chronic Health Non-Cancer Risk	Health Index	1.0	0.24	0.02
Increase in PM2.5 Concentration	Average Annual (μg/m³)	0.3	1.17	0.12
Source: Terry A. Hayes Associates Inc. 2017~~6~~.				

Operation

Toxic Air Contaminants

Operational impacts associated with the BART Extension, including the Newhall Maintenance Facility, have been discussed above. The BART Extension with TOJD Alternative would reduce regional mobile-source air toxic emissions, and VTA also operates diesel-hybrid buses. There is no potential for a long-term PM hot-spot. The TOJD sites include residential and retail/office land uses. These land uses would not include significant sources of TAC emissions requiring specific BAAQMD permits, such as chrome plating facilities. Activities at the TOJDs would be typical to in-fill housing and commercial land uses that support residents, retail facilities, and office personnel. The TOJDs would likely include loading docks. Based on the types of anticipated land uses, less than five trucks per day would deliver to each TOJD. In addition, trucks would be prohibited for idling in excess of 5 minutes, in accordance with state law. The TOJDs would not expose offsite receptors to significant TAC emissions. Therefore, the BART Extension with TOJD Alternative would ~~not~~ result in a *less-than-significant* impact related to operations, and no mitigation is required.

Carbon Monoxide Hot-Spots

As discussed in Section 4.2.3.2, *Local Air District Thresholds*, BAAQMD has published a screening methodology for determining the possibility of a CO hot spot. According to *VTA's BART Silicon Valley – Phase II Extension Project Traffic Impact Analysis of the BART Extension and VTA's Transit-Oriented Joint Development* (Hexagon 2017~~6~~b), the BART Extension with TOJD Alternative would not increase traffic volumes at any intersection in the traffic study area to more than 24,000 vehicles per hour. Accordingly, the BART Extension with TOJD Alternative would not conflict with BAAQMD's screening criteria or expose receptors to localized CO hot spots. This impact would be *less than significant*, and no mitigation is required.

Impact BART Extension + TOJD AQ-5: Create objectionable odors that would affect a substantial number of people

Construction

Potential odor sources during construction activities include diesel exhaust from heavy-duty equipment. The BART Extension with TOJD Alternative would utilize typical construction techniques for the Twin-Bore and Single-Bore Options; therefore, any odors would be typical for construction sites. Construction near existing receptors would be temporary in nature, and construction activities would not be likely to result in nuisance odors that would violate BAAQMD Regulation 7 (Odorous Substances). Therefore, the BART Extension with TOJD Alternative would result in a *less-than-significant impact* related to construction odors, and no mitigation is required.

Operation

The land uses and industrial operations that are typically associated with odor complaints include wastewater treatment plants, landfills, confined animal facilities, composting stations, food manufacturing plants, refineries, and chemical plants. The BART Extension operations would not include activities that typically generate adverse odors. However, there would likely be Newhall Maintenance Facility activities (e.g., car cleaning) operation as that would generate odors and require air permits from the BAAQMD. While fuel combustion by generators and other sources may also create odors, permitting conditions will ensure compliance with BAAQMD rules and regulations related to public nuisances (including odors). The BART Extension with TOJD Alternative would not include any other land uses or activities that typically generate adverse odors. Diesel hybrid buses at the transit stations may emit detectable odors. However, these odors would be transient and would quickly disperse under typical meteorological conditions. Therefore, operation of the BART Extension with TOJD Alternative would have a *less-than-significant impact* related to odors, and no mitigation is required.

6.3.5 CEQA Conclusion

The BART Extension Alternative would have a *significant and unavoidable impact* under CEQA given the violation of BAAQMD air quality standards for NO_X during construction (Twin-Bore and Single-Bore Options).

The BART Extension with TOJD Alternative would have a *significant and unavoidable impact* under CEQA given the violation of BAAQMD air quality standards for ROG and NO_X during construction. Operation of the BART Extension with TOJD Alternative would also exceed the ROG threshold.

No secondary impacts are anticipated due to implementation of the proposed mitigation measures. Mitigation measure AQ-CNST-A requires water for dust control which would not result in a permanent substantial increase in water demand. Recycled water would be used for

dust control during construction activities to the maximum extent feasible. Impacts of water use on utilities and service systems are addressed in Section 5.5.16, *Utilities*.

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6.4 Biological Resources and Wetlands

6.4.1 Introduction

This section describes impacts under CEQA that would result from construction and operation of the CEQA Alternatives.

Discussions of existing conditions regarding biological resources and wetlands is provided in Chapter 4, Section 4.3.2, *Environmental and Regulatory Setting*. Additional information on biological resources and wetlands is provided in *VTA's BART Silicon Valley—Phase II Extension Project Special-Status Species Lists* technical report (ICF 2016).

6.4.2 Environmental Setting

This section discusses the existing biological resources along the alignment, which is the area of disturbance, including construction staging areas. Sources for the information provided in this section are described in Chapter 4, Section 4.3.1, *Introduction*.

6.4.2.1 Land Cover Types

The alignment would be within the central California Coast Range. Land cover types identified in the alignment consist of ruderal/disturbed, willow scrub/riparian woodland, and riverine (Guadalupe River and creeks). Land cover types in the alignment are highly fragmented, which diminishes their value in most cases. See Chapter 4, Section 4.3.2.1, *Environmental Setting*, for descriptions of vegetation and wildlife resources within each land cover type in the alignment.

6.4.2.2 Special-Status Species

Special-status species that may occur in or near the alignment consist of Central California Coast steelhead (*Oncorhynchus mykiss*), fall- run Chinook salmon (*Oncorhynchus tshawytscha*), California red-legged frog (*Rana draytonii*), western pond turtle (*Actinemys marmorata*), burrowing owl (*Athene cunicularia hypogea*), tricolored blackbird (*Agelaius tricolor*), and several species of bats. All federal and state special-status and protected species are described in Chapter 4, Section 4.3.2.1, *Environmental Setting*. Note that the species described in Section 4.3.2.1 may also have local protections (Bay checkerspot butterfly, burrowing owl, and tricolored blackbird) under the Santa Clara Valley Habitat Plan (SCVHP).

6.4.2.3 Jurisdictional Features

Waters of the United States and State

Waters of the United States and state within the alignment consist of three creeks and one river: Lower Silver Creek, Coyote Creek, Los Gatos Creek, and Guadalupe River. The streams and their respective floodplains are jurisdictional features regulated by the U.S. Army Corps of Engineers (USACE) and San Francisco Bay Regional Water Quality Control Board pursuant to Sections 404 and 401 of the federal Clean Water Act and the California Porter-Cologne Water Quality Control Act (Porter-Cologne Act). These streams were not studied intensively for the project because the BART Extension would be constructed in underground tunnels 20 to 50 feet below the creek and riverbeds and, thus, would avoid the potential for impacts on jurisdictional waters of the United States and state.

Fish and Game Code Section 1602 Jurisdiction

Under Section 1602 of the California Fish and Game Code, the California Department of Fish and Wildlife (CDFW) has the authority to regulate work that will "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake." Therefore, the four streams and associated riparian vegetation within the alignment are subject to CDFW jurisdiction. However, because all project facilities would be underground and would not affect the bed, channel, or bank of these streams nor associated riparian vegetation, the project is not expected to result in impacts on resources subject to CDFW's Section 1602 jurisdiction.

6.4.2.4 Other Protected or Managed Biological Resources

Other protected or managed biological resources potentially occurring in the alignment include nesting birds and roosting bats, which are discussed in Chapter 4, Section 4.3.2.1, *Environmental Setting*.

6.4.3 Regulatory Setting

Federal regulations that are relevant to the project are discussed in Chapter 4, Section 4.3, *Biological Resources and Wetlands*.

State

California Endangered Species Act

The California Endangered Species Act (CESA) protects wildlife and plants listed as threatened and endangered under the act by the California Fish and Game Commission. It is administered by CDFW. The CESA prohibits all persons from taking species that are state-

listed as threatened or endangered except under certain circumstances; the CESA definition of *take* is any action or attempt to "hunt, pursue, catch, capture, or kill."

Section 2081 of CESA provides a means by which agencies or individuals may obtain authorization for incidental take of state-listed species, except for certain species designated as fully protected under the California Fish and Game Code. Take must be incidental to, and not the purpose of, an otherwise lawful activity. Requirements for a Section 2081 permit are similar to those used in the federal Endangered Species Act (ESA) Section 7 process. They include identification of adverse effects on listed species, development of mitigation measures that minimize and fully mitigate adverse effects, development of a monitoring plan, and assurance of funding to implement mitigation and monitoring.

California Native Plant Protection Act

The California Native Plant Protection Act (CNPPA) prohibits importation of rare and endangered plants into California, take of rare and endangered plants, and sale of rare and endangered plants. CESA prohibits take of listed plants except as otherwise authorized by the CNPPA, which ensures that state-listed plant species are protected when state agencies are involved in projects subject to CEQA.

Removal of rare and endangered plants for performance of a public service by a public agency or a publicly or privately owned public utility is exempt from the CNPPA. Accordingly, some activities associated with the project may be considered exempt from the CNPPA. However, evaluation of the potential for adverse effects on state-listed plant species is required pursuant to State CEQA Guidelines Section 15380(c)(1).

California Fish and Game Code

Protection for Individual Species

The California Fish and Game Code provides protection from take for a variety of species, defining *take* as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

Certain species are considered fully protected, meaning that the regulations explicitly prohibit all take of individuals of these species, except for take required for scientific research, which may be authorized by CDFW in some situations. Sections 3511, 4700, 5515, and 5050 of the Fish and Game Code list fully protected birds, mammals, fishes, and amphibians and reptiles, respectively.

The regulations provide less stringent protection for other species, prohibiting most take but permitting CDFW to issue regulations authorizing take under some circumstances. Eggs and nests of all birds are protected under Section 3503, nesting birds (including raptors and passerines) under Sections 3513 and 3503.5, birds of prey under Section 3503.5, migratory non-game birds under Section 3800, and other specified birds under Section 3505.

Lake or Streambed Alteration Agreement (Sections 1600 to 1616)

Fish and Game Code Sections 1600 to 1616 regulate activities that interfere with the natural flow, or substantially alter the channel, bed, or bank, of a lake, river, or stream. Lakebed and streambed alteration activities are covered under Section 1602 for public and private entities. Requirements to protect the integrity of biological resources and water quality are often conditions of Lake or Streambed Alteration Agreements.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Act in part implements the federal CWA to provide a mechanism for protecting the quality of the state's waters through the State Water Resources Control Board (State Water Board) and the nine Regional Water Quality Control Boards (Regional Water Boards). Chapter 6, Section 6.15.2.1, *State Laws and Local Requirements*, describes the provisions of the Porter-Cologne Act.

The State Water Board and San Francisco Bay Regional Water Board have taken the position that the Porter-Cologne Act and basin plans developed pursuant to the act provide independent authority to regulate discharge of fill material to wetlands outside the jurisdiction of USACE. This applies specifically to isolated wetlands considered non-jurisdictional based on the *Solid Waste Agency of Northern Cook County (SWANCC) v. United States Army Corps of Engineers* decision (121 S.CT. 675, 2001), which limited USACE's jurisdiction over isolated wetlands.

The State Water Board and Regional Water Boards also regulate activities on creek banks that are above the ordinary high water mark. For example, clear span bridges with abutments above the ordinary high water mark would not need a Section 401 permit, but may require issuance of waste discharge requirements from the Regional Water Board. In addition, the State Water Board recently adopted General Waste Discharge Requirements for activities that occur in waters of the state that are outside of USACE jurisdictional waters. Coverage under these requirements can be obtained by filing a Notice of Intent with the Regional Water Board.

Regional

Santa Clara Valley Habitat Plan

In 2013, the County of Santa Clara, Santa Clara Valley Transportation Authority, Santa Clara Valley Water District, and the Cities of Gilroy, Morgan Hill, and San Jose (collectively referred to as the Local Partners) adopted the SCVHP, a habitat conservation plan and natural community conservation plan. The SCVHP promotes the protection and recovery of covered species while accommodating planned public and private development, infrastructure, and operation and maintenance activities. The plan was developed in association with the U.S. Fish and Wildlife Service (USFWS) and CDFW in consultation with a stakeholder group and the general public.

Santa Clara Valley Water District

Under the jurisdiction of the District Act (Chapter 279, Assembly Bill 2435), the Santa Clara Valley Water District is authorized to enhance, protect, and restore streams, riparian corridors, and natural resources.

Local

City of San Jose Municipal Code Chapter 13.28

Chapter 13.28 of the San Jose Municipal Code deals with protection of street trees and heritage trees. This chapter defines street trees as any vegetation over 6 feet in height growing within a public right-of-way. Street trees themselves are not considered a sensitive resource unless they have been designated as a heritage tree by the City Council as per Section 13.28.330. Heritage trees are those that have been protected because of their size, location, unique qualities, or other special significance to the community. Civil penalties are established in Section 13.32.090 for individuals damaging a designated heritage tree. A permit is required for removal and replacement of heritage trees. Replacement ratios and species for trees removed are generally established by the City's Arborist Inspector during implementation. A Live Tree Removal Application or Permit Adjustment, depending on size, is also required for all trees proposed to be removed on multifamily residences, commercial properties, or industrial properties.

Additionally, the City of San Jose has adopted the Tree City U.S.A. Program. The Tree City U.S.A. Program is sponsored primarily by the Arbor Day Foundation. For a city to be considered a Tree City U.S.A., it must have a tree board or department, a tree care ordinance, a community forestry program with an annual budget of at least $2 per capita, and an Arbor Day observance and proclamation (Arbor Day Foundation 2015).

City of San Jose General Plan: Riparian Corridors

Envision San Jose 2040 General Plan (City of San Jose 2011) recognizes the value of riparian lands as a natural resource supporting diverse habitats. The plan contains the following policies for riparian corridors.

ER-2.1 Ensure that new public and private development adjacent to riparian corridors in San José are consistent with the provisions of the City's Riparian Corridor Policy Study and any adopted Santa Clara Valley Habitat Conservation Plan/Natural Communities Conservation Plan (HCP/NCCP).

ER-2.2 Ensure that a 100-foot setback from riparian habitat is the standard to be achieved in all but a limited number of instances, only where no significant environmental impacts would occur.

ER-2.3 Design new development to protect adjacent riparian corridors from encroachment of lighting, exotic landscaping, noise and toxic substances into the riparian zone.

ER-2.4 When disturbances to riparian corridors cannot be avoided, implement appropriate measures to restore, and/or mitigate damage and allow for fish passage during construction.

City of Santa Clara: Tree Protection

The City of Santa Clara regulates all trees and shrubs planted along public streets and within the associated rights-of-way. Additionally, the City of Santa Clara has adopted the Tree City U.S.A. Program for the past 27 consecutive years (City of Santa Clara 2015).

6.4.4 CEQA Methods of Analysis

Biologists compiled a variety of natural resource information for the project by consulting documentary sources, including the California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife 2015), the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Plants* (California Native Plant Society 2015), and the USFWS list of threatened and endangered species (U.S. Fish and Wildlife Service 2015). A reconnaissance survey was conducted on November 4, 2015, to confirm existing biological resources in the alignment. In addition, biologists reviewed the *Silicon Valley Rapid Transit Corridor Environmental Impact Statement and 4(f) Evaluation* (Santa Clara Valley Transportation Authority and Federal Transit Administration 2010) and associated biological technical studies prepared for that Final EIS to obtain additional background information on the alignment. The CNDDB, CNPS, and USFWS lists are included in the *Special-Status Species Lists* technical report.

6.4.5 CEQA Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the project would be considered to have a significant effect if it would result in any of the conditions listed below.

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFW or USFWS.
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

6.4.6 Environmental Consequences and Mitigation Measures

This section identifies the impacts on biological resources, including wetlands, under CEQA and mitigation measures necessary to reduce the level of potentially significant impacts.

6.4.6.1 No Build Alternative

The No Build Alternative consists of the existing transit and roadway networks and planned and programmed transportation improvements (see Chapter 2, Section 2.2.1, *NEPA No Build Alternative*, for a list of these projects) and other land development projects planned by the Cities of San Jose and Santa Clara.

The No Build Alternative projects could result in effects on biological resources typically associated with transit, highway, bicycle, and pedestrian facilities, and roadway projects, as well as land development projects.

All individual projects planned under the No Build Alternative would undergo separate environmental review to identify effects on biological resources. Review would include an analysis of impacts and identification of mitigation measures to reduce potential impacts.

6.4.6.2 BART Extension Alternative

Construction of the BART Extension, including stations and associated infrastructure (ventilation facilities, systems facilities, station boxes, trackwork including crossovers, and cross passages), station campuses, and the Newhall Maintenance Facility, and the relocation of utilities could result in disturbance of special-status wildlife species. Oversized equipment, such as cranes, bulldozers, loaders, pavement breakers, excavators, and backhoes, would be used extensively. Demolition activities would primarily be at the construction staging areas along the alignment and at the four stations, two mid-tunnel ventilation facility sites, and two tunnel portals. In addition, emergency egress, known as cross passages for twin-bore tunnels, are required every 460 to 750 feet between the two tunnels and may require surface ground treatment. Surface ground treatment would be a minimum of 200 feet from any river or creek.

Impact BART Extension BIO-1: Adversely affect a special-status species or habitat

Construction

Connection to Phase I Berryessa Extension

The connection to Phase I Berryessa Extension would be at grade near Las Plumas Avenue, north of Lower Silver Creek, and then enter the East Tunnel Portal. Approximately 900 feet south of the portal, the tunnel (under both Single-Bore and Twin-Bore options) would pass 25–30 feet beneath Lower Silver Creek near the U.S. Highway 101 (U.S. 101) crossing. Tunnel boring would occur underground and there would be no construction activities near

Lower Silver Creek. Nesting birds have the potential to occur in street or urban trees and could be impacted if tree removal or pruning occurred during the nesting season. Roosting bats have the potential to occur in existing buildings and trees in construction staging areas that would be removed. However, implementation of Mitigation Measures BIO-CNST-A, BIO-CNST-B, and BIO-CNST-C would ensure impacts on special-status species or habitat are *less than significant* for both the Twin-Bore and Single-Bore Options.

Alum Rock/28th Street Station

Alum Rock/28th Street Station would be in an area that is already urbanized. The nesting bird and bat discussion and mitigation provided above under *Construction, Connection to Phase 1 Berryessa Extension* also applies to this station.

Tunnel Alignment Near Coyote Creek

Construction underneath Coyote Creek would not disturb special-status species, including western pond turtle or Central California coast steelhead. Boring for the Twin-Bore and Single-Bore Options would occur approximately 20 feet and 55 feet below the Coyote Creek bed, respectively, and the use of heavy equipment in this area would occur entirely underground. Construction staging locations would occur in an already disturbed and urban area; however, roosting bats have the potential to occur in existing buildings and trees that would be removed during construction. The nesting bird and bat discussion and mitigation provided above under *Construction, Connection to Phase 1 Berryessa Extension* also applies to this section of the alignment. Because the Twin-Bore Option alignment would veer slightly to the north of the Single-Bore Option alignment near Coyote Creek; the Santa Clara Street bridge foundations are avoided. However, impacts would be similar for either option and would be *less than significant*. No mitigation is required.

Downtown San Jose Station (East and West Options)

Both the East and West Options of the Downtown San Jose Station would be in a downtown commercial area with high human disturbance, and use of heavy construction equipment and tunnel boring would occur underground. The nesting bird and bat discussion and mitigation provided above under *Construction, Connection to Phase 1 Berryessa Extension* also applies to this station.

Diridon Station (South and North Options)

Prior to reaching the Diridon Station South Option ~~and Diridon Station North Option~~, the twin-bore and single-bore tunnel alignments would cross at least ~~40~~ 45 feet and ~~45~~ 50 feet below the Guadalupe River bed, respectively. Prior to reaching the Diridon Station North Option, the twin-bore and single-bore tunnel alignments would cross at least 50 feet and 45 feet below the Guadalupe River bed, respectively. Tunnel boring under the Guadalupe River would not disturb special-status bats in the riparian area, western pond turtles, or Central California coast steelhead and Chinook salmon.

For the Diridon Station South Option, the Twin-Bore and Single-Bore Options would occur approximately ~~20~~ 25 feet and ~~50~~ 35 feet below the Los Gatos Creek bed, respectively. Aboveground system facilities proposed at the Diridon Station South Option (both Twin-Bore and Single-Bore Options) would be constructed adjacent to Los Gatos Creek.

For the Diridon Station North Option, the Twin-Bore and Single-Bore Options would occur approximately ~~25~~30 feet and ~~50~~ 40 feet below the Los Gatos Creek bed, respectively, and the aboveground system facilities would be located west of Autumn Street. The Diridon Station North Option would also utilize a previously disturbed, triangular parcel for construction staging and/or underground station system facilities (Single-Bore Option) adjacent to the west of the Caltrain tracks.

The nesting bird and bat discussion and mitigation provided above under *Construction, Connection to Phase 1 Berryessa Extension* also applies to this station.

Along the Guadalupe River and Los Gatos Creek, tricolored blackbird surveys are required under the SCVHP and would be conducted before construction commences, as described in Mitigation Measure BIO-CNST-E. Avoidance and minimization measures and biological monitoring would be determined and established if individuals are found. As discussed in Section 6.14, *Water Resources, Water Quality, and Floodplains*, as part of compliance with the Construction General Permit, standard erosion control measures and other best management practices would be identified in a Storm Water Pollution Prevention Plan. Therefore, at the Diridon Station impacts would be *less than significant* with the implementation of mitigation measures.

Continuation of Tunnel Alignment

The continuation of the tunnel alignment would be in an urbanized area with extensive human disturbance. The ventilation structure locations along Stockton Avenue would be in a highly urbanized area with no onsite habitat. The nesting bird and roosting bat discussion and mitigation provided above under *Construction, Connection to Phase 1 Berryessa Extension* also applies to this section of the alignment.

Newhall Maintenance Facility

The Newhall Maintenance Facility would be in an urbanized area with extensive human disturbance. However, the SCVHP has designated the portion of the maintenance facility within the City of San Jose as occupied nesting burrowing owl habitat and a burrowing owl survey area (Santa Clara Valley Habitat Agency 2016). Construction activities could have a significant impact on burrowing owls if they occur in the ruderal habitats in the area, at the Newhall Maintenance Facility. The nesting bird discussion and mitigation provided above under *Construction, Connection to Phase 1 Berryessa* Extension also applies to the Newhall Maintenance Facility.

Santa Clara Station

The Santa Clara Station would be in an area that is already urbanized. The nesting bird discussion and mitigation provided above under *Construction, Connection to Phase 1 Berryessa Extension* also applies to this station. No other impacts on special-status species or habitat are expected to result from construction of this station.

Operation

Operation of the BART Extension elements discussed above are expected to have minimal impacts on special-status species because the majority of the alignment is in a tunnel or located in highly urbanized and disturbed areas. There would be *no impact* on special-status species or habitat.

Impact BART Extension BIO-2: Adversely affect a sensitive natural community

Construction

Connection to Phase I Berryessa Extension

Riparian habitat is found along the alignment at Lower Silver Creek; however, the connection to Phase I Berryessa Extension would go under Lower Silver Creek near U.S. 101 (for both the Twin-Bore and Single-Bore Options) and, therefore, would result in *no impact* on sensitive natural communities. No mitigation is required. However, a construction staging area (CSA) is proposed on an existing former UPRR bridge that crosses over Lower Silver Creek. Compliance with the City of San Jose's riparian setback policy and implementation of Mitigation Measure BIO-CNST-C would ensure impacts associated with construction of the BART Extension on sensitive natural communities would be *less than significant* for both the Twin-Bore and Single-Bore Options.

Alum Rock/28th Street Station

No sensitive natural communities occur at the Alum Rock/28th Street Station. There would be *no impact* for both the Twin-Bore and Single-Bore Options. No mitigation is required.

Tunnel Alignment Near Coyote Creek

Riparian habitat is found along the alignment at Coyote Creek; however, the Twin-Bore and Single-Bore Options alignment near Coyote Creek would be approximately 20 feet and 55 feet beneath the creek bed, respectively and, therefore, would result in *no impact* on sensitive natural communities. The 13th Street Ventilation Structure would be located one-quarter mile west of Coyote Creek. The site consists of an existing parking lot and building with no vegetated habitat onsite. No mitigation is required.

Downtown San Jose Station (East and West Options)

No sensitive natural communities occur at the location of either the Downtown San Jose Station East Option or the Downtown San Jose Station West Option. There would be *no impact* for both the Twin-Bore and Single-Bore Options. No mitigation is required.

Diridon Station (South and North Options)

Riparian habitat is found along the tunnel alignment, east of the Diridon Station South and North Options at the Guadalupe River and Los Gatos Creek. However, the tunnel alignment near the Guadalupe River would be at least 40 feet underground. Construction staging under State Route 87 near the Guadalupe River would comply with the City of San Jose's riparian setback policy by avoiding the riparian area and would not impact special-status species. Additionally, implementation of Mitigation Measure BIO-CNST-D would further avoid any impact on riparian habitat and special-status species.

The tunnel alignment at Los Gatos Creek would be at least ~~20~~ 25 feet underground. For the Diridon Station North Option, system facilities would be located on the north side of Autumn Street in a previously disturbed area. For the Diridon South Station Option, riparian habitat is found along Los Gatos Creek adjacent to the system facilities. Nonetheless, construction activities for both tunnel options would be located in an existing parking lot with associated buildings, would avoid the riparian habitat, and would comply with San Jose's riparian setback policy. Additionally, Implementation of Mitigation Measure BIO-CNST-D would further ensure that riparian habitat is mapped and protected during construction.

Continuation of Tunnel Alignment

No sensitive natural communities occur at the continuation of the tunnel alignment or at the ventilation structure locations along Stockton Avenue. There would be *no impact,* and no mitigation is required.

Newhall Maintenance Facility

No sensitive natural communities occur at the Newhall Maintenance Facility. There would be *no impact*, and no mitigation is required.

Santa Clara Station

No sensitive natural communities occur at the Santa Clara Station. There would be *no impact*, and no mitigation is required.

Operation

Riparian habitat is found along the alignment at Lower Silver Creek, Coyote Creek, Guadalupe River, and Los Gatos Creek. BART Extension operations would occur in highly developed urban areas, on previously developed sites and not in existing riparian habitat. Therefore, impacts associated with operation of the BART Extension on sensitive natural communities would be *less than significant*. No mitigation is required.

Impact BART Extension BIO-3: Adversely affect federally or state protected wetlands or waters of the United States or state

Construction

Connection to Phase I Berryessa Extension

The connection to Phase I Berryessa Extension would be at grade near Las Plumas Avenue, north of Lower Silver Creek, and then enter the East Tunnel Portal. South of the portal, the Twin-Bore and Single-Bore Options would pass approximately 25 feet and 30 feet beneath the Lower Silver Creek bed, respectively, near the U.S. 101 crossing. No construction activities would occur aboveground at Lower Silver Creek. Therefore, there would be *no impact* on protected wetlands or waters of the United States or state at Lower Silver Creek for both the Twin-Bore and Single-Bore Options. No mitigation would be required.

Alum Rock/28th Street Station

No protected wetlands or waters of the United States or state occur at the location of the Alum Rock/28th Street Station. All aboveground construction activities would be in previously developed areas. Therefore, construction activities would have *no impact* on protected wetlands or waters of the United States or state at this location. No mitigation is required.

Tunnel Alignment near Coyote Creek

The tunnel alignment would pass at least 20 feet beneath Coyote Creek. Construction would not be required aboveground at Coyote Creek. West of Coyote Creek there would be a ventilation structure at 13th Street. The site consists of an existing parking lot and building with no habitat onsite. Therefore, construction activities would have *no impact* on protected wetlands or waters of the United States or state at this location. No mitigation is required.

Downtown San Jose Station (East and West Options)

No protected wetlands or waters of the United States or state occur at the locations of the Downtown San Jose Station East Option or the Downtown San Jose Station West Option. Therefore, construction activities would have *no impact* on protected wetlands or waters of the United States or state at this location. No mitigation is required.

Diridon Station (South and North Options)

For the Diridon Station North Option, tunnels for the Twin-Bore and Single-Bore Options would pass approximately ~~45~~ 40 feet and 50 feet beneath the Guadalupe River bed, respectively. For the Diridon Station South Option, tunnels for the Twin-Bore and Single-Bore Options would pass approximately ~~40~~ 45 feet and 50 feet beneath the Guadalupe River bed, respectively. As the alignment approaches the Diridon Station, it would continue under the Los Gatos Creek bed, approximately ~~25~~ 30 feet (North Twin-Bore Option), ~~50~~ 40 feet (North Single-Bore Option), ~~50~~ 25 feet (South Twin-Bore Option) and ~~50~~ 35 feet (South Single-Bore Option) beneath the creek. Therefore, there would be *no impact* on wetlands and

waters of the United States or state at this location for both the Diridon Station North and South Options under either the Twin-Bore or Single-Bore Option. No mitigation would be required.

Continuation of Tunnel Alignment

No wetlands or waters of the United States or state occur along the tunnel alignment from Diridon Station to just north of Interstate 880. Therefore, while the aboveground Stockton Avenue ventilation structure would be in this alignment, there would be *no impact* on protected wetlands or waters of the United States or state at this location. No mitigation is required.

Newhall Maintenance Facility

No protected wetlands or waters of the United States or state occur at the location of the Newhall Maintenance Facility. Therefore, there would be *no impact* on protected wetlands or waters of the United States or state at this location. No mitigation is required.

Santa Clara Station

No protected wetlands or waters of the United States or state occur at the Santa Clara Station site. Therefore, there would be *no impact* on protected wetlands or waters of the United States or state at this location. No mitigation is required.

Operation

BART Extension operations would be in a highly urbanized area, on previously developed sites and not protected wetlands or waters of the United States or state. Therefore, impacts associated with operation on these sensitive natural communities would be *less than significant.* No mitigation is required.

Impact BART Extension BIO-4: Interfere with wildlife movement or impede use of wildlife nursery sites

Construction

Alignment

Noise and disturbance from heavy equipment and tunnel boring machines is not expected to disturb nesting birds or temporarily deter aquatic species such as central California coast steelhead, Chinook salmon, and western pond turtles from using aquatic sites. Construction of stations would necessitate removal and pruning of trees potentially supporting nesting birds, which would result in a significant impact. With implementation of Mitigation Measures BIO-CNST-A and BIO-CNST-B, impacts on wildlife movement or wildlife nursery sites would be *less than significant*.

Stations and Facilities

Existing trees at the Alum Rock/28th Street Station, Downtown San Jose Station (East and West Options), Diridon Station (South and North Options), Santa Clara Station, ventilation structures, and system facilities provide nesting habitat for birds. Tree removals at these location during the nesting season (February 1 through August 31, although some raptors may nest as early as January 1) may result in the destruction of active nests, which would be a significant impact. Implementation of Mitigation Measures BIO-CNST-A and BIO-CNST-B would ensure that impacts on nesting birds are *less than significant*.

Operation

BART Extension operations would not interfere with wildlife movement or impede use of wildlife nursery sites. There would be *no impact*, and no mitigation is necessary.

Impact BART Extension BIO-5: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance

Construction

Existing trees occurring along the alignment and at station and facility locations are predominately landscaping trees. Construction of the BART Extension would include removing landscaping and other trees. As described in Mitigation Measure AES-CNST-A, tree removal would comply with the overall intent and spirit of local tree ordinances as applicable.. Replacement trees would be planted to mitigate the effects. This impact would be *less than significant* with mitigation.

Operation

BART Extension operations are not expected to interfere with local policies or ordinances protecting biological resources. There would be *no impact*, and no mitigation is necessary.

Impact BART Extension BIO-6: Conflict with an adopted habitat conservation plan or local policies or ordinances protecting biological resources

Construction

The BART Extension would be within the SCVHP permit area. Within the permit area, the BART Extension would be within wildlife survey areas established by the SCVHA for tricolored blackbird at the State Route 87 CSA along Guadalupe River and at Diridon Station near Los Gatos Creek and for burrowing owl at the Newhall Maintenance Facility and would also be within the burrowing owl fee zone. Construction activities could result in a significant impact on these species if found. VTA would perform preconstruction surveys, and if necessary implement avoidance measures for tricolored blackbird (Mitigation Measure BIO-CNST-E) and burrowing owls (Mitigation Measure BIO-CNST-F). Additionally, the BART Extension would be within the burrowing owl fee zone, and fees will be paid to the SCVHA to offset any potential impacts on burrowing owls. The fee would be calculated by

determining how much occupied burrowing owl habitat the BART Extension is removing. With implementation of these mitigation measures and compliance with the SCVHP burrowing owl fee zone, impacts would *be less than significant*.

Operation

The SCVHP *addresses* nitrogen deposition in the region as it relates to the degradation of serpentine grasslands and, specifically, habitat for Bay checkerspot butterfly. Bay checkerspot butterflies spend their entire life cycle on host plants, including but not limited to the dwarf plantain (*Plantago pusilla*) and California goldfields (*Lasthenia californica*), which mainly occur in serpentine soils, found in the region. Serpentine soils have low productivity and naturally low nitrogen levels. This allows the Bay checkerspot butterfly native host plants to thrive in serpentine soils. As a result of increased air pollution, nitrogen has been depositing into the serpentine soils, allowing for other nonnative invasive species to persist and compete with the Bay checkerspot butterfly host plants. Serpentine soils are also important to a variety of native grasses. Nitrogen deposition poses threats to many resources in the region (Santa Clara County 2012). As discussed in Section 6.3, *Air Quality*, and Section 6.7, *Energy*, the BART Extension would actually decrease nitrogen output because of fewer vehicle miles traveled as a result of fewer vehicles on the road. Therefore, there would be *no impact,* and no mitigation is required.

6.4.6.3 BART Extension with TOJD Alternative

Impact BART Extension + TOJD BIO-1: Adversely affect a special-status species or habitat

Construction and Operation

Construction and operations impacts and mitigation measures would be similar to those discussed under the BART Extension Alternative for all locations. After implementation of mitigation measures, impacts would be *less than significant*.

Impact BART Extension + TOJD BIO-2: Adversely affect a sensitive natural community

Construction and Operation

Construction and operations impacts and mitigation measures would be similar to those discussed under the BART Extension Alternative for all locations. After implementation of mitigation measures, impacts would be *less than significant*.

Impact BART Extension + TOJD BIO-3: Adversely affect wetlands or other waters of the United States or state

Construction and Operation

Construction and operations impacts would be similar to those discussed under the BART Extension Alternative for all locations. Impacts would be *less than significant*, and no mitigation is required.

Impact BART Extension + TOJD BIO-4: Interfere with wildlife movement or impede use of wildlife nursery sites

Construction

The BART Extension would clear all of the area that would be needed for TOJD. Therefore, TOJD would not clear any more vegetation, and impacts would be *less than significant*. No mitigation is necessary.

Operation

The BART Extension and TOJD operations would not interfere with wildlife movement or impede use of wildlife nursery sites. There would be *no impact*, and no mitigation is necessary.

Impact BART Extension + TOJD BIO-5: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance

Construction and Operation

Construction and operations impacts and mitigation measures would be similar to those discussed under the BART Extension Alternative for all locations. After implementation of mitigation measures, impacts would be *less than significant*.

Impact BART Extension + TOJD BIO-6: Conflict with an adopted habitat conservation plan, or local policies or ordinances protecting biological resources

Construction and Operation

Construction and operations impacts would be similar to those discussed under the BART Extension Alternative for all locations. For operational impacts only, under the BART Extension with TOJD Alternative, long-term traffic and vehicle miles traveled would increase, resulting in an increase in nitrogen deposition. However, VTA will pay required fees to be in compliance with the Santa Clara Valley Habitat Conservation Plan. Therefore, impacts would be *less than significant*.

6.4.7 CEQA Conclusion

Under Impact BART Extension BIO-1 and Impact BART Extension + TOJD BIO-1 (Adversely affect a special-status species or habitat), Impact BART Extension BIO-2 and Impact BART Extension + TOJD BIO-2 (Adversely affect a sensitive natural community), Impact BART Extension BIO-4 and Impact BART Extension + TOJD BIO-4 (Interfere with wildlife movement or impede use of wildlife nursery sites), Impact BART Extension BIO-5 and Impact BART Extension + TOJD BIO-5 (Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance) and Impact BART Extension BIO-6 and Impact BART Extension + TOJD BIO-6 (Conflict with an adopted habitat conservation plan, or local policies or ordinances protecting biological resources), the BART Extension Alternative and BART Extension with TOJD Alternative has the potential to result in significant impacts under CEQA. The mitigation measures presented above would reduce impacts to a *less-than-significant* level.

Implementation of Mitigation Measure BIO-CNST-D, which involves installation of protective orange fencing and flagging around riparian habitat during construction, has the potential to result in secondary visual/aesthetic impacts. However, these impacts would be temporary and would not result in a permanent or substantial change in the viewshed and, therefore, would be *less than significant* under CEQA. These typical visual signs of construction are addressed in Section 5.5.17, *Visual Quality and Aesthetics.*

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6.5 Community Facilities and Public Services

6.5.1 Introduction

This section describes impacts on community facilities and public services, including recreation, under CEQA that would result from construction and operation of the CEQA Alternatives. This section analyzes the CEQA Alternatives' potential to affect fire protection, emergency services, law enforcement, schools, and parks.

Existing conditions are provided in Chapter 4, Section 4.4.2.1, *Environmental Setting*.

6.5.2 Regulatory Setting

6.5.2.1 State

Senate Bill 50

The Leroy F. Greene School Facilities Act of 1998, or Senate Bill (SB) 50, restricts the ability of local agencies to deny project approvals on the basis that public school facilities (e.g., classrooms, auditoriums) are inadequate. School impact fees are collected at the time when building permits are issued. Payment of school fees is required by SB 50 for all new residential development projects and is considered full and complete mitigation of any school impacts. School impact fees are payments to offset capital cost impacts associated with new development, which result primarily from costs of additional school facilities, equipment, and maintenance requirements. Consequently, agencies cannot require additional mitigation for any school impacts.

Chawanakee Unified School District v. County of Madera (June 20, 2011) 196 Cal.App.4th 1016

This challenge to Madera County's approval of a large residential project in the Rio Mesa Area Plan focused on whether the project's EIR was required to consider the project's impacts on school facilities. During the public review of the EIR and consideration of the project, the school district submitted two lengthy letters alleging that the cap on school impact fees established by Government Code Section 65996 (known commonly as SB 50) did not eliminate the requirement for full disclosure of development's impacts on school services. Furthermore, the school district contended that Madera County must consider alternative mitigation measures to reduce any project impacts on school services.

The Court of Appeal, in the published portion of this decision, reviewed the legislative history of SB 50. In short, SB 50 places a statutory limit on the school impact fees that may be imposed on any project. SB 50 (Government Code Section 65996(a)) further provides, in part, "Notwithstanding Section 65858, or Division 13 (commencing with Section 21000) of the Public Resources Code (CEQA), or any other provision of state or local law, the

following provisions shall be the exclusive methods of *considering* and mitigating impacts on school facilities that occur or might occur as a result of any legislative or adjudicative act, or both, by any state or local agency" (emphasis added).

The Court examined the meaning of the word "considering" in subsection (a) to determine whether it limits the scope of the review of school facilities impacts. The Court concluded:

> Because the methods set forth in Government Code section 65996, subdivision (a) are exclusive, that provision obviates the need for an EIR to contain a description and analysis of a development's impacts on school facilities. Based on this interpretation, we reject School District's claim that the EIR violates CEQA because it lacks any analysis of the environmental consequences for the existing school facilities that will be forced to accommodate hundreds of students beyond current overcrowded conditions.

The court held that SB 50's limitation on review and mitigation does not extend to "the project's indirect impacts on parts of the environment that are not school facilities." These could include the impact on traffic of getting students to and from school and the impact of school construction on the environment.

California Government Code, Section 65995 (b)

In 2012, the State Allocation Board approved an increase in statutory school facility fees (Level 1 School Fees) pursuant to Government Code Section 65995(b) to $3.20 per square foot for residential construction of at least 500 square feet and $0.51 per square foot for new commercial development. These fees can be increased every other year and are expected to continue to increase in response to inflation.

Quimby Act

The Quimby Act (California Government Code Sections 66475–66478) was approved by the California legislature to preserve open space and parkland in the state. This legislation was in response to California's increased rate of urbanization and the need to preserve open space and provide parks and recreation facilities for California's growing communities. The Quimby Act authorizes local governments to establish ordinances requiring developers of new subdivisions to dedicate parks, pay an in-lieu fee, or perform a combination of the two.

The Quimby Act provides two standards for the dedication of parks. If the existing park acreage in a community is greater than 3 acres per 1,000 persons, then the community may require dedication based on a standard of up to 5 acres per 1,000 persons within a subdivision. If the existing park acreage in a community is less than 3 acres per 1,000 persons, then the community may require dedication based on a standard of only 3 acres per 1,000 persons residing in the subdivision. Government Code Section 66475.1 also states that a new subdivision may be required to dedicate land for bicycle paths if the subdivider is dedicating roadways to the public.

6.5.2.2 Local

City of San Jose General Plan

The following *Envision San Jose 2040 General Plan* (City of San Jose 2011) policies are related to public services and recreation.

> CD-5.5: Include design elements during the development review process that address security, aesthetics, and safety. Safety issues include, but are not limited to, minimum clearances around buildings, fire protection measures such as peak load water requirements, construction techniques, and minimum standards for vehicular and pedestrian facilities and other standards set forth in local, state, and federal regulations.
>
> ES-3.9: Implement urban design techniques that promote public and property safety in new development through safe, durable construction and publically-visible and accessible spaces.
>
> PR-1.1: Provide 3.5 acres per 1,000 population of neighborhood/community serving parkland through a combination of 1.5 acres of public parks and 2.0 acres of recreational school grounds open to the public per 1,000 San Jose residents.
>
> PR-1.2: Provide 7.5 acres per 1,000 population of citywide /regional park and open space lands through a combination of facilities provided by the City of San José and other public land agencies.
>
> PR-2.6: All new residential developments over 200 units in size should be located within 1/3 of a mile walking distance of an existing or new park, trail, open space or recreational school grounds open to the public after normal school hours or shall include one or more of these elements in the project design.

City of San Jose Municipal Code Chapters 19.38 and 14.25

The purpose of San Jose Municipal Code Chapter 19.38 (Parkland Dedication Ordinance) and Chapter 14.25 (Park Impact Ordinance) is to mitigate the impacts of new housing development growth by providing parkland to serve the new residents ~~on existing parkland under the Quimby Act and Mitigation Fee Act~~. Per the requirements of the Parkland Dedication Ordinance and the Park Impact Ordinance, new residential development must provide 3 acres of parklands per 1,000 new residents added as a result of the BART Extension. Residential projects can comply with this obligation by dedicating land for public parks, paying an in-lieu fee, constructing new park facilities, providing improvements to existing recreational facilities, or by providing a negotiated agreement for a combination of these options.

The City of San Jose City Charter Sections 1700–1705

The City of San Jose City Charter Sections 1700–1705 describes the regulatory basis for City parkland. Any alienation of City parkland must comply with City Charter Sections 1700–1705 and applicable City ordinances and policies.

City of Santa Clara General Plan

The following *City of Santa Clara 2010-2035 General Plan* (City of Santa Clara 2010) policies are related to public services and recreation.

5.9.1-P14: Encourage publicly accessible open space in new development.

5.9.1-P17: Foster site design for new development so that building height and massing do not overshadow new parks and plazas.

5.9.1-P18: Promote open space and recreation facilities in large-scale developments in order to meet a portion of the demand for parks generated by new development.

5.9.1-P20: Promote the continuation of a parks per population ratio of 2.4 per 1,000 residents and explore the potential to increase the ratio to 3.0, based on the Parks and Recreation Needs Assessment (Parks Master Plan), referenced in Plan Prerequisite 5.1.1-P24.

5.9.2-P7: Support efforts by school districts to maintain improve and expand educational facilities and services, to meet the demands of new development.

5.9.2-P8: Cooperate with local school districts in collecting fees for development projects as required by State regulations.

5.9.3-P1: Encourage design techniques that promote public and property safety in new development and public spaces.

5.9.3-P3: Maintain a City-wide average three minute response time for 9 percent of police emergency service calls.

5.9.3-P4: Maintain a City-wide average three minute response time for fire emergency service calls.

Santa Clara City Code Chapter 17.35

The purpose of Santa Clara City Code Chapter 17.35 (Chapter 17.35) is to mitigate the impacts of new housing development growth on existing parkland under the Quimby Act and Mitigation Fee Act. New residential development not involving a subdivision must meet the Mitigation Fee Act standards of 2.53 acres per 1,000 residents.

6.5.3 CEQA Methods of Analysis

Temporary and permanent impacts on community facilities and public services resulting from construction and operation are evaluated against existing public service capacity, as identified in Chapter 4, Section 4.4.2.1, *Environmental Setting.* This analysis determines if public service providers would be capable of adequately servicing the BART Extension Alternative or BART Extension with Transit-Oriented Joint Development (TOJD) Alternative. Appendix G of the State CEQA Guidelines is used to evaluate the significance of potential public service impacts.

6.5.4 CEQA Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, a project would have a significant impact on public services if it would result in the conditions listed below.

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered

governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:

- Fire protection
- Police protection
- Schools
- Parks
- Other community facilities

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

6.5.5 Environmental Consequences and Mitigation Measures

Using the criteria identified in Section 6.5.4, *CEQA Thresholds of Significance*, this section identifies impacts on community facilities and public services including recreation and evaluates whether they would be significant according to CEQA.

6.5.5.1 No Build Alternative

The No Build Alternative consists of the existing transit and roadway networks and planned and programmed transportation improvements (see Chapter 2, Section 2.2.1, *NEPA No Build Alternative*, for a list of these projects) and other land development projects planned by the Cities of San Jose and Santa Clara.

The No Build Alternative projects could result in effects on community facilities and public services typically associated with transit, highway, bicycle, and pedestrian facilities, and roadway projects, as well as land development projects. All individual projects planned under the No Build Alternative would undergo separate environmental review to identify effects on community facilities and public services. Review would include an analysis of impacts and identification of mitigation measures to reduce potential impacts.

6.5.5.2 BART Extension Alternative

Impact BART Extension CS-1: Require new or physically altered existing community services or facilities

Construction

Construction of the BART Extension would take approximately 8 years to complete. Construction would be coordinated with the cities of San Jose and Santa Clara to ensure the safety of construction workers, employees, and the public during construction. Therefore, the need for emergency services during construction activities would be minimal.

Construction activities would align with local and state-recognized safety practice requirements. Fencing and lighting of construction zones would be implemented to avoid accidents. Safety plans would be designed to account for worksite traffic control, pedestrian and bicyclist access, and handling of potential hazardous or contaminated materials. The construction manager would be responsible for job site safety and security during construction. Is it not anticipated that new or expanded fire or police facilities would be required during construction.

BART Extension–related construction would not generate a direct increase in population and would therefore not permanently increase the demand for schools. Construction-related impacts on public services from the construction of the BART Extension Alternative would be *less than significant*, and no mitigation is required.

Operation

Impacts on community facilities and public services related to operation of the BART Extension Alternative are summarized below. Please refer to Chapter 4, Section 4.4, *Community Facilities and Public Services*, and Chapter 4, Section 4.13, *Security and System* Safety, for a more detailed analysis of security and public services impacts associated with the BART Extension Alternative.

Police Protection

BART Police would provide primary law enforcement within the BART Extension Alternative Operating Corridor, including onboard trains, tunnels and operating rights-of-way, and within the station platforms. Police protection for BART facilities outside of the Operating Corridor would be coordinated by VTA and the Santa Clara County Sheriff's Office (SCCSO). VTA would also expand existing mutual aid agreements with regional police providers that would provide supplemental law enforcement along the BART Extension, including San Jose Police Department (SJPD), Santa Clara Police Department (SCPD), and San Mateo County Sheriff's Office (SMCSO). SCCSO would need to increase staffing to provide adequate enforcement to the BART Extension. Additional facilities could be provided through reconfiguring one of VTA's existing facilities. Therefore, this demand would not require new or expanded police facilities that would result in significant impacts.

The BART Extension Alternative does not propose new at-grade crossings and would not interfere with emergency responders traveling along existing roadways.

Given the above, this impact would be *less than significant*. No mitigation is required.

Fire Protection

San Jose Fire Department (SJFD) and Santa Clara Fire Department (SCFD) would be the primary responders to incidents along the BART Extension. However, operational safety procedures implemented by BART's System Safety Department would significantly reduce the need for emergency services within the BART system. Furthermore, ~~the~~ BART facilities will be equipped with adequate and compliant fire safety equipment, including fire protection systems and firefighting systems, in compliance with CBC requirements ~~Extension Alternative would be designed to comply~~and ~~with the~~ pertinent BART Facilities Standards to ~~Design Criteria, which~~ ensure thi~~s at~~ new BART project~~s~~ provide~~s~~ a high level of security and safety. Though SJFD and SCFD would respond to incidents along the BART Extension, this demand would not require new or expanded fire facilities.

The BART Extension Alternative does not propose new at-grade crossings and would not interfere with emergency responders traveling along existing roadways.

Given the above, this impact would be *less than significant*. No mitigation is required.

Schools

School demand is based on population factors. Because the BART Extension Alternative would not directly increase population, no new or expanded school facilities would be required. This impact would be *less than significant*, and no mitigation is required.

Impact BART Extension CS-2: Require new or physically altered recreational facilities

Construction

Construction of the BART Extension Alternative would not generate a direct increase in population and would not permanently increase the use of existing recreational facilities.

A portion of the proposed Five Wounds Trail may run along the abandoned railroad right-of-way near the Alum Rock/28th Street Station in San Jose, which is currently identified as a construction staging area (CSA) for the BART Extension. There are no City of San Jose studies, master plans, or secured funding sources for the proposed Five Wounds Trail, but the community has worked with San Jose State University to develop a conceptual plan for the trail alignment. VTA would work with San Jose to ensure that the construction schedules are coordinated should the City secure funding and wish to begin construction before the BART Extension construction.

Construction of the BART Extension Alternative would have a *less-than-significant impact* on recreational facilities, and no mitigation is required.

Operation

Park demand is based on population factors. The BART Extension Alternative constitutes a transportation project that would not directly introduce new population to the area. As a result, implementation of the BART Extension Alternative would not directly increase the demand for parks beyond what is currently provided in the area.

Several park facilities would be directly above the tunnel alignment, including Roosevelt Park, Theodore Lenzen Park, Guadalupe River Park & Trail, Los Gatos Creek Trail (Proposed), Five Wounds Trail (Proposed) and Coyote Creek Trail (Proposed). The BART Extension Alternative would not entail surface improvements that would interfere with these park facilities.

Operation of the BART Extension Alternative may lead to increased usage of the Guadalupe River Trail near the Diridon Station South and North Options. This trail network may be used to access employers, homes, and other regional destinations. However, the BART Extension Alternative is considered in VTA's *Valley Transportation Plan 2030* and San Jose's *Diridon Station Area Plan Environmental Impact Report*. Together, these planning documents propose multimodal circulation improvements to accommodate transit users near the Diridon Station South and North Options.

Given the above, operation of the BART Extension Alternative would have a *less-than-significant impact* on recreational facilities, and no mitigation would be required.

6.5.5.3 BART Extension with TOJD Alternative

The five TOJDs in San Jose (at Alum Rock/28th Street Station, Downtown San Jose Station, Diridon Station, the Santa Clara and 13th Street ventilation facility, and the Stockton Avenue ventilation facility) would create approximately 130,000–280,000 square feet of retail space, 1,175,000–1,443,000 square feet of office space, and 275 dwelling units depending on the Downtown San Jose East or West Options. Using the 3.2-person average household size assumption identified in the *Envision San Jose 2040 General Plan*, implementation of the TOJD would increase San Jose's population by 880 residents. All of these residents would be located in the Alum Rock/28th Street TOJD.

The TOJD in Santa Clara (at the Santa Clara Station) would create approximately 30,000 square feet of retail space, 500,000 square feet of office space, and 220 residential dwelling units. Using the 2.65-person average household size assumption identified in the *City of Santa Clara 2010-2035 General Plan*, implementation of the TOJD would increase Santa Clara's population by 583 residents.

Impact BART Extension + TOJD CS-1: Require new or physically altered existing community services or facilities

Construction

In addition to construction impacts associated with BART Extension Alternative, the BART Extension Alternative with TOJD Alternative would also include typical construction activities associated with office, retail, and residential uses, such as demolition, excavation, trenching, infrastructure installation, and framing. However, similar to the BART Extension Alternative, safety plans would be developed and implemented onsite pursuant to local and state law. Construction-related impacts of the BART Extension with TOJD Alternative on public services would be *less than significant*, and no mitigation is required.

Operation

Police Protection

Potential impacts on the SCCSO and SMCSO are only associated with operation of the BART stations, right-of-way, and system facilities. Therefore, the TOJD would not increase impacts on these public services beyond those analyzed under Impact BART Extension CS-1.

San Jose Police Department

SJPD provides police services to the San Jose portions of the alignment. In addition to providing supplemental law enforcement along the BART Extension, SJPD would respond to calls generated by new residents and commercial space in the TOJD portions. According to SJPD, this increased demand would not directly require new or expanded SJPD facilities (Morales pers. comm.). This impact would be *less than significant*, and no mitigation is required.

Santa Clara Police Department

SCPD provides police services to areas within the City of~~the~~ Santa Clara ~~portions of the alignment~~. In addition to providing supplemental law enforcement ~~along~~ for the BART Extension Alternative, the SCPD would respond to service calls generated by new residents and commercial space in the TOJD portions. Implementation of the BART Extension with TOJD Alternative would require SCPD to add one officer to maintain their current office-per-resident ratio (McDowell pers. comm.). Although additional police staff may be required, implementation of the TOJD would not directly require new or expanded SCPD facilities. This impact would be *less than significant*, and no mitigation is required.

Fire Protection

San Jose

SJFD provides fire and emergency services to the San Jose portions of the alignment. In addition to service calls generated by the BART Extension Alternative, the SJFD would

respond to calls generated by new residents and businesses in the TOJD portions. However, it is unlikely that this increased demand would require new or expanded SJFD facilities. This impact would be *less than significant*, and no mitigation is required.

Santa Clara

SCFD provides fire and emergency services to areas within the City of ~~the~~ Santa Clara. ~~portions of the alignment.~~ In addition to service calls generated by the BART Extension Alternative, the SCFD would respond to calls generated by new residents and businesses in the TOJD portions~~the TOJD~~. However, it is unlikely that this increased demand would require new or expanded SCFD facilities. This impact would be *less than significant*, and no mitigation is required.

Schools

San Jose

San Jose Unified School District (SJUSD) operates schools in San Jose's portion of the alignment. The SJUSD schools that would service the Alum Rock/28th Street TOJD are Empire Gardens Elementary School, Burnett Middle School, and San Jose High School. The Alum Rock/28th Street TOJD would generate approximately 90 new elementary students, 39 middle school students, and 48 high school students (Case pers. comm.).

SJUSD schools serving the alignment currently have the capacity to accept students generated by the BART Extension with TOJD. If all students generated by the BART Extension with TOJD attend local SJUSD-operated schools, Empire Gardens Elementary would be at 90 percent capacity, Burnett Middle School would be at 92 percent capacity, and San Jose High School would be at 79 percent capacity.

Additionally, the BART Extension with TOJD Alternative would comply with SB 50 and California Government Code Section 65995(b), which require the project applicant to pay school developer fees. This impact would be *less than significant*, and no mitigation is required.

Santa Clara

Santa Clara Unified School District (SCUSD) operates schools in Santa Clara's potion of the alignment. The SCUSD schools that would serve the Santa Clara TOJD are Scott Lane Elementary School, Buchser Middle School, and Santa Clara High School. Scott Lane Elementary School is at capacity, and both Buchser Middle School and Santa Clara High School are over capacity (Healy pers. comm.).

The Santa Clara TOJD would generate approximately 12 new students (Healy pers. comm.), which would be distributed among the elementary, middle, and high schools. The BART Extension with TOJD Alternative would comply with SB 50 and California Government Code Section 65995(b), which require the project applicant to pay school developer fees. Although the BART Extension with TOJD Alternative would contribute students to an

already over-burdened school system, it would not directly require the construction or expansion of SCUSD school facilities. This impact would be *less than significant*, and no mitigation is required.

Impact BART Extension + TOJD CS-2: Require new or physically altered recreational facilities

Construction

Impacts associated with construction of the BART facilities would be similar to those analyzed under Impact BART Extension CS-2 above.

Construction activities related to the TOJD would not directly generate a population increase, and would not permanently increase the use of existing neighborhood and regional parks or recreational facilities. This impact would be *less than significant*, and no mitigation is required.

Operation

Impacts associated with operation of the BART facilities would be similar to those analyzed under Impact BART Extension CS-2.

New residential developments are required to provide additional park facilities to prevent deterioration of existing park facilities resulting from increased use. The approximately 880 new residents from the San Jose TOJD would require an additional 2.64 acres of parkland to meet requirements of San Jose's Parkland Dedication Ordinance and Park Impact Ordinance. The approximately 583 new residents from the Santa Clara TOJD would require an additional 1.49 acres of parkland to meet the requirements of Santa Clara City Code Chapter 17.35. ~~The TOJD developers would be required to comply with these regulations through parkland dedication or payment of in-lieu fees.~~

Any residential portion of the joint development projects would be subject to either the requirements of the City's Park Impact Ordinance (Chapter 14.25 of Title 14 of the San Jose Municipal Code) or the Parkland Dedication Ordinance (Chapter 19.38 of Title 19 of the San Jose Municipal Code) in effect at the time of land use entitlements. The San Jose TOJD developers would be required to dedicate land and/or payment of fees in-lieu of dedication of land for a public park and/or recreational purposes, or a negotiated combination of these. An executed Parkland Agreement that outlines how a project will comply with the Park Impact Ordinance or Parkland Dedication Ordinance is required prior to the issuance of a Parcel Map or a Final Subdivision Map. Payment of Park Impact in-lieu fees is required prior to the issuance of a Building Permit.

Daytime users of proposed commercial and office uses and people visiting, shopping, or working in nonresidential TOJD may use nearby parks. However, existing and proposed facilities are anticipated to be capable of accommodating increased usage resulting from the BART Extension with TOJD Alternative without experiencing substantial deterioration.

Given the above, this impact would be *less than significant*. No mitigation is required.

6.5.6 CEQA Conclusion

Primary law enforcement to the BART Extension Alternative would be coordinated by BART Police, VTA, and SCCSO. SJPD, SCPD, and SMCSO would provide supplemental law enforcement along the BART Extension, while SJPD and SCPD would provide primary law enforcement to the TOJD. These law enforcement providers would be able to serve the BART Extension with TOJD Alternative without new or expanded police facilities.

SJFD and SCFD would respond to incidents along the BART Extension with TOJD Alternative. Existing fire and emergency services would be able to serve the BART Extension with TOJD Alternative without new or expanded fire facilities.

In accordance with applicable regulations, TOJDs would pay fees to minimize impacts on schools and parks resulting from the BART Extension with TOJD Alternative.

Given the above, impacts on community services and public services would be *less than significant*. No mitigation is required.

6.6 Cultural Resources

6.6.1 Introduction

This section discusses impacts under CEQA that would result from construction and operation of CEQA Alternatives.

6.6.2 Regulatory Setting

6.6.2.1 State

California Environmental Quality Act and Guidelines

CEQA uses the term *historical resource* to describe buildings, sites, structures, objects, or districts that may have historical, pre-historical, architectural, archaeological, cultural, or scientific importance.

CEQA states that if implementation of a project would result in significant effects on historical resources, then alternative plans or mitigation measures must be considered; however, only significant historical resources need to be addressed (14 California Code of Regulations (CCR) Sections 15064.5, 15126.4). Therefore, before impacts and mitigation measures can be identified, the significance of historical resources must be determined.

The State CEQA Guidelines define three ways that a property may qualify as a historical resource for the purposes of CEQA review.

1. The resource is listed in or determined eligible for listing in the California Register of Historical Resources (CRHR).
2. The resource is included in a local register of historical resources, as defined in Section 5020.1(k) of the California Public Resources Code (PRC) or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the PRC, unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3. The lead agency determines the resource to be significant, as supported by substantial evidence in light of the whole record (14 CCR Section 15064.5(a)).

Each of these ways of qualifying as a historical resource for the purpose of CEQA is related to the eligibility criteria for inclusion in the CRHR (PRC Sections 5020.1(k), 5024.1, 5024.1(g)). A historical resource may be eligible for inclusion in the CRHR if it meets any of the following conditions.

1. The resource is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

2. The resource is associated with the lives of persons important in California's past.
3. The resource embodies the distinctive characteristics of a type, period, region, or method of construction or represents the work of an important creative individual or possesses high artistic values.
4. The resource has yielded, or may be likely to yield, information important in prehistory or history.

Properties that are listed in or eligible for listing in the National Register of Historic Places are considered eligible for listing in the CRHR and thus are significant historical resources for the purpose of CEQA (PRC Section 5024.1(d)(1)).

According to CEQA, a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant impact on the environment (14 CCR Section 15064.5(b)). Under CEQA, a substantial adverse change in the significance of a resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resource would be materially impaired. Actions that would materially impair the significance of a historical resource are any actions that would demolish or adversely alter the physical characteristics that convey the property's historical significance and qualify it for inclusion in the CRHR or in a local register or survey that meets the requirements of PRC Sections 5020.1(k) and 5024.1(g).

California Public Resources Code

PRC Section 5024.1, which established the CRHR, protects historical resources. PRC Section 5024 requires state agencies to identify and protect state-owned resources that meet National Register of Historic Places listing criteria.

PRC Section 5097.5 prohibits removing, destroying, injuring, or defacing any vertebrate paleontological site, including fossilized footprints, or any other paleontological feature, as well as items of archaeological and historic interest that are situated on public lands, except with permission of the public agency with jurisdiction.

California Health and Safety Code—Treatment of Human Remains

Under Section 8100 of the California Health and Safety Code, six or more human burials at one location constitute a cemetery. Disturbance of Native American cemeteries is a felony (Health and Safety Code Section 7052).

Section 7050.5 of the Health and Safety Code requires that construction or excavation be stopped in the vicinity of discovered human remains until the county coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must then contact the Native American Heritage Commission, which has jurisdiction pursuant to PRC Section 5097.

When human remains are discovered or recognized in any location other than a dedicated cemetery, no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains may take place until the county coroner has been informed and has determined that no investigation of the cause of death is required, and, if the remains are of Native American origin, either:

- The descendants of the deceased Native American(s) have made a recommendation to the landowner or the person responsible for the excavation work for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98; or
- The Native American Heritage Commission was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the commission.

6.6.2.2 Local

City of San Jose

The Land Use and Transportation chapter of *Envision San Jose 2040 General Plan* contains several goals and policies related to historical resources (City of San Jose 2011).

Goal LU-13: Landmarks and Districts. Preserve and enhance historic landmarks and districts in order to promote a greater sense of historic awareness and community identity and contribute toward a sense of place.

- **Policy LU-13.1.** Preserve the integrity and fabric of candidate or designated Historic Districts.
- **Policy LU-13.2.** Preserve candidate or designated landmark buildings, structures and historic objects, with first priority given to preserving and rehabilitating them for their historic use, second to preserving and rehabilitating them for a new use, or third to rehabilitation and relocation on-site. If the City concurs that no other option is feasible, candidate or designated landmark structures should be rehabilitated and relocated to a new site in an appropriate setting.
- **Policy LU-13.3.** For landmark structures located within new development areas, incorporate the landmark structures within the new development as a means to create a sense of place, contribute to a vibrant economy, provide a connection to the past, and make more attractive employment, shopping, and residential areas.

Goal LU-14: Historic Structures of Lesser Significance. Preserve and enhance historic structures of lesser significance (i.e., Structures of Merit, Identified Structures, and particularly Historic Conservation Areas) as appropriate, so that they remain as a representation of San José's past and contribute to a positive identity for the City's future.

- **Policy LU-14.1.** Preserve the integrity and enhance the fabric of areas or neighborhoods with a cohesive historic character as a means to maintain a connection between the various structures in the area.

- **Policy LU-14.3.** Discourage demolition of any building or structure listed on or eligible for the Historic Resources Inventory as a Structure of Merit by pursuing the alternatives of rehabilitation, re-use on the subject site, and/or relocation of the resource.

Goal LU-16: Sustainable Practices. Preserve, conserve, and/or rehabilitate historic structures as a means to achieve the City of San José's environmental, economic, and fiscal sustainability goals.

In addition, three of San Jose's City ordinances make reference to historic resources. Title 2, Chapter 2.08, Part 26 establishes the Historic Landmarks Commission. Title 13, Chapter 13.48 discusses the goals of historic preservation; outlines the procedures for historic designation; prohibits alteration, demolition, or maintenance without a permit; and requires a public hearing should a historic resource be proposed for demolition. Title 17 references the application of the State Historical Building Code.

City of Santa Clara

The *Santa Clara 2010–2035 General Plan* (Chapter 5, Goals and Policies), provides goals and policies for historic preservation, areas of historic sensitivity, and archaeological and cultural resources (City of Santa Clara 2010).

Historic Preservation Goals

5.6.1-G1. Preservation of historic resources and neighborhoods.

5.6.1-G2. Public awareness of the City's historic preservation programs.

5.6.1-G3. Changes and maintenance of historic resources that retain the integrity of the property and its historic value.

Historic Preservation Policies

5.6.1-P1. Discourage the demolition or inappropriate alterations of historic buildings and ensure the protection of historic resources through the continued enforcement of codes and design guidelines.

5.6.1-P2. Protect the historic integrity of designated historic properties and encourage adaptive reuse when necessary to promote preservation.

5.6.1-P3. Protect historic resources from demolition, inappropriate alterations and incompatible development.

5.6.1-P4. Use the City's Criteria for Local Significance as the basis for designating historic resources and review proposed changes to these resources for consistency with the Secretary of Interior Standards and California Historic Building Code.

5.6.1-P5. Promote the use of the preservation standards outlined in the current Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings, or properties listed, or eligible for listing, on the City's Architecturally or Historically Significant Properties List.

5.6.1-P6. Promote an active program to identify, interpret and designate the City's historic properties, including the evaluation of resources over 50 years old to determine eligibility for the City's Architecturally or Historically Significant Properties list.

5.6.1-P7. Encourage programs that provide incentives and leverage public and private resources, to promote historic preservation, maintenance and adaptive reuse by property owners, such as Mills Act Contracts for tax benefits, tax credits, and zero or low-interest loans for income-qualified residents.

5.6.1-P8. Coordinate historic preservation efforts with other agencies and organizations, including the Chamber of Commerce, Santa Clara County Historical and Genealogical Society, and other historical organizations.

5.6.1-P9. Facilitate public outreach, education and information regarding historic preservation through the City's Historical and Landmarks Commission.

5.6.1-P10. Update and maintain the City's Architecturally or Historically Significant Properties List, and associated State Department of Parks and Recreation forms, as an Appendix to the General Plan.

Areas of Historic Sensitivity Goals and Policies

The area immediately surrounding historic resources contributes to the setting for the resource. It is important to review any changes in these areas with that in mind. The following goals and policies provide direction for all properties within a radius of 100 feet to City, State, or federally listed historic resources in the City.

Areas of Historic Sensitivity Goals

5.6.2-G1. New development that is compatible with nearby historic resources.

5.6.2-G2. Preservation of the neighborhood context for historic resources.

Areas of Historic Sensitivity Policies

5.6.2-P1. Evaluate any proposed changes to properties within 100 feet of historic resources on the City's Architecturally or Historically Significant Properties List for potential negative effects on the historic integrity of the resource or its historic context.

5.6.2-P2. Require that changes to properties that contribute to the context of a historic resource are compatible in scale, materials, design, height, mass and use with the historic resource or its context.

5.6.2-P3. Strengthen the character and historic context of the Old Quad historic neighborhood through streetscape design, amenities and street tree planting.

5.6.2-P4. Work with Santa Clara University to improve compatibility between University-owned properties and nearby historic resources.

5.6.2-P5. Work with off-campus housing providers to ensure that maintenance and operational provisions that protect nearby historic resources are implemented.

5.6.2-P6. Provide notification and information to owners, and developers of properties near historic resources in order to increase awareness of potential constraints on new development and/or uses.

Archaeological and Cultural Resources Goals and Policies

The City of Santa Clara is rich with archaeological and paleontological resources. These resources include the Santa Clara Mission, Native American burial grounds, the Berryessa Adobe and many others. The following Goals and Policies ensure that these resources are protected, now and into the future, and that appropriate mitigation measures to unforeseen impacts are enforced.

Archaeological and Cultural Resources Goals

5.6.3-G1. Protection and preservation of cultural resources, as well as archaeological and paleontological sites.

5.6.3-G2. Appropriate mitigation in the event that human remains, archaeological resources or paleontological resources are discovered during construction activities.

Archaeological and Cultural Resources Policies

5.6.3-P1. Require that new development avoid or reduce potential impacts to archaeological, paleontological and cultural resources.

5.6.3-P2. Encourage salvage and preservation of scientifically valuable paleontological or archaeological materials.

5.6.3-P3. Consult with California Native American tribes prior to considering amendments to the City's General Plan.

5.6.3-P4. Require that a qualified paleontologist/archaeologist monitor all grading and/or excavation if there is a potential to affect archaeological or paleontological resources, including sites within 500 feet of natural water courses and in the Old Quad neighborhood.

5.6.3-P5. In the event that archaeological/paleontological resources are discovered, require that work be suspended until the significance of the find and recommended actions are determined by a qualified archaeologist/paleontologist.

5.6.3-P6. In the event that human remains are discovered, work with the appropriate Native American representative and follow the procedures set forth in State law.

6.6.3 CEQA Methods of Analysis

This section of the SEIS/SEIR describes the potential cultural impacts that could result from implementation of the project, as well as mitigation measures to reduce such impacts.

For a detailed discussion of the identification of the Area of Potential Effect (APE)/Area of Direct Impact, the results of the background records search, and the summary of Native American consultation, please see Section 4.5, *Cultural Resources*.

6.6.4 CEQA Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the project would have a significant impact if it would result in any of the conditions listed below.

- Cause a substantial adverse change in the significance of a built environment resource or an archaeological resource that is a historical resource pursuant to State CEQA Guidelines Section 15064.5.
- Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to PRC Section 21083.2.
- Disturb any human remains, including those interred outside of formal cemeteries, pursuant to California Health and Safety Code Section 7050.5.

6.6.5 Environmental Consequences and Mitigation Measures

This section identifies the impacts on cultural resources under CEQA, as well as mitigation measures necessary to reduce the level of potentially significant impacts.

6.6.5.1 No Build Alternative

The No Build Alternative consists of the existing transit and roadway networks and planned and programmed transportation improvements (see Chapter 2, Section 2.2.1, *NEPA No Build Alternative*, for a list of these projects) and other land development projects planned by the Cities of San Jose and Santa Clara.

The No Build Alternative projects could result in effects on cultural resources typically associated with transportation projects, such as transit, highway, bicycle and pedestrian facilities, and roadway projects, as well as land development projects. All individual projects planned under the No Build Alternative would undergo separate environmental review to identify effects on cultural resources. Review would include an analysis of impacts and identification of mitigation measures to reduce potential impacts.

6.6.5.2 BART Extension Alternative

Construction of the BART Extension including stations and associated infrastructure (ventilation facilities, systems facilities, station boxes, and trackwork including crossovers), station campuses, Newhall Maintenance Facility, and relocation of utilities could result in disturbance to cultural resources. Oversized equipment, such as cranes, bulldozers, loaders, pavement breakers, excavators, and backhoes, would be used extensively. Demolition activities would primarily occur at the four stations, two mid-tunnel ventilation facility sites, two tunnel portals, and the construction staging areas north of U.S. 101.

Impact BART Extension CUL-1: Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5

Construction

Construction of the BART Extension Alternative would not cause significant impacts on any of the ~~34~~ 36 identified historical ~~architectural~~ resources (see Tables 4.5-1 through 4.5-~~43~~ in Section 4.5). BART Extension Alternative components near historical resources include Twin-Bore and Single-Bore options of tunnel alignments, stations (Alum Rock/28th Street, Downtown San Jose East and West Options, Diridon Station South and North Options, and Santa Clara), and the Newhall Maintenance Facility.

Construction of the BART Extension Alternative components (listed above) would not cause any direct substantial adverse change to any of the 36 historical resources. As discussed in Section 5.5.6.2, tunnel alignments under the Single- and Twin-Bore Options would pass beneath some historic properties. However, the historical resources would not be materially impaired by tunnel construction. There would be *no direct impact*, and no mitigation is required.

The construction of some elements of the Downtown San Jose Station East and West Options under the Twin-Bore Option would be located within the boundary of the San Jose Downtown Commercial District and may alter the landscaping, infrastructure, and hardscape (i.e., sidewalks, curbs, light standards, and street furniture). Those components, such as station entrance portals and elevators, would be constructed within the public ROW and would not alter any of the contributing elements or character-defining features of the historic district and therefore would not cause a direct substantial adverse change to the district or its contributors. Please see detailed discussions about direct impacts from construction in Section 5.5.6.2. Impacts would be *less than significant*, and no mitigation is required.

Cut-and-cover construction of the Downtown San Jose Station East and West Options under the Twin-Bore Option may result in the partial removal of sub-sidewalk features (basements and/or freight access elevators located within the public right-of-way) that may be associated with historic buildings adjacent to this type of construction area~~s~~. However, the presence or exact location of these sub-surface features are presently unknown. Implementation of measures as outlined in Section 5.5.6.2 would avoid and/or minimize any direct substantial adverse change to historical resources. This impact would be *less than significant after mitigation.*

Cut-and-cover construction of the Downtown San Jose Station—East Option and Downtown San Jose Station—West Option under both the Single- and Twin-Bore Options would use tiebacks to secure shoring walls; however, tiebacks would extend underground beneath historic properties and would not directly impact any historic building. There would be *no impact*, and no mitigation is required.

The construction of some components of the Diridon Station South Option and Diridon Station North Option under either the Twin-Bore or Single-Bore Options would be located

within the boundary of the historic Cahill Station. However, the proposed station components would be in areas already altered by a modern transit center and their construction would not alter any of the contributing elements or character-defining features of the historical resource and therefore would not cause a direct substantial adverse change to the historic station. Please see detailed discussions about direct impacts from construction in Section 5.5.6.2. Impacts would be *less than significant*, and no mitigation is required.

Construction noise has the potential to cause indirect substantial adverse changes~~effects~~ only on historical resources ~~properties~~ that have an inherent quiet quality that is part of a property's historic character and significance (i.e., churches, parks, and National Historic Landmarks with significant outdoor use). Only one of the ~~29~~ 36 historical ~~properties~~resources, the Five Wounds Portuguese National Church ~~of Five Wounds~~, is considered to have an inherent quiet quality. Noise generated during construction of the Alum Rock/28th Street Station has the potential to result in a significant impact on the Five Wounds Portuguese National Church ~~of Five Wounds~~. To avoid and/or minimize impacts on this historical resource, Mitigation ~~measures~~ Measure NV-CNST-C (identified in Section 5.5.13.3), which will include installation of a temporary noise wall or noise curtain (a flexible barrier hung from frames), ~~(Mitigation Measure NV-CNST-C)~~will be implemented. This impact would be *less than significant after mitigation.*

There would be no indirect ~~adverse effect~~ substantial adverse change on any historical ~~property~~ resource from predicted vibration ~~or noise~~ impacts from ~~the~~ construction of the BART Extension Alternative ~~at the location of any historic property~~. Implementation of measures as described in detail in Section 5.5.13.3 and included in Mitigation Measures NV-CNST-P through NV-CNST-R would avoid and/or minimize any direct substantial adverse change to historical resources from potential construction vibration impacts. ~~While the impacts caused by vibration from construction of the BART Extension may exceed the FTA threshold of 0.12 inch/second peak particle velocity (PPV) for potential to cause physical damage or alteration on historic properties, the contractor would be required to maintain vibration levels of less than 0.12 inch/second PPV as measured at historic properties. Mitigation Measures NV-CNST-P through NV-CNST-R would be~~Therefore, ~~implemented and~~ the impact would be *less than significant after mitigation*.

Potential impacts on historic buildings due to surface settlement during tunneling and cut-and-cover activities in the vicinity historical resources would be avoided and/or reduced by implementing measures described in detail in Section 5.5.13.3 and Mitigation Measures GEO-CNST-B through GEO-CNST-D. Thus, impacts on historical resources adjacent to this construction activity would be *less than significant after mitigation.* Please see a detailed discussion in Section 5.5.13.3~~4.5~~. None of the BART Extension components would result in substantial adverse changes to the identified historical resources because they would not result in physical demolition, destruction, relocation, or alteration of any historical resources. Therefore, the BART Extension Alternative would result in *less-than-significant impacts* on historical resources.

Operation

Only operational noise or vibration has the potential to affect historic properties during BART operations. As explained in Section 4.5, the operational noise and vibration levels for the BART Extension Alternative would not be substantial and would not affect the historical resources. Section 4.5 also explains that station entrance portals and/or elevators and other aboveground elements are small in scale relative to the surrounding buildings, and their massing would be consistent with the character of the surroundings and would not represent an indirect visual impact on historic properties. Therefore, operation of the BART Extension Alternative would have a *less-than-significant impact* on historical resources during operations. No mitigation is required.

Impact BART Extension CUL-2: Cause a substantial adverse change in the significance of an archaeological resource as defined in § 21083.2

Construction

Known Resources

One historic-era archaeological resource (CA-SCL-363H) was identified within the archaeological APE during the background records search; however, as described in *VTA's BART Silicon Valley—Phase II Extension Project: Finding of Effects* (JRP, ICF, and Far Western 2016) and Chapter 5, Section 5.5.6, *Cultural Resources,* the BART Extension Alternative would not affect this resource. Additional archaeological resources, both prehistoric and historic-era, are within 0.5 mile of the archaeological APE but would not be affected by the BART Extension Alternative. Impacts would be *less than significant*, and no mitigation is required.

Unknown Resources

As discussed in Section 4.5, the 2016 ARTR and 2017 Supplemental ARTR identified numerous locations within the APE where archaeological resources may be expected. Preconstruction archaeological testing is recommended to test the sensitive areas within the APE that may be disturbed by construction. However, many of the sensitive areas are located under existing buildings or infrastructure that would have to be removed prior to testing, are located on private property, or both. Therefore, it is not feasible to test all sensitive areas at this time.

Consequently, a Draft Programmatic Agreement (PA) has been prepared for the identification and evaluation of archaeological resources in phases prior to construction of the project, and treatment of archaeological resources and burials in the event that such resources are discovered during construction activities. The Draft PA includes an ~~outline for an~~ Archaeological Resources Treatment Plan (ARTP)~~ that will be prepared~~. The ARTP ~~will~~ describes archaeological procedures, notification and consultation requirements, professional qualifications requirements, and procedures for the disposition of artifacts if any are discovered. The preparation and implementation of the Draft PA and ARTP are identified in

Chapter 5, Section 5.5.6, *Cultural Resources,* as Mitigation Measure CUL-CNST-A. The Draft PA was~~is~~ included in Appendix D.3 in the Draft SEIS/SEIR. The Draft PA and Draft ARTP are currently under consultation with the Office of Historic Preservation and other Consulting Parties. The Final PA and ARTP will be included as an attachment to the Record of Decision. Implementation of this mitigation would ensure that impacts on unknown archaeological resources are *less than significant with mitigation*.

Operation

The only operational impact that would have the potential to affect the one known archaeological historic property during BART operations would result from potential vibration impacts of the trains operating along the tracks within the tunnel. As explained in Section 4.5, operational vibration levels would be below the threshold of 90 vibration decibels (VdB); therefore, vibration from operation of the BART Extension would result in a *less-than-significant impact*, and no mitigation is required.

Impact BART Extension CUL-3: Disturb human remains, including those interred outside of formal cemeteries

Construction

No known archaeological sites having the likelihood of containing human remains were identified within the APE during the background records search.

Given the findings of the archaeological inventory (the background records/literature review) and the sensitivity assessment, it is possible that previously undiscovered archaeological resources, including human remains, are located within the APE. Mitigation Measure CUL-CNST-A would reduce this impact to a *less-than-significant* level.

Operation

Operation of the BART Extension would occur within areas previously disturbed by construction of the BART Extension; therefore, the BART Extension would not cause new damage or destruction of unknown archaeological resources that may contain human remains. There would be *no impact*, and no mitigation is required.

6.6.5.3 BART Extension with TOJD Alternative

Impact BART Extension + TOJD CUL-1: Cause a significant adverse change in the significance of a historical resource as defined in § 15064.5

Construction

VTA proposes to construct TOJD consisting of office, retail, and residential buildings as part of the BART Extension with TOJD Alternative. TOJD would occur at the four station locations (Alum Rock/28th Street, Downtown San Jose East and West Options, Diridon Station South and North Options, and Santa Clara). None of these construction activities

would cause a direct substantial adverse change to any of the ~~34~~ 36 identified historical resources, because all development would occur outside of the historical resources' property boundaries.

Impacts related to the BART Extension with TOJD Alternative would be the same as those described under Impact BART Extension CUL-1 above. There would be no significant indirect impacts on any historical resource from predicted vibration or noise from construction of the TOJD near the location of any historical resource. Noise impacts on historical resources from construction of the TOJD would be the same as those described under Impact BART Extension CUL-1 above. As stated under Impact BART Extension CUL-1, potential impacts on historic resources resulting from construction noise and vibration would be reduced to a less-than-significant level by implementing Mitigation Measures NV-CNST-C, NV-CNST-P, NV-CNST-Q, and NV-CNST-R. Potential impacts on historic properties due to surface settlement would be reduced to a less-than-significant level by implementation of Mitigation Measures GEO-CNST-B through GEO-CNST-D. Only impacts specific to the TOJD element are described below.

Alum Rock/28th Street Station

At the Alum Rock/28th Street Station, TOJD would be more than 50 feet from the northwestern boundary of the only nearby historical resource. While the TOJD, which would include a building up to nine stories in height, would be visible from the historical resource (~~Five Wounds~~ Five Wounds Portuguese National Church), it would not substantially alter the viewshed or industrial setting surrounding this historic property. The historic integrity of the historical resource would remain unchanged, and its significance would not be materially impaired. Impacts would be *less than significant*, and no mitigation is required.

Downtown San Jose Station East and West Options

The TOJD at the Downtown San Jose Station East and West Options would consist of up to 3.5-story buildings, which would be consistent in scale and height with historical resources and other modern infill construction in the area. ~~One of these~~A The TOJD~~s~~ proposed for the Downtown San Jose Station East and West Options under both the Single- and Twin-Bore Options would be adjacent to one historical resource located at 30 North 3rd Street (Map Reference E-27); however, construction would be at the rear of the historic building and would not be visible from its historic façade, which would face away from the TOJD. The remaining TOJDs would be constructed 70 feet or more away, and across well-traveled thoroughfares, from any of the identified historical resources. While visible from some nearby historical resources, the construction of the TOJD would not substantially alter any historical resource's viewshed or setting, as the setting and view at many of these locations has already been altered by the introduction of modern buildings and street amenities, or through introduction of other similar modern facilities. Therefore, none of VTA's TOJDs would materially impair the significance of any of the nearby historical resources; as such, impacts under CEQA would be *less than significant*. No mitigation is required.

Diridon Station South and North Options

Similarly, the TOJD at the Diridon Station South and North Options would not materially impair the one nearby historical resource (historic Diridon Station, Map Reference F-13). TOJDs would be a considerable distance (more than 130 feet) from any contributing element of the historical resource and approximately 50 feet from the property boundary. While the building of up to eight stories in height on the site of an extant surface parking lot may alter the view and setting of the historical resource, it would not do so in an adverse manner. The integrity of the character-defining features of this historic rail station—those specifically related to the historical resource's architectural design for which it was found to be historically significant (its Italian Renaissance Revival design and ornamentation as well as its contributing appurtenant features and structures such as its wall and wrought-iron fence system, tracks, passenger sheds, underpass)—would remain unchanged, and the station would still be able to convey the architectural significance that qualifies it for inclusion in the CRHR. Impacts would be *less than significant*, and no mitigation is required.

Santa Clara Station

At the Santa Clara Station, TOJD would be more than 250 feet away, and across a heavily traveled railroad corridor, from any nearby historical resource. While the construction of one or more buildings of up to eleven stories in height would alter the view and setting of a historical resource (historic Caltrain Station, Map References I-01 and I-02), the TOJD would be far enough away that it would not alter the character-defining features of the historic station or its associated buildings, which include building plan, roof, siding, doors, loading dock, windows, and signage. The historic station's integrity and use would remain unchanged, and the resource would still be able to convey both its architectural merit and its association with early state and regional rail transportation for which it was found to be historically significant. Impacts would be *less than significant*, and no mitigation is required.

Operation

All operational impacts would be similar to those discussed under Impact BART Extension CUL-1. Operation of the BART Extension with TOJD Alternative would have a *less-than-significant impact* on historical resources during operations. No mitigation is required.

Impact BART Extension + TOJD CUL-2: Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 21083.2

Construction

All construction impacts would be similar to those discussed under Impact BART Extension CUL-2. Mitigation Measure CUL-CNST-A would reduce this impact to a *less-than-significant* level.

Operation

All operational impacts would be similar to those discussed under Impact BART Extension CUL-2. Impacts would be *less than significant*, and no mitigation is required.

Impact BART Extension + TOJD CUL-3: Disturb human remains, including those interred outside of formal cemeteries

Construction

All construction impacts would be similar to those discussed under Impact BART Extension CUL-3. Mitigation Measure CUL-CNST-A would reduce this impact to a *less-than-significant* level.

Operations

All operational impacts would be similar to those discussed under Impact BART Extension CUL-3. There would be *no impact*, and no mitigation is required.

6.6.6 CEQA Conclusion

The BART Extension Alternative and the BART Extension with TOJD Alternative have the potential to result in significant impacts on unknown archaeological resources and human remains, should they be encountered during construction activities. However, by implementing Mitigation Measure CUL-CNST-A, these impacts would be reduced to a *less-than-significant* level. Additionally, potential impacts on historic resources resulting from construction noise and vibration would be reduced to a less-than-significant level by implementing Mitigation Measures NV-CNST-C, NV-CNST-P, NV-CNST-Q, and NV-CNST-R. Potential impacts on historic properties due to surface settlement would be reduced to a less-than-significant level by implementation of Mitigation Measures GEO-CNST-B through GEO-CNST-D.

6.7 Energy

6.7.1 Introduction

This section discusses existing conditions and the regulatory setting regarding energy, and it describes impacts under CEQA that would result from construction and operation of the CEQA Alternatives.

Please refer to Chapter 4, Section 4.7.2.1, *Environmental Setting*, for a summary of existing state energy generation and demand, as well as information on local energy providers and distribution.

6.7.2 Regulatory Setting

The relevant state, regional, and local energy regulations and policies are provided below.

Senate Bill 1389, Chapter 568, Statutes of 2002

The California Energy Commission (CEC) is responsible for, among other things, forecasting future energy needs for the state and developing renewable energy resources and alternative renewable energy technologies for buildings, industry, and transportation. Senate Bill 1389 (Chapter 568, Statutes of 2002) requires CEC to prepare a biennial integrated energy policy report assessing major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors. The report is also intended to provide policy recommendations to conserve resources, protect the environment, and ensure reliable, secure, and diverse energy supplies. The *2013 Integrated Energy Policy Report*, the most recent report required under Senate Bill 1389, was released to the public in February 2013.

Assembly Bill 2076, Reducing Dependence on Petroleum

Assembly Bill (AB) 2076 (passed in 2000) directs CEC and the California Air Resources Board to develop and adopt recommendations for reducing dependence on petroleum. A performance-based goal is to reduce petroleum demand to 15 percent less than 2003 demand by 2020.

California Green Building Standards Code and Title 24

In January 2010, the California Building Standards Commission adopted the statewide mandatory Green Building Standards Code (CALGreen [California Code of Regulations, Title 24, Part 11]). CALGreen applies to the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure.

CALGreen requires the installation of energy- and water-efficient indoor infrastructure for all new projects. CEC recently adopted changes to the 2013 Building Energy Efficiency Standards contained in the California Code of Regulations, Title 24, Part 6 (also known as

the California Energy Code) and associated administrative regulations in CALGreen Part 11. The 2013 Building Energy Efficiency Standards are 25 percent more efficient than previous standards for residential construction. Part 11 also establishes voluntary standards that became mandatory in the 2010 edition of the code, including planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The standards require windows, insulation, lighting, ventilation systems, and other features that reduce energy consumption in homes and businesses.

Santa Clara Valley Transportation Authority Sustainability Program

VTA's Sustainability Program outlines VTA's commitment to conserve natural resources, reduce greenhouse gas (GHG) emissions, prevent pollution, and increase renewable energy generation. The program contributes to energy reductions through solar power projects, energy efficiency retrofits, high-efficiency lighting, and smart operating practices, such as turning off auxiliary power systems when light rail vehicles are parked. This program would apply to areas outside the BART stations, system facilities, and guideway and include VTA facilities such as the transit centers, parking, and landscaping.

San Francisco Bay Area Rapid Transit District Sustainability Policy

BART's Sustainability Policy outlines feasible practices to preserve the environment of the San Francisco Bay Area. With respect to energy resources, BART has outlined a goal to incorporate proven sustainable materials, methods, and technologies into BART's Facilities Standard to increase life-cycle value including reduction of energy and resource use, and to enhance the health and comfort of BART employees and customers (Bay Area Rapid Transit n.d.).

City of San Jose 2040 General Plan Policies

The City of San Jose's *Envision San Jose 2040 General Plan* (Chapter 3, *Environmental Leadership*) provides the following specific goals related to energy. The general plan identifies several policies and actions for each goal (City of San Jose 2011).

- Goal MS-14: Reduce Consumption and Increase Efficiency: Reduce per capita energy consumption by at least 50 percent below 2008 levels by 2022 and maintain or reduce net aggregate energy consumption levels equivalent to the 2022 level through 2040 (five policies; three actions).
- Goal MS-15: Renewable Energy: Receive 100 percent of electrical power from clean renewable sources (e.g., solar, wind, hydrogen) by 2022 and, to the greatest degree feasible, increase generation of clean, renewable energy within the city to meet its own energy consumption needs (six policies; three actions).
- Goal MS-16: Energy Security: Provide access to clean, renewable, and reliable energy for all San Jose residents and businesses (three policies; three actions).

City of Santa Clara 2010–2035 General Plan Policies

The *City of Santa Clara 2010–2035 General Plan* (Chapter 5, *Goals and Policies*) provides the following specific goals related to energy. Thirteen policies are identified in the general plan to support implementation of the goals (City of Santa Clara 2010).

- Goal 5.10.3-G1: Energy supply and distribution maximizes the use of renewable resources.
- Goal 5.10.3-G2: Implementation of energy conservation measures to reduce consumption.
- Goal 5.10.3-G3: Adequate energy service to residents, businesses, and municipal operations.

6.7.3 CEQA Methods of Analysis

6.7.3.1 Construction

Construction-related energy use (i.e., fuel consumption) was calculated by converting GHG emissions estimated by the project's air quality analysts using the rate of carbon dioxide (CO_2) emitted per gallon of combusted gasoline (8.78 kilograms/gallon) and diesel (10.21 kilograms/gallon) (Climate Registry 2015). The estimated fuel consumption was converted to British thermal unit (BTU) equivalents using the factors summarized in Table 4.7-2, in Chapter 4, Section 4.7. As discussed in Section 4.7.3.2, *Calculation Approach*, BTUs are expressed at two levels: in terms of the direct energy content of electricity and fuels consumed (or saved), as well as the total energy content of each energy unit. The former is the specific energy available at the point of use while the latter also includes the energy required to generate or refine and transmit or transport the energy unit to the final point of use.

Materials manufacturing would also consume energy, although information on the intensity and quantity of fuel used during manufacturing is currently unknown and beyond the scope of project-level environmental analyses. An analysis of energy associated with materials manufacturing is considered speculative and is not presented in this Draft SEIS/SEIR. This analysis focuses on energy associated with physical construction of the project (i.e., fuel consumed by heavy-duty equipment and vehicles).

6.7.3.2 Operation

Please refer to Chapter 4, Section 4.7.3.2, for a discussion of the calculation methods for operational energy consumption associated with the BART Extension Alternative. The energy analysis for operation of the BART Extension with TOJD Alternative considers the following sources of energy consumption.

- BART Extension: electricity consumed by vehicle propulsion and at stations and related facilities.

- Vehicular fuel: gasoline and diesel consumed by automobiles and trucks.
- Power, heating, and cooking: electricity and natural gas consumed by residential and commercial land uses in the transit-oriented joint development (TOJD).

Improvements in transit opportunities would facilitate removal of single-occupancy vehicles from the transportation network. Construction of the TOJD would offset a portion of this benefit as a result of increased vehicle travel consistent with population and employment growth. Regional vehicle miles traveled (VMT) with and without the BART Extension with TOJD under 2015 Existing, 2025 Opening Year, and 2035 Forecast Year conditions were obtained from the project's air quality analysts and are summarized in Table 6.7-1 (Hosseini pers. comm.). The VMT estimates were converted to BTU equivalents using the factors summarized in Table 4.7-2 and vehicle fuel economy data obtained from the California Air Resources Board's EMFAC2014 model.[1]

Table 6.7-1: Annual Regional Vehicle Miles Traveled (million) for the BART Extension

	2015 Existing		2025 Opening Year		2035 Forecast Year	
Mode[a]	No Build	With BART Extension	No Build	With BART Extension	No Build	With BART Extension
Automobile	18,057	18,019	19,075	19,045	20,663	20,632
Medium Truck	480	481	555	557	672	675
Heavy Truck	404	405	438	439	484	486
Total	18,941	18,905	20,068	20,040	21,819	21,792
Change from No Build		*-36 (-0.2%)*		*-28 (-0.1%)*		*-27 (-0.1%)*

Source: Hosseini pers. comm.

[a] Implementation of the BART Extension with TOJD Alternative would not have a measurable effect on regional bus activity (Van den Hout pers. comm.). Accordingly, VMT from regional buses are not included in the VMT analysis for the BART Extension with TOJD.

Operational electricity and natural gas consumption at the TOJD was drawn from the CalEEMod modeling performed to support the GHG analysis (see Section 6.9, *Greenhouse Gas Emissions*). CalEEMod outputs for natural gas consumption are provided in BTU; outputs for electricity consumption, which are provided in kilowatt-hours, were converted to BTU equivalents using the factors summarized in Table 4.7-2.

6.7.4 CEQA Thresholds of Significance

Determinations of the project's potential impacts are based on the following criteria, which are in State CEQA Guidelines Appendix F.

[1] Refer to footnote 1 in Chapter 4, Section 4.7, *Energy*, for automobile fuel economy data. Weighted fuel economy factors for medium trucks (EMFAC vehicle categories of LHD1, LHD2, and MDV) under 2015 Existing, 2025 Opening Year, and 2035 Forecast Year conditions are 14.3, 18.7, and 23.2 miles per gallon, respectively. Fuel economy factors for heavy trucks (EMFAC vehicle categories of MH, MHDT, and HHDT) are 6.4, 6.9, and 7.1.

- The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project, including construction, operation, maintenance, and removal. If appropriate, the energy intensiveness of materials may be discussed.
- The effects of the project on local and regional energy supplies and on requirements for additional capacity.
- The effects of the project on peak- and base-period demands for electricity and other forms of energy.
- The degree to which the project complies with existing energy standards.
- The effects of the project on energy resources.
- The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

The State CEQA Guidelines recommend that the discussion of applicable energy impacts focuses on whether the project would result in the wasteful, inefficient, or unnecessary consumption of energy, because this may constitute an unavoidable adverse effect on energy resources. Efficiency projects that incorporate conservation measures to avoid wasteful energy usage facilitate long-term energy planning and avoid the need for unplanned or additional energy capacity. Accordingly, based on the criteria outlined in the CEQA Guidelines Appendix F, the project would cause significant impacts related to energy if it would lead to a wasteful, inefficient, and unnecessary usage of direct or indirect energy. As discussed in Section 6.7.2, *Regulatory Setting*, energy legislation, policies, and standards adopted by California and local governments were enacted and promulgated for the purpose of reducing wasteful and inefficient use of energy. Therefore, for the purposes of this analysis, *wasteful* and *inefficient* are defined as circumstances in which the project would conflict with applicable state or local energy legislation, policies, and standards. Accordingly, if the project conflicts with legislation, policies, or standards designed to avoid wasteful and inefficient energy usage, it would result in a significant impact related to energy resources and conservation.

6.7.5 Environmental Consequences

This section identifies the impacts related to energy under CEQA.

6.7.5.1 No Build Alternative

The No Build Alternative consists of the existing transit and roadway networks and planned and programmed transportation improvements (see Chapter 2, Section 2.2.1, *NEPA No Build Alternative*, for a list of these projects) and other land development projects planned by the Cities of San Jose and Santa Clara.

The No Build Alternative projects could result in effects on energy usage typically associated with transit, highway, bicycle, and pedestrian facilities and roadway projects, as well as land development projects. The transportation projects completed under the No Build Alternative

would be consistent with local policies that encourage alternative transportation and energy conservation, but would not be as supportive of regional plans to promote BART and TOJD. Because BART is a more energy-efficient form of transportation than personal automobiles are, the No Build Alternative would have greater energy use than the BART Extension Alternative or the BART Extension with TOJD Alternative.

All individual projects planned under the No Build Alternative would undergo separate environmental review to identify effects on energy. Review would include an analysis of impacts and identification of mitigation measures to reduce potential impacts.

6.7.5.2 BART Extension Alternative

Impact BART Extension ENG-1: Result in the inefficient, wasteful, or unnecessary consumption of energy

Construction

Construction of the BART Extension would consume gasoline and diesel through operation of heavy-duty construction equipment and vehicles. Twin-Bore and Single-Bore Options for tunnels have been proposed as construction alternatives. Energy usage during construction of either option, although short term, would encompass a period of approximately 8 years. Based on the GHG assessment (refer to Chapter 4, Section 4.9, *Greenhouse Gas Emissions*), energy use associated with BART Extension construction was calculated and estimated to result in the one-time consumption of 625,667 and 632,929 million direct BTU and 765,076 million total BTU for the Twin-Bore and Single-Bore Options, respectively. Impacts would be *less than significant*, and no mitigation is required.

Operations

BART Extension energy consumption for 2015 Existing, 2025 Opening Year, and 2035 Forecast Year conditions is summarized in Table 4.7-3 in Chapter 4, Section 4.7, *Energy*. There would be an increase in electricity associated with BART vehicle propulsion and station operations, but there would also be a reduction in vehicular fuel use through the removal of passenger trips from the transportation network. As shown in Table 4.7-3, the reduction in vehicular fuel use would offset increases in BART electricity consumption, resulting in a net energy reduction. Vehicular fuel savings would be a regional energy benefit.

BART's Policy Framework for Sustainability includes a goal to "Apply sustainable techniques and procedures into BART's maintenance projects and operations in a cost-effective manner." Energy conservation is an important aspect of this goal. For example, variable speed escalators that stop and restart or that operate at a low-speed mode will be evaluated for implementation to reduce off-peak energy consumption as they are being done on VTA's BART Silicon Valley Berryessa Extension Project.

Although the BART Extension would increase electricity consumption over existing conditions, VTA's Sustainability Program green strategies would help conserve energy. For example, light-emitting diode (LED) fixtures, photosensor-driven lighting, and dimming controls could be applied to the ~~campus areas~~BART stations and Newhall Maintenance Facility to minimize artificial lighting during daylight hours and reduce power during off-peak periods. Photovoltaic solar panels may also be incorporated, which would minimize purchased power and demand on Pacific Gas & Electric Company (PG&E) loads. These strategies are consistent with state and local energy plans and policies to reduce energy consumption, and would ensure that energy use is not wasteful or inefficient. The BART Extension would also facilitate implementation of the Metropolitan Transportation Commission's (MTC) *Plan Bay Area* by promoting regional transit and reductions in single-occupancy vehicle use. *Plan Bay Area* is a long-range integrated transportation and land-use strategy through 2040 for the San Francisco Bay Area.

Accordingly, because the BART Extension would incorporate energy conservation measures and VTA would implement strategies consistent with state and local energy plans and policies, operation of the BART Extension would not lead to a wasteful, inefficient, and unnecessary usage of direct energy. Impacts would be *less than significant*, and no mitigation is required.

Impact BART Extension ENG-2: Require substantial local or regional energy supplies

As discussed in Chapter 4, Section 4.7.4.2, BART would procure and PG&E would distribute electricity to the BART Extension through 115-kilovolt alternating current lines. Electricity consumption would be highest during peak-periods (3 p.m. to 7 p.m.) and would be on the order of 11 megawatts, which is approximately 0.018 percent of historic (2011) peak demand (California Energy Commission 2015). The degree to which VTA is able to conserve energy and generate renewable power through implementation of the strategies described above will dictate the BART facilities' demand on PG&E's system.

Natural gas consumption, which would be supplied by PG&E, would be highest during peak-periods (3 p.m. to 7 p.m.), with demand greatest during the winter months. The degree to which VTA is able to utilize natural gas conservation would dictate its dependency on PG&E and have a direct effect on supply from PG&E.

PG&E uses local and regional development plans to forecast and plan for the energy needs of its service territory. This dynamic process is subject to regulatory oversight by the Public Utilities Commission (PUC), where every 2 years in Long Term Procurement Plan proceedings, the PUC assesses the system and local resource needs of the state's three investor-owned utilities over a 10-year horizon. The PUC establishes upfront standards for utility procurement activities and cost recovery by reviewing and approving proposed procurement plans prior to their implementation. Integral to this process is the utility demand forecast, which is subject to review by CEC. As part of this process, BART's 20-year load forecast, which includes extension loads, is submitted to PG&E for long-term planning. To

ensure consistency with approved plans, the PUC conducts annual Energy Resource Recovery Account proceedings in which energy forecasts are refined based on existing procurement. This continual planning process ensures that local utilities will accommodate the current and planned energy requirements for a region. Consequently, it is anticipated that the BART facilities would have a *less-than-significant* impact on local and regional energy supplies and peak loads. No mitigation is required.

6.7.5.3 BART Extension with TOJD Alternative

Impact BART Extension + TOJD ENG-1: Result in the inefficient, wasteful, or unnecessary consumption of energy

Construction

Similar to construction of the BART Extension Alternative, construction of the BART Extension with TOJD Alternative would consume gasoline and diesel through operation of heavy-duty construction equipment and vehicles. Energy usage during construction, although short term, would encompass a period of approximately 8 years. Based on the GHG assessment (refer to Chapter 4, Section 4.9, *Greenhouse Gas Emissions*), energy use associated with BART Extension construction was calculated and estimated to result in the one-time consumption of 625,667 and 632,929 million direct BTU and 765,076 million total BTU for the Twin-Bore and Single-Bore Options, respectively.

Based on the GHG assessment (refer to Chapter 4, Section 4.9, *Greenhouse Gas Emissions*), energy use associated with construction of the BART Extension with TOJD Alternative was calculated and estimated to result in the one-time consumption of 706,214 and 713,476 million direct BTU and 863,113 million total BTU for the Twin-Bore and Single-Bore Options respectively.[2]

VTA's adopted Sustainability Program requires projects to "incorporate sustainability and green building principles and practices in the planning, design, construction, and operation of new VTA facilities." As discussed in Chapter 2, Section 2.2.2.2, VTA would, to the extent feasible, use recycled and regionally or locally available materials, as well as reuse soils onsite or elsewhere along the alignment. These strategies would reduce hauling requirements and associated on-road fuel consumption, and ensure that the BART Extension with TOJD Alternative would not result in substantial waste or inefficient use of energy. Therefore, impacts on energy resources would be *less than significant*. No mitigation is required.

Operation

BART Extension energy consumption for 2015 Existing, 2025 Opening Year, and 2035 Forecast Year conditions is summarized in Table 4.7-4 in Chapter 4, Section 4.7, *Energy*.

[2] Construction BTU calculated based on a conversion of kilograms of CO_2 per gallon of fuel consumed equaling 10.20648 kilograms (kg) CO_2 per gallon for diesel and 8.7775 kg CO_2 per gallon for gasoline from the Climate Registry (2015), with a direct BTUs per gallon rate of 127,464 for diesel and 116,090 for gasoline.

There would be an increase in electricity associated with BART vehicle propulsion and station operations, but there would also be a reduction in vehicular fuel use through the removal of passenger trips from the transportation network. As shown in Table 4.7-4, the reduction in vehicular fuel use would offset increases in BART electricity consumption, resulting in a net energy reduction. Vehicular fuel savings would be a regional energy benefit.

Variable speed escalators that stop and restart or that operate at a low-speed mode could also be installed to reduce off-peak energy consumption as is being done on VTA's BART Silicon Valley Berryessa Extension Project.

Although the BART Extension with TOJD Alternative would increase electricity consumption over existing conditions, VTA's Sustainability Program green strategies would help conserve energy. For example, LED fixtures, photosensor-driven lighting, and dimming controls could be applied to the campus areas to minimize artificial lighting during daylight hours and reduce power during off-peak periods. Photovoltaic solar panels may also be incorporated, which would minimize purchased power and demand on PG&E loads. These strategies are consistent with state and local energy plans and policies to reduce energy consumption, and would ensure that energy use is not wasteful or inefficient. The BART Extension with TOJD Alternative would also facilitate implementation of the MTC's *Plan Bay Area* by promoting regional transit and reductions in single occupancy vehicle use.

Accordingly, because the BART Extension with TOJD Alternative would incorporate energy conservation measures and VTA would implement strategies consistent with state and local energy plans and policies, operation of the BART Extension with TOJD Alternative would not lead to a wasteful, inefficient, and unnecessary usage of direct energy.

Energy consumption of the BART Extension with TOJD Alternative under 2015 Existing, 2025 Opening Year, and 2035 Forecast Year conditions is summarized in Table 6.7-2. The BART Extension with TOJD Alternative would increase electricity associated with BART vehicle propulsion and station operations, but would reduce vehicular fuel use through the removal of passenger trips from the transportation network. However, lighting, heating, and cooking at the TOJD would consume electricity and natural gas. Resident, employee, and visitor trips would also use gasoline and diesel, as would delivery and vendor trucks.

Table 6.7-2: Annual Direct and Total Energy Use for the BART Extension with TOJD Alternative (Million BTU)

Condition and Source	Direct Energy[a]	Total Energy[b]
2015 Existing		
BART Electricity	6,388	14,696
TOJD Utilities	274,598	596,810
Change in Vehicular Fuel Use(increased ridership + TOJD traffic)	-145,967	-173,227
Overall Net Change in Energy Consumption (Existing Plus BART Extension with TOJD vs. No Build)	*135,018*	*438,552*
2025 Opening Year		
BART Electricity	6,388	14,969
TOJD Utilities	274,598	596,810
Change in Vehicular Fuel Use(increased ridership + TOJD traffic)	-68,855	-81,205
Overall Net Change in Energy Consumption (Opening Plus BART Extension with TOJD vs. No Build)	*212,131*	*530,575*
2035 Forecast Year		
BART Electricity	6,388	14,969
TOJD Utilities	274,598	596,810
Change in Vehicular Fuel Use (increased ridership + TOJD traffic)	-40,590	-47,174
Overall Net Change in Energy Consumption (Plus BART Extension with TOJD vs. No Build)	*240,396*	*564,605*

[a] Direct energy includes energy required at the point of use.

[b] Total energy includes the energy required to generate/refine and transmit/transport the energy unit to the final point of use.

As shown in Table 6.7-2, increased BART ridership would reduce vehicular fuel consumption through the removal of single-occupancy vehicle trips. This reduction would be sufficient to offset new vehicle trips generated by the TOJD, resulting in a regional vehicular fuel benefit. However, despite this reduction in vehicular fuel use, overall energy consumption for the BART Extension with TOJD Alternative would increase, relative to existing and No Build conditions. This increase is primarily the result of electricity and natural gas consumption by the TOJD.

While the TOJD would increase electricity and natural gas, the BART Extension with TOJD Alternative would incorporate VTA's Sustainability Program green strategies, which would help conserve energy. The TOJD would also be constructed consistent with the conservation requirements of the CALGreen Code and Title 24 standards. As shown in Table 6.7-3, per-service population (persons + employment) energy consumption (electricity and natural gas) associated with the TOJD would be below the average Santa Clara County per-service population BTU. Therefore, the TOJD would result in more efficient and lower consumption of energy resources (on a per-service population) than existing development.

Table 6.7-3: TOJD Per-Service Population Energy Consumption Compared with Santa Clara County Average

Source	Million BTU[a]	Service Population	Million BTU/ Service Population
TOJD	274,598	10,841	25
Santa Clara County (2010)	100,070,268	3,144,980[b]	32

Notes:
[a] Direct energy consumption of electricity and natural gas
[b] Based on the U.S. Census Bureau, 2006–2010 American Community Survey and Bay Area Census (MTC-ABAG n.d.)
BTU = British thermal unit

The BART Extension with TOJD Alternative would facilitate implementation of MTC's *Plan Bay Area* and long-term sustainable land use strategy. The BART Extension with TOJD Alternative would increase transit opportunities and provide an alternative to single-occupancy vehicle trips. The TOJD would promote mobility and connectivity through mixed-use design, as well as configure development with higher densities and site design policies to minimize automobile use. This is consistent with AB 2076, which strives to reduce dependency on petroleum demand. Residential and commercial land uses associated with the TOJD would also be constructed consistent with Title 24. Accordingly, because the BART Extension with TOJD Alternative would be consistent with state and local energy policies enacted to reduce energy consumption, and the TOJD would result in lower per-service population energy consumption than the current Santa Clara County average, the BART Extension with TOJD Alternative would not result in a wasteful, inefficient, and unnecessary usage of energy. This impact would be *less than significant*. No mitigation is required.

Impact BART Extension + TOJD ENG-2: Require substantial local or regional energy supplies

As discussed in Chapter 4, Section 4.7.4.2, BART would procure and PG&E would distribute electricity to the BART Extension through 115-kilovolt alternating current lines. Electricity consumption would be highest during peak periods (3:00 to 7:00 p.m.) and would be on the order of 11 megawatts, which is approximately 0.018 percent of historic (2011) peak demand (California Energy Commission 2015). The degree to which VTA is able to conserve energy and generate renewable power through implementation of the strategies described above will dictate the BART Extension with TOJD Alternative's demand on PG&E's system.

PG&E would also distribute electricity and natural gas to the TOJD. Electricity and natural gas consumption would also be highest during peak periods (3:00 to 7:00 p.m.), with electricity demand greatest during the summer months and natural gas demand greatest during the winter months. The degree to which VTA is able to conserve energy and generate renewable power through implementation of the strategies described above would dictate its demand on PG&E's system.

PG&E uses local and regional development plans to forecast and plan for the energy needs of its service territory. This dynamic process is subject to regulatory oversight by the PUC, where every 2 years in Long Term Procurement Plan proceedings, the PUC assesses the system and local resource needs of the state's three investor-owned utilities over a 10-year horizon. The PUC establishes upfront standards for utility procurement activities and cost recovery by reviewing and approving proposed procurement plans prior to their implementation. Integral to this process is the utility demand forecast, which is subject to review by CEC. As part of this process, BART's 20-year load forecast, which includes extension loads, is submitted to PG&E for long-term planning. To ensure consistency with approved plans, the PUC conducts annual Energy Resource Recovery Account proceedings in which energy forecasts are refined based on existing procurement. This continual planning process ensures that local utilities will accommodate the current and planned energy requirements for a region. Consequently, it is anticipated that the BART Extension with TOJD Alternative would have a *less-than-significant* impact on local and regional energy supplies and peak loads. No mitigation is required.

6.7.6 CEQA Conclusion

Implementation of the CALGreen Code, Title 24 standards, and VTA's Sustainability Program green strategies would ensure that the BART Extension Alternative and the BART Extension with TOJD Alternative are consistent with state and local energy plans and policies to reduce energy consumption. Peak energy demand would not impede PG&E's ability to meet regional loads, and ongoing utility and system planning processes would be employed to accommodate increases in future energy consumption. Accordingly, the BART Extension Alternative and the BART Extension with TOJD Alternative would have a *less-than-significant* impact under CEQA. No mitigation is required.

6.8 Geology, Soils, and Seismicity

6.8.1 Introduction

This section discusses the regulatory setting regarding geology, soils, and seismicity, and it describes impacts under CEQA that would result from construction and operation of the CEQA Alternatives.

6.8.2 Regulatory Setting

6.8.2.1 State

Alquist-Priolo Earthquake Fault Zoning Act

The primary purpose of the Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act; Public Resources Code Sections 2621–2630) is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The law requires the state geologist to establish regulatory zones (known as Earthquake Fault Zones or Alquist-Priolo Zones) around the surface traces of active faults and issue locational maps to all affected cities, counties, and state agencies for their use in safe construction. Before a project may be permitted in an Earthquake Fault Zone, a geologic investigation is required to demonstrate that proposed buildings would not be constructed across active faults. An evaluation and written report of a specific site must be prepared by a licensed geologist. A structure for human occupancy must be set back from the surface trace of an active fault, generally by 50 feet (California Department of Conservation 2015a). The act addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards.

Seismic Hazards Mapping Act of 1990

The California Seismic Hazards Mapping Act of 1990 (Public Resources Code Sections 2690 et seq.) addresses earthquake hazards other than surface fault rupture, including liquefaction and seismically induced landslides. The state establishes city, county, and state agency responsibilities for identifying and mapping seismic hazard zones and mitigating seismic hazards to protect public health and safety. The act requires the California Department of Conservation, Division of Mines and Geology, to map seismic hazards and establishes specific criteria for project approval that apply within seismic hazard zones, including the requirement for a geological technical report.

California Building Code

The California Code of Regulations, Title 24 (California Building Code) applies to all structures for which building permits are required. The California Building Code (also called the California Building Standards Code) has incorporated the International Building Code,

which is updated approximately every 3 years. The current version of the California Building Code (2013) became effective on January 1, 2014.

Local agencies must ensure that development in their jurisdictions complies with the California Building Code. Cities and counties can, however, adopt building standards more stringent those provided in the code.

6.8.2.2 Local

City of San Jose General Plan Hazards Chapter

The *Envision San Jose 2040 General Plan* (City of San Jose 2011) provides the following soil and geology goal and policy to minimize risk through design and mitigation. Geotechnical studies are required for the development of proposals.

> **Soils and Geologic Conditions Goal: Protect the community from the hazards of soil erosion, soil contamination, weak and expansive soils and geologic instability.**
>
> Soils and Geologic Conditions Policy 6 – Development in areas subject to soils and geologic hazards should incorporate adequate mitigation measures.

City of Santa Clara General Plan and Building Code

The *City of Santa Clara 2010–2035 General Plan* (City of Santa Clara 2010) recognizes seismic hazards and provides policies to address safety as it relates to earthquake activity and geologic conditions. The general plan includes the following policies with respect to seismic hazards.

> Policy 5.10.5-P5 regulates development, including remodeling or structural rehabilitation, to ensure adequate mitigation of safety hazards, including flooding, seismic, erosion, liquefaction and subsidence dangers.
>
> Policy 5.10.5-P6 requires that new development is designed to meet current safety standards and implement appropriate building codes to reduce risks associated with geologic conditions.
>
> Policy 5.10.5-P7 requires implementation of all recommendations and design solutions identified in project soils reports to reduce potential adverse effects associated with unstable soils or seismic hazards.

In addition, the City of Santa Clara has adopted the California Building Code with local amendments. The City Building Code includes provisions to address appropriate design and construction in seismically active areas. It also includes provisions to ensure that the foundation and building design are appropriate to site soil conditions.

6.8.3 CEQA Methods of Analysis

This section describes the potential geologic, soils, and seismic impacts that could result from implementation of the BART Extension or BART Extension with transit-oriented development (TOJD), as well as mitigation measures to reduce such impacts. The analysis in this section is based on VTA's *BART Silicon Valley—Phase II Extension Project Geotechnical Memorandum* prepared by PARIKH Consultants, Inc. in February 2014. Because geologic conditions do not change over the course of a few years, the setting and

conclusions stated in the 2014 report are still considered valid for the purposes of this SEIS/SEIR.

6.8.4 CEQA Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, a project would have a significant impact if it would result in any of the conditions listed below.

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: (1) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault; (2) strong seismic ground shaking; (3) seismic-related ground failure, including liquefaction; and (4) landslides.
- Result in substantial soil erosion or the loss of topsoil.
- Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse.
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.
- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
- Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

6.8.5 Environmental Consequences and Mitigation Measures

This section identifies the impacts under CEQA relating to geology, soils, and seismicity and mitigation measures necessary to reduce the level of potentially significant impacts.

6.8.5.1 No Build Alternative

The No Build Alternative consists of the existing transit and roadway networks and planned and programmed transportation improvements (see Chapter 2, Section 2.2.1, *NEPA No Build Alternative*, for a list of these projects) and other land development projects planned by the Cities of San Jose and Santa Clara.

The No Build Alternative projects could result in effects on geology, soils, and seismicity typically associated with transit, highway, bicycle, and pedestrian facilities, and roadway

projects, as well as land development projects. Structures associated with these projects would be designed in accordance with seismic design standards in the California Building Code.

All individual projects planned under the No Build Alternative would undergo separate environmental review to identify effects on geology, soils, and seismicity. Review would include an analysis of impacts and identification of mitigation measures to reduce potential impacts.

6.8.5.2 BART Extension Alternative

Impact BART Extension GEO-1: Expose people or structures to potential seismic hazards

Potential hazards in the alignment are surface fault rupture, ground shaking, and liquefaction. This section analyzes the potential of these geologic phenomena to affect the BART Extension.

Fault Rupture

Construction

The BART Extension is not within an Earthquake Fault Zone as defined by the Alquist-Priolo Act. The Silver Creek Fault, which is a potentially active fault, runs northwest to southeast and lies within the alignment between the proposed Downtown San Jose (East and West Options) and Alum Rock/28th Street Stations.

Although there may be potential for fault rupture impacts along the Silver Creek Fault near Alum Rock/28th Street Station, the BART Extension would be constructed to comply with the California Building Code and the pertinent BART Facilities Standards. The California Building Code and the BART Facilities Standards provide standards intended to permit structures to withstand seismic hazards. They include standards for excavation, grading, construction earthwork, fill embankments, expansive soils, foundation investigations, liquefaction potential, and soil strength loss. Therefore, impacts related to fault rupture would be *less than significant*. No mitigation is required.

Operation

As described above, a potentially active fault lies within portions of the alignment. However, the BART Extension would be designed and constructed in accordance with California Building Code and the pertinent BART Facilities Standards requirements that would ensure that all facilities are constructed to withstand the maximum credible earthquake. Therefore, during operation of the BART Extension, persons or property would not be exposed to potential seismic hazards related to fault rupture, and impacts would be *less than significant*. No mitigation is required.

Ground Shaking

Construction

The BART Extension would be in a seismically active region surrounded by numerous faults. The San Andreas, Hayward, and Calaveras Faults have the greatest potential to release earthquakes that produce strong ground shaking along the alignment. The potential for strong ground shaking to occur along the alignment is moderate to high. The proximity of the faults mentioned above and other nearby active faults, such as Silver Creek Fault, which are capable of generating large magnitude earthquakes means that strong ground shaking would eventually subject the alignment and structures to strong seismic accelerations. Structures could be damaged or destroyed and people could be harmed during a major seismic event originating on any of the nearby faults.

The BART Extension would be designed and constructed to meet or exceed standards set forth by the California Building Code and the pertinent BART Facilities Standards, Release 1.2. These codes and standards are designed to reduce major structural damage and avoid major injury and loss of life in the event of an earthquake. The seismic performance goals generally expect that some property damage would be incurred in a moderate to large earthquake, but that damage would generally be reparable and not life threatening. Because the BART Extension would comply with California Building Code requirements and the pertinent BART Facilities Standards, Release 1.2, impacts related to strong seismic shaking during construction would be *less than significant*. No mitigation is required.

Operation

As described above, the alignment would be in a seismically active region and near several active faults. However, the BART Extension would be designed and constructed in accordance with California Building Code requirements and pertinent BART Facilities Standards, Release 1.2, which would ensure that all facilities are constructed to withstand strong seismic shaking. Therefore, during operation of the BART Extension, persons or property would not be exposed to potential seismic hazards related to ground shaking, and impacts would be *less than significant*. No mitigation is required.

Ground Failure Including Liquefaction

Construction

All of the stations and the Newhall Maintenance Facility would be in areas with moderate liquefaction potential. Approximately 100 and 700 feet northeast of Diridon Station (South and North Options), the alignment would cross two approximately 100-foot-wide stream channels (Los Gatos Creek and Guadalupe River, respectively), where the liquefaction potential is characterized as being very high. The approximately 500-foot-long segment of the alignment near Diridon Station (South and North Options) between the two stream channels is rated as having moderate liquefaction potential. Liquefaction potential is moderate to high and may damage project facilities along the alignment and in station areas.

The BART Extension would be designed and constructed to meet or exceed standards set forth by the California Building Code and the pertinent BART Facilities Standards. The BART Extension would also be designed and constructed using the site-specific measures provided in Mitigation Measure GEO-CNST-A (see Chapter 5, Section 5.5.9, *Geology, Soils, and Seismicity*). Because the BART Extension would comply with California Building Code requirements and pertinent BART Facilities Standards and VTA would implement Mitigation Measure GEO-CNST-A, impacts as a result of liquefaction would be *less than significant*.

Operation

As described above, portions of the alignment would be in areas with soils having moderate or very high liquefaction potential. However, the BART Extension would be designed and constructed in accordance with California Building Code requirements and the pertinent BART Facilities Standards, as well as site-specific mitigation measures prescribed in Mitigation Measure GEO-CNST-A. Therefore, during operation of the BART Extension, persons or property would not be exposed to potential seismic hazards related to ground failure including liquefaction, and impacts would be *less than significant* after mitigation.

Landslides

Construction and Operation

The alignment would be on nearly flat terrain and is not identified as being susceptible to earthquake-induced landslides. There would be *no impact* from potential landslides.

Impact BART Extension GEO-2: Cause soil erosion

Construction and Operation

Construction activities associated with the BART Extension could exacerbate erosion conditions by exposing soils. Additionally, the creation of new impervious surfaces that would generate runoff, along with landscaping irrigation, would add water to the soil during BART Extension operation. However, the BART Extension would be required to include best management practices (BMPs) stipulated in the Stormwater Pollution Prevention Plan in accordance with the state Stormwater National Pollutant Discharge Elimination System (NPDES) Construction General Permit. BMPs employed during construction would include sediment and erosion control measures to prevent pollutants from leaving the site. In addition, post-construction BMPs such as bioswales and raingardens and using soil-water separators and other filters would be incorporated into the design to filter out sediment and other pollutants from runoff and prevent it from being discharged into nearby drainages. Please see Section 6.15, *Water Resources, Water Quality, and Floodplains*, for details.

Additionally, VTA would implement a Phase II Small Municipal Separate Storm Sewer System as part of the NPDES project-specific control measures to reduce the discharge of stormwater pollutants to the maximum extent practicable. Therefore, both potential

short-term construction and long-term operational impacts related to soil erosion would be *less than significant*. No mitigation is required.

Impact BART Extension GEO-3: Be located on a geologic unit that is unstable or that would become unstable

Surface Settlement and Lateral Ground Movement

Construction and Operation

During preliminary engineering, additional analyses were conducted regarding the potential for surface settlements and lateral ground movements during construction of the tunnel and cut-and-cover stations. The purpose of these analyses was to assess the magnitude and likelihood of settlement and ground movement, physical damage to structures or utilities caused by potential settlement or ground movement, and functional significant impacts related to any physical damage on performance of structures or utilities that may be caused by tunnel boring and cut-and-cover construction. The analyses also recommended appropriate mitigation measures.

Along the tunnel alignment, the maximum surface settlement induced during tunnel boring under the Twin-Bore or Single-Bore Options is predicted to be in a range categorized as between negligible and slight. Minor cracking that can easily be patched, and sticking windows or doors, would characterize slight damage. For the Twin-Bore Option, any settlement would be distributed in a trough running parallel to and centered over the twin tunnel bores, with the maximum settlement of approximately 0.5 inch occurring at the centerline of the trough between the two bores. Maximum settlement with the Single-Bore Option is 1 inch.

For cut-and-cover construction, surface settlement varies with distance from the excavation, with a maximum being at the face of the excavation wall to zero at the *limit of influence*, a horizontal distance around the excavation equal to twice the depth of excavation. The maximum surface settlement adjacent to the open cut excavations during construction is predicted to be approximately 1.4 inches. However, the potential for ground settlement during construction is greatly reduced through the use of soil-cement mix or slurry diaphragm walls.

Although surface settlements and ground movements may cause damage to structures, settlement does not necessarily result in damage. Depending on the predicted degree of effect, probability of exceedance, and structural sensitivity to movement, the BART Extension would include ground treatment measures, strengthening of structures, and underpinning of structures on a case-by-case basis prior to tunnel boring or cut-and-cover construction. The BART Extension also would utilize Tunnel Boring Machines to minimize the risk of surface settlements and lateral ground movements. In addition to these design requirements, Mitigation Measures GEO-CNST-B through GEO-CNST-F would be implemented to reduce the magnitude and likelihood of surface settlements and ground

movements, physical damage, or functional effects. The impact would be *less than significant* after mitigation.

Excavation Bottom Stability or Disturbance

Construction and Operation

Soft to medium-stiff clay and loose to medium-dense sand may be encountered at the bottom of excavations for stations. Where these soil conditions occur, excavation bottom instability may result from bottom heave, piping, or blow-out. Bottom heave is typical for excavations in soft clays. Piping may be a concern if the force of the upward flow of water exceeds the buoyant weight of the soil at the excavation bottom. Blow-out is another mode of failure in which a pervious sand layer is located below the clay layer at excavation bottom and is not drained in advance. Blow-out occurs when hydrostatic pressures at the base of the clay layer exceed the shear strength and weight of the clay plug.

If excavation bottom fails due to bottom heave, piping or blow-out, Mitigation Measure GEO-CNST-F would be implemented to reduce impacts to a *less-than-significant* level.

Soft and loose, saturated native soil deposits could be encountered at the excavation bottom. If clay and saturated sand deposits are sufficiently disturbed during construction activities at the bottom of an excavation, the deposits could become soft and loose. Consequently, working conditions at the bottom of the excavation may become difficult and cause the loss of equipment mobility. Adequate measures should be taken to minimize the disturbance of the sensitive deposits at the excavation subgrade. The disturbance of sensitive deposits or the existence of soft or loose ground conditions may be minimized by constructing a working platform as described in Mitigation Measure GEO-CNST-G. With implementation of this mitigation, the impact would be *less than significant*.

Impact BART Extension GEO-4: Be located on expansive soil, creating risks to life or property

Construction

Expansive soils are a concern for the proposed structures for system facilities, parking, and vehicular and pedestrian access at the stations. Some of the soils at station locations and the Newhall Maintenance Facility have high plasticity indices of between 21 and 40, meaning that the soils have moderate to high expansion potential.

The BART Extension would be designed and constructed to meet or exceed standards set forth by the California Building Code, the pertinent BART Facilities Standards and using site-specific mitigation measures described in Mitigation Measure GEO-CNST-H. Because the BART Extension would comply with California Building Code requirements, pertinent BART Facilities Standards and because VTA would implement Mitigation Measure GEO-CNST-H, impacts related to expansive soils would be *less than significant*.

Operation

As described above, portions of the alignment would be in areas with soils having moderate to high expansion potential. However, the BART Extension would be designed and construction in accordance with applicable General Plan policies and California Building Code requirements, pertinent BART Facilities Standards as well as site-specific mitigation measures prescribed in Mitigation Measure GEO-CNST-H. Therefore, during operation of the BART Extension, the existing expansive soils would not create a substantial risk to persons or property, and impacts would be *less than significant*.

Impact BART Extension GEO-5: Reduce availability of a mineral resource

Construction and Operation

The BART Extension would be in areas designated as Mineral Resource Zone (MRZ) 1, which are "areas where adequate information indicates that no significant minerals are present or where it is judged that there is little likelihood exists of their presence" (Surface Mining and Reclamation Act, Public Resources Code Sections 2710–2796). Also, according to the Department of Conservation's Division of Oil, Gas, and Geothermal Resources' Well Finder, there are no active or abandoned oil or gas wells in the alignment (Department of Conservation 2015b). Because no active oil or gas wells or other mineral resource areas have been identified in the alignment, there would be *no impact* on the availability of mineral resources. No mitigation is required.

Impact BART Extension GEO-6: Destroy a unique paleontological resource or unique geologic feature

Construction

The BART Extension would be constructed in areas of San Jose and Santa Clara that have been previously developed. Consequently, any paleontological resource or site or unique geologic feature in these areas would likely have been discovered during previous development. However, because of excavation depths involved in construction of the BART Extension, there is a potential for discovery of previously unknown resources. In the event that construction activities encounter a unique paleontological resource or unique geologic feature, implementation of Mitigation Measure GEO-CNST-I would reduce potential impacts to a *less-than-significant* level.

Operation

There would be *no impacts* on paleontological resources during BART Extension operation. No mitigation is required.

6.8.5.3 BART Extension with TOJD Alternative

Impact BART Extension + TOJD GEO-1: Expose people or structures to potential seismic hazards

Potential hazards related to surface fault rupture, ground shaking, and liquefaction under the BART Extension with TOJD Alternative are similar to those discussed under the BART Extension Alternative. Construction and operations impacts related to fault rupture, ground shaking, and landslides under the BART Extension with TOJD Alternative would be *less than significant*, and no mitigation is required.

Ground Failure Including Liquefaction

All of the stations and the Newhall Maintenance Facility would be in areas with moderate liquefaction potential. Approximately 50 and 650 feet northeast of the Diridon Station South Option, and approximately 100 and 700 feet northeast of the Diridon Station North Option, the alignment would cross two approximately 100-foot-wide stream channels (Los Gatos Creek and Guadalupe River, respectively), where the liquefaction potential is characterized as being very high. The approximately 500-foot-long segment of the alignment near Diridon Station (South and North Options) between the two stream channels is rated as having moderate liquefaction potential.

The BART Extension with TOJD Alternative would be designed and constructed to meet or exceed standards set forth by the California Building Code and the pertinent BART Facilities Standards. The BART Extension with TOJD Alternative would also be designed and constructed using the site-specific measures provided in Mitigation Measure GEO-CNST-A. Because the BART Extension with TOJD Alternative would comply with California Building Code requirements and pertinent BART Facilities Standards and VTA would implement Mitigation Measure GEO-CNST-A, construction- and operations-related impacts as a result of liquefaction would be *less than significant*.

Impact BART Extension + TOJD GEO-2: Cause soil erosion

Impacts related to soil erosion under the BART Extension with TOJD Alternative would be similar to those discussed under the BART Extension Alternative. Both potential short-term construction and long-term operational impacts related to soil erosion would be *less than significant*. No mitigation is required.

Impact BART Extension + TOJD GEO-3: Be located on a geologic unit that is unstable or that would become unstable

Impacts and mitigation measures related to surface settlements, ground movements, and excavation bottom stability or disturbance under the BART Extension with TOJD Alternative would be similar to those described under the BART Extension Alternative. Implementation of Mitigation Measures GEO-CNST-B through GEO-CNST-G would reduce impacts to *less-than-significant* levels.

Impact BART Extension + TOJD GEO-4: Be located on expansive soil, creating risks to life or property

Construction and operations impacts and mitigation measures related to expansive soil under the BART Extension with TOJD Alternative would be similar to those described under the BART Extension Alternative. Implementation of Mitigation Measure GEO-CNST-H would reduce these impacts to *less-than-significant* levels.

Impact BART Extension + TOJD GEO-5: Reduce availability of a mineral resource

As under the BART Extension Alternative, there would be *no impact* on the availability of mineral resources under the BART Extension with TOJD Alternative. No mitigation is required.

Impact BART Extension + TOJD GEO-6: Destroy a unique paleontological resource or unique geologic feature

As discussed under the BART Extension Alternative, construction impacts related to paleontological resources and unique geologic features under the BART Extension with TOJD Alternative would be *less-than-significant* with implementation of Mitigation Measure GEO-CNST-I. There would be *no operational impact* related to paleontological resources and unique geologic features under the BART Extension with TOJD Alternative, and no mitigation is required.

6.8.6 CEQA Conclusion

Implementation of Mitigation Measures GEO-CNST-A through GEO-CNST-I and adherence to both the California Building Code requirements and pertinent BART Facilities Standards would minimize the potential effects related to liquefaction, expansive soils, surface settlement and lateral ground movement, and excavation bottom failure or disturbance, along with potential impacts on paleontological resources or geologic features, to *less-than-significant* levels for the BART Extension Alternative and the BART Extension with TOJD Alternative.

For the BART Extension Alternative and the BART Extension with TOJD Alternative, potential impacts related to fault rupture, ground shaking, and erosion would be *less than significant* with adherence to California Building Code requirements and pertinent BART Facilities Standards.

No significant secondary impacts due to implementation of mitigation measures would occur. Mitigation Measure GEO-CNST-E requires surveys that could result in temporary short-term disruption of utility service. However, prior notification will be provided to utility providers. Any water from dewatering activities required under Mitigation Measure GEO-CNST-F would be treated as necessary.

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6.9 Greenhouse Gas Emissions and Climate Change

6.9.1 Introduction

This section discusses existing conditions and the regulatory setting regarding greenhouse gas (GHG) emissions, and it describes impacts under CEQA that would result from construction and operation of the CEQA Alternatives.

6.9.2 Existing Conditions and Regulatory Setting

6.9.2.1 Affected Environment

The term *GHG emissions* refers to a group of emissions that are generally believed to affect global climate conditions. The greenhouse effect compares Earth and the atmosphere surrounding it to a greenhouse with glass panes. The glass panes in a greenhouse let heat from sunlight in and reduce the amount of heat that escapes. GHGs, such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), keep the average surface temperature of Earth close to 60 degrees Fahrenheit (°F).

GHGs also include hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and water vapor. CO_2 is the most abundant pollutant that contributes to climate change through fossil fuel combustion. The other GHGs are less abundant but have higher global warming potential than CO_2. To account for this higher potential, emissions of other GHGs are frequently expressed in the equivalent mass of CO_2, denoted as CO_2e.

Long-term and irrevocable shifts in weather, including temperature, precipitation, and seasonal patterns, are referred to as *climate change*. According to the Intergovernmental Panel on Climate Change's *Fourth Assessment Report*, climate change caused by GHG emissions is anticipated to result in sea level rise, climate-related hazards, extinction of species, reduced food production, exacerbated health problems, slower economic growth, and displacement of people. According to a study by the Union of Concerned Scientists and Ecological Society of America, some of the possible effects of climate change in the Bay Area are as follows.

- Sea-level rise may threaten coastal wetlands, infrastructure, and property.
- Increased storm activity together with sea-level rise could increase beach erosion and cliff undercutting.
- Warmer temperatures and more frequent storms due to El Niño will bring more rain instead of snow to the Sierras, reducing supply of water for summer needs.
- Decreased summer runoff and warming ocean temperatures will affect salinity, water circulation, and nutrients in the Bay, possibly leading to complex changes in marine life.

6.9.2.2 Regulatory Setting

State

California has adopted a variety of statewide legislation to address various aspects of climate change and GHG emissions mitigation. Much of this legislation is not directed at citizens or jurisdictions specifically; rather, it establishes a broad framework for the state's long-term GHG reduction and climate change adaptation program. The governor has also issued several executive orders related to the state's evolving climate change policy. Below is a summary of GHG legislation applicable to the project.

- **Senate Bill (SB) 97:** SB 97 required that the California Natural Resources Agency coordinate on the preparation of amendments to the CEQA Guidelines regarding feasible mitigation of GHG emissions or the effects of GHG emissions. Pursuant to SB 97, the California Natural Resources Agency adopted State CEQA Guidelines amendments on December 30, 2009 and transmitted the Adopted Amendments and the entire rulemaking file to the Office of Administrative Law on December 31, 2009. The amendments were approved by the Office of Administrative Law on February 16, 2010, and became effective on March 18, 2010.
- **Assembly Bill (AB) 32:** Requires the California Air Resources Board (ARB) to develop and enforce regulations for the reporting and verification of statewide GHG emissions, and directs ARB to set a GHG emission limit, based on 1990 levels, to be achieved by 2020. The bill set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner. On December 11, 2008, ARB adopted the AB 32 Scoping Plan, which sets forth the framework for facilitating the state's goal of reducing GHG emissions to 1990 levels by 2020. The First Update of the AB 32 Scoping Plan was adopted on May 22, 2014. At this writing, ARB is drafting the next update of the Scoping Plan. The Second Update is expected to include strategies to meet a 2030 GHG reduction goal of 40 percent below 1990 levels (the goal set out in EO B-30-15, described below). Neither AB 32 nor the updated AB 32 Scoping Plan establish regulations implementing, for specific projects, the Legislature's statewide goals for reducing GHGs (*Center for Biological Diversity v. California Department of Fish and Game* (2015) 62 CAl.4th 204, 259).

  The AB 32 Scoping Plan outlines a series of technologically feasible and cost-effective measures to reduce statewide GHG emissions, including expanding energy efficiency programs, increasing electricity production from renewable resources (at least 33 percent of the statewide electricity mix), increasing automobile efficiency, implementing the Low-Carbon Fuel Standard, and developing a cap-and-trade program. The vast majority of the project's GHG emissions would result from mobile sources and energy. Multiple AB 32 Scoping Plan measures address GHG emissions from transportation fuels and energy. For example, the cap-and-trade program, through the regulation of upstream electricity producers and fuel suppliers, will account for GHG emissions from the project

and will require emissions from covered sectors to be reduced by the amount needed to achieve AB 32's 2020 goal.

Likewise, the Low-Carbon Fuel Standard requires a 10 percent reduction in the carbon intensity of transportation fuels by 2020 and therefore creates incentives for broader-scale deployment of alternative vehicle fuels as well as electricity. Similarly, the state's Renewables Portfolio Standard mandates that state utilities dramatically increase (to 33 percent by 2020) the percentage of electricity sales that are generated by eligible renewable generation sources. Together, these elements of the AB 32 Scoping Plan will ensure that overall statewide emissions will be decreased to the extent necessary to achieve AB 32's emissions reduction goals. At the time the California Natural Resources Agency promulgated State CEQA Guidelines Section 15064.4, the agency explained that the AB 32 Scoping Plan "may not be appropriate for use in determining the significance of individual projects . . . because it is conceptual at this state and relies of the future development of regulations to implement and the strategies identified in the Scoping Plan" (California Natural Resources Agency 2009:26–27).

- **Assembly Bill 1493:** AB 1493 requires the development and adoption of regulations to achieve "the maximum feasible reduction of greenhouse gases" emitted by noncommercial passenger vehicles, light-duty trucks, and other vehicles used primarily for personal transportation in the state. In 2009, ARB adopted amendments to the AB 1493 regulations that reduce GHG emissions in new passenger vehicles from 2009 through 2016. These amendments are part of California's commitment toward a nationwide program to reduce new passenger vehicle GHGs from 2012 through 2016. The goal is to increase average fuel economy to roughly 43 miles per gallon by 2020 and reduce GHG emissions from the transportation sector by approximately 14 percent.
- **Senate Bill 375:** SB 375 was enacted to reduce GHG emissions from automobiles and light trucks through integrated transportation, land use, housing and environmental planning. Under the law, Metropolitan Planning Organizations are tasked with incorporating Sustainable Communities Strategies (SCS) as an element in Regional Transportation Plans (RTP). The SCS documents are intended to:
    - Identify the general location of uses, residential densities, and building intensities within the region.
    - Identify areas within the region sufficient to house all the population of the region, including all economic segments of the population, over the course of the planning period of the RTP, taking into account net migration into the region, population growth, household formation, and employment growth.
    - Identify areas within the region sufficient to house an 8-year projection of the regional housing need for the region.
    - Identify a transportation network to service the transportation needs of the region.

  - Gather and consider the best practically available scientific information regarding resource areas and farmland in the region.
  - Consider the state housing goals.
  - Set forth a forecasted development pattern for the region, which, when integrated with the transportation network, and other transportation measures and policies, will reduce the GHG emissions from automobiles and light trucks to achieve, if there is a feasible way to do so, the GHG emission reduction targets approved by the state board.
  - Allow the RTP to comply with the federal Clean Air Act.

- **State Cap-and-Trade Program:** This program creates a market-based system with an overall emissions limit for affected sectors, including electric utilities, large industrial facilities, and distributors of transportation, natural gas, and other fuels.
- **Senate Bills 1078/107/X 1-2, Renewables Portfolio Standard and Renewable Energy Resources Act**: SB 1078 and 107, California's Renewables Portfolio Standard, obligated investor-owned energy service providers and Community Choice Aggregations to procure an additional 1 percent of retail sales per year from eligible renewable sources until 20 percent was reached (by 2010). The California Public Utilities Commission and California Energy Commission are jointly responsible for implementing the program. SB X 1-2, called the California Renewable Energy Resources Act, obligates all California electricity providers to obtain at least 33 percent of their energy from renewable resources by 2020.
- **Executive Order (EO) S-01-07:** This EO established a Low-Carbon Fuel Standard and directed the Secretary of the California Environmental Protection Agency (Cal/EPA) to develop and propose protocols for measuring the life-cycle carbon intensity of transportation fuels.
- **Executive Order S-3-05:** This EO established state GHG emission targets of 1990 levels by 2020 (the same as AB 32, enacted later and discussed below) and 80 percent below 1990 levels by 2050. It calls for the Secretary of Cal/EPA to be responsible for coordination of state agencies and progress reporting. In response to the EO, the Secretary of Cal/EPA created the Climate Action Team, which originated as a coordinating council organized by the Secretary of Cal/EPA.
- **Executive Order B-30-15, Brown**: EO B-30-15 established a medium-term goal for 2030 of reducing GHG emissions by 40 percent below 1990 levels and required ARB to update its current AB 32 Scoping Plan to identify the measures to meet the 2030 target. The EO supports EO S-3-05, described above, but is currently binding only on state agencies.
- **State CEQA Guidelines Section 15064.4**: Requires that, in performing environmental review under CEQA, an agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate, or estimate the amount of

GHG emissions resulting from a project. The lead agency has discretion to determine whether to use a model or methodology to quantify GHG emissions, and which model or methodology to use, or rely on a qualitative analysis or performance-based standards. The lead agency should consider the following factors, among others, when assessing the significance of impacts from GHG emissions on the environment.

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

- **California Green Building Standards Code and Title 24**: In January 2010, the California Building Standards Commission adopted the statewide mandatory Green Building Standards Code (CALGreen [California Code of Regulations, Title 24, Part 11]). The code was updated in 2013 to require additional energy savings. CALGreen applies to the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure.

Regional

Metropolitan Transportation Commission

The Metropolitan Transportation Commission (MTC) is the transportation planning agency for the Bay Area. MTC is responsible for preparing the RTP and blueprints for mass transit as well as highway, airport, seaport, railroad, bicycle, and pedestrian facilities. It also screens requests from local agencies for state and federal grants for transportation projects. Adopted in June 2013, the most recent edition of the RTP is *Plan Bay Area*, which incorporates the SCS mandated by SB 375. *Plan Bay Area* provides a long-range framework to minimize transportation impacts on the environment, improve regional air quality, protect natural resources, and reduce GHG emissions by encouraging new development to locate near transit rather than areas poorly served or not served by transit.

Plan Bay Area has been approved by ARB as meeting target reductions in GHG emissions from cars and light trucks. The mechanism for achieving these reductions is an SCS that promotes compact, mixed-use commercial and residential development that is walkable and bike-able and close to mass transit, jobs, schools, shopping, parks, recreation, and other

amenities. *Plan Bay Area* contains goals, policies, and objectives that encourage more transportation choices, more livable communities, and reduction in the GHG emissions that contribute to climate change.

Local

City of San Jose

The San Jose General Plan does not include a specific goal related to GHG emissions but does identify the several policies and actions that will contribute to GHG reductions. For example, Policy H-4.2 seeks to maintain and periodically update the Zero Waste Strategic Plan to establish criteria and strategies for achieving zero waste, including reducing GHG emissions. Policy TR-1.8 requires actively coordinating with regional transportation, land use planning, and transit agencies to develop a transportation network with complementary land uses that encourage travel by bicycling, walking, and transit, and ensure that regional greenhouse gas emission standards are met. Other air quality and energy policies and actions will contribute to GHG reductions.

The City of San Jose has adopted a GHG Reduction Strategy in conjunction with the recently adopted *Envision San Jose 2040 General Plan Update*, consistent with the implementation requirements of AB 32. The strategy was adopted by the City Council as an extension of the Envision Plan on November 1, 2011. The purposes of the GHG Reduction Strategy are to achieve the following.

- Capture and consolidate GHG reduction efforts already underway by the City of San Jose.
- Distill policy direction on GHG reduction from the *Envision San Jose 2040 General Plan Update*.
- Quantify GHG reductions that should result from land use changes incorporated in the Envision General Plan Land Use diagram.
- Create a framework for the ongoing monitoring and revision of this GHG Reduction Strategy.
- Achieve general plan–level environmental clearance for future development activities (through 2020) occurring within the City of San Jose.

City of Santa Clara

The City of Santa Clara General Plan includes the following policy intended to reduce GHG emissions.

- **Air Quality Policy 5.10.2-4:** Encourage measures to reduce greenhouse gas emissions to reach 30 percent below 1990 levels by 2020.

The City of Santa Clara adopted a Climate Action Plan (CAP) in December 2013. The CAP outlines the City's efforts to reduce GHG emissions consistent with the Bay Area Air Quality

Management District's (BAAQMD's) *CEQA Guidelines* and larger statewide GHG reduction goals. The CAP estimates current (2008) and future (2020 and 2035) GHG emissions generated by community activities and sets a GHG reduction goal of 15 percent below 2008 emissions levels by 2020. Measures to achieve this target are identified and focus on energy efficiency, renewable energy, water conservation, waste reduction, off-road equipment, and transportation and land use. The CAP is incorporated as part of the City's General Plan.

6.9.3 CEQA Methods of Analysis

6.9.3.1 Construction

Emissions generated by construction of the BART facilities were estimated using a spreadsheet methodology and emission factors and emission rates obtained from ARB's EMFAC2014 and California Emissions Estimator Model (CalEEMod), version 2013.2.2. It was assumed that 20 pieces of heavy-duty construction equipment would be operating simultaneously 16 hours a day along the alignment. The equipment could be spread throughout the length of the alignment to do the construction work. Offsite emissions associated with the Twin-Bore and Single-Bore Options' tunnel hauling trips were accounted for and based on the estimated total number of truck trips. Construction emissions for VTA's transit-oriented joint development (TOJD) were estimated using CalEEMod. Inputs to the model include each land use type and size, in terms of building area, and the number of dwelling units. Details of the direct and indirect emissions analysis, including calculation sheets and assumptions used for the CalEEMod runs, are provided in *VTA's BART Silicon Valley—Phase II Extension Project Air Quality Study*. (Terry A. Hayes 2017~~6~~) included as a technical report with this SEIS/SEIR.

6.9.3.2 Operation

Operational emissions associated with the BART Extension have been estimated related to changes to regional vehicle miles traveled (VMT)[1] and electricity production to support BART facilities. Because BART provides an alternative to vehicle trips, it would contribute to a decrease in regional emissions from reductions in personal vehicle use (also known as *mode shift*). The America Public Transportation Association (2009) recommends that GHG analyses for transit projects account for this emissions credit associated with avoided car trips through mode shift. Consistent with America Public Transportation Association recommendations, VTA has used this methodology for other transit projects (i.e., Phase I Project) throughout the region.

Mobile source direct and indirect emissions from changes in regional VMT were estimated using ARB's emissions model (EMFAC2014; California Air Resources Board 2015) and daily VMT data obtained from *VTA's BART Silicon Valley—Phase II Extension Project*

[1] Refer to the *Transportation* chapters and sections throughout this document for detailed description of the methodology used to estimate VMT and the resulting VMT for each alternative.

Transportation Impact Analysis of the BART Extension Only and *VTA's BART Silicon Valley—Phase II Extension Project Transportation Impact Analysis of the BART Extension and VTA's Transit-Oriented Joint Development* by Hexagon Transportation Consultants, Inc. (2017~~6~~a and 2017~~6~~b, respectively). The VMT data were provided in 5-mile-per-hour (mph) speed bins (or ranges) for the 2015 Existing, 2025 Opening Year, and 2035 Forecast Year under the with- and without-BART Extension scenarios. Mobile source emissions were estimated using grams per mile emission rates by speed obtained from the ARB EMFAC2014 model.

GHG emissions to support BART electricity consumption associated with traction, station lighting, and station auxiliary power have been quantified using a power consumption rate of 0.00267 megawatt-hour per BART VMT per day. To calculate total daily power consumption, the above power consumption rate was multiplied by the total length of the BART Extension and the total number of train departures/arrivals in a day. It is assumed that there would be 6-minute headways between 6:00 a.m. and 7:30 p.m. and 20-minute headways between 4:00 a.m. and 6:00 a.m. and between 7:30 p.m. and 1:30 a.m., resulting in 13.5 hourly train trips. The stations and related facilities built as part of the BART Extension would also use electric power. This other energy requirement was calculated on a percentage basis. About 25 percent of BART's existing power requirements are for station and facilities operations, with the other 75 percent for vehicle propulsion. It was assumed that this relationship would apply to the BART Extension, as well. Based on data obtained from the air quality analysts, annual electricity consumption for vehicle propulsion along the BART Extension would be 1.4 million kilowatt-hours. Additional electricity consumed by other facilities was therefore estimated to be about 468,000 kilowatt-hours per year. The electricity intensity factors were obtained from the CalEEMod and used to calculate CO_2 emissions associated with the production of electricity consumed by operation of the BART Extension (California Air Pollution Control Officers Association 2013).

TOJD operational emissions were estimated using CalEEMod default assumptions for the proposed land use types. Inputs to the model include each land use type and size, in terms of building area; the number of dwelling units; and the vehicle trip generation for each land use. Mobile-source emissions for the TOJDs were estimated using trip generation rates provided by Hexagon Transportation Consultants, Inc. (2015~~5~~7b).

The GHG analysis for the TOJDs relies on the service population (residents plus employees). Estimates for residents were based on rates available in CalEEMod for multi-family residences. The utilized population rate was 2.86 people per dwelling unit. The employee rates for retail and office use were 400 and 225 employees per 1,000 square feet, respectively. The assumptions resulted in a service population of 10,841 persons.

6.9.4 CEQA Thresholds of Significance

State CEQA Guidelines Appendix G identifies the following significance criteria to be considered for determining whether a project could have significant GHG impacts.

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

BAAQMD has not recommended a quantitative threshold for the evaluation of construction-related GHG emissions. The significance of construction GHG emissions is evaluated by determining whether a project is consistent with AB 32 GHG reduction goals (BAAQMD 2010). BAAQMD also recommends that lead agencies incorporate best management practices to reduce GHG emissions during construction.

With respect to operational emissions, BAAQMD has not recommended a significance threshold for transit projects that include TOJDs. In addition, there is no consensus between state, regional, and local agencies related to addressing potential impacts from transit-related GHG emissions. California air pollution control officials and air quality districts have made several proposals for numerical thresholds. Multiple agencies' efforts at framing GHG significance issues have not yet coalesced into any widely accepted set of numerical significance thresholds for transit projects.

Although BAAQMD has not established a significance threshold for transit projects, significance thresholds have been established for land use developments, such as the TOJDs. BAAQMD's guidelines establish three potential analysis criteria for land use development projects: (1) compliance with a qualified CAP, (2) a mass emissions threshold of 1,100 metric tons (MT) per year of CO_2e, and (3) a GHG efficiency threshold of 4.6 MT CO_2e per service population (project jobs plus projected residents). BAAQMD's thresholds are based on AB 32's requirement to reduce statewide GHG emissions from both existing and new development to 1990 levels by 2020.

The State CEQA Guidelines authorize the lead agency to consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence (State CEQA Guidelines Sections 15064.4(a) and 15064.7(c)). Given that there is no drafted, adopted, or recommended threshold specific to transit projects, and that transit projects are inherently designed to reduce GHG emissions, VTA has established that the proposed project would result in a significant GHG impact if it were to result in an emissions increase above net zero. Because the BART Extension with TOJD Alternative would include TOJD, GHG emissions associated with the TOJDs are also evaluated relative to BAAQMD's 4.6 MT CO_2e per service population threshold. This comparison is done for informational purposes only; the final impact determination is based on the net zero threshold.

Although there is no adopted state plan that addresses GHG emission reduction beyond 2020, long-term goals for 2030 and 2050 have been articulated in EO B-30-15 and EO S-3-05, respectively. There is a bill being considered in the state legislature to adopt an interim

(2030) binding GHG target.[2] To date, however, there are no proposed or adopted significance thresholds for analyzing post-2020 emissions for development projects in California. Nevertheless, given the recent legislative attention on post-2020 goals and scientific evidence that additional GHG reductions are needed through 2050 to stabilize CO_2 concentrations, the Association of Environmental Professionals (AEP) Climate Change Committee recommended in a 2015 white paper that CEQA analyses for projects with post-2020 development not only "consider consistency with the 2020/AB 32 based framework" but also analyze "the consequences of post-2020 GHG emissions in terms of their impacts on the reduction trajectory from 2020 toward 2050." AEP (2015) further recommends that the "significance determination…should be based on consistency with *substantial progress* along a post-2020 trajectory."

Consistent with AEP's recommendation and general scientific understanding that there will be a need for deeper reductions in GHG emissions in the post-2020 period (see further discussion in the AEP white paper referenced in this section), this document maintains the stringent net zero threshold to evaluate long-term operational emissions under design (2035) year conditions. GHG emissions associated with the TOJDs in 2035 are also assessed, for informational purposes, relative to the *substantial progress indicator* based on the 2030 and 2050 reduction targets identified in EO B-30-15 and EO S-3-05, respectively.[3]

Climate change is a global problem, and GHGs are global pollutants, unlike criteria air pollutants (such as ozone precursors), which are primarily pollutants of regional and local concern. Given their long atmospheric lifetimes, GHGs emitted by many sources worldwide accumulate in the atmosphere. No single emitter of GHGs is large enough to trigger global climate change on its own. Rather, climate change is the result of the individual contributions of countless past, present, and future sources. Thus, GHG impacts are inherently cumulative.

6.9.5 Environmental Consequences and Mitigation Measures

This section identifies the impacts related to GHG emissions and climate change under CEQA and the mitigation measures necessary to reduce potentially significant impacts.

6.9.5.1 No Build Alternative

The No Build Alternative consists of the existing transit and roadway networks and planned and programmed transportation improvements (see Chapter 2, Section 2.2.1, *NEPA No Build Alternative,* for a list of these projects) and other land development projects planned by the Cities of San Jose and Santa Clara.

[2] The 2030 target of 40 percent below 1990 levels may be adopted in legislation per the proposed SB 32, which was withdrawn during the 2015 legislative term but is expected to be considered in the 2016 legislative term.

[3] The substantial progress indicator was calculated for 2035 based on the GHG reduction goals established under EO B-30-15 and EO S-3-05 (40 percent reduction below 1990 levels by 2030 and 80 percent reduction below 1990 levels by 2050, taking into account the 1990 emissions levels and the projected 2035 statewide population and employment levels).

The No Build Alternative projects could result in effects on greenhouse gases typically associated with transit, highway, bicycle, and pedestrian facilities, and roadway projects, as well as land development projects.

Under the No Build Alternative, the project would not be built and regional VMT would not be reduced by the BART Extension. Table 6.9-1 shows the comparison between No Build Alternative, BART Extension Alternative, and BART Extension with TOJD Alternative emissions. The net reduction in GHG emissions associated with the BART Extension would not be realized under the No Build Alternative. In addition, the TOJDs would not occur, development of which would be entirely consistent with development goals established in GHG reduction plans.

All individual projects planned under the No Build Alternative would undergo separate environmental review to identify effects on greenhouse gases. Review would include an analysis of impacts and identification of mitigation measures to reduce potential impacts.

6.9.5.2 BART Extension Alternative

Impact BART Extension GHG-1: Generate GHG emissions, either directly or indirectly

Construction

Construction of the BART Extension would generate direct emissions of CO_2, CH_4, and N_2O from mobile and stationary construction equipment exhaust as well as employee and haul truck vehicle exhaust. Indirect emissions would be generated from water use for fugitive dust control. It is estimated that total GHG emissions associated with construction of the BART Extension would be 50,200 and 50,787 MT of CO_2e for the Twin-Bore and Single-Bore Options, respectively. Because construction activity would last 8 years, estimated average annual CO_2e emissions associated with the Twin-Bore and Single-Bore Options would be 6,275 and 6,348 MT of CO_2e, respectively.

BAAQMD's *CEQA Guidelines* do not identify a quantitative GHG emission threshold for construction emissions. Instead, BAAQMD recommends that GHG emissions from construction be quantified and disclosed and that a determination regarding the significance of the GHG emissions be made. Both the implementation of best management practices and a project's consistency with AB 32 GHG emission reduction goals are considered.

Air quality mitigation would require BAAQMD-recommended basic construction mitigation measures (i.e., best management practices), including limiting idling times to 5 minutes or less, limiting vehicle speeds to 15 mph or less, and performing equipment maintenance and tuning in accordance with manufacturer specifications (see Chapter 5, Section 5.4.3, *Air Quality*). These best management practices have been included as Mitigation Measures AQ-CNST-B through AQ-CNST-G, and would reduce GHG emissions from on- and off-road equipment. Moreover, as shown in Table 6.9-1, below, operation of the BART Extension would decrease CO_2e emissions by 22,136 to 42,246 MT per year, depending on

the year of analysis. This decrease is attributable to reduced mobile source emissions from vehicle mode shift.

Operational GHG reductions would offset short-term construction emissions within approximately 2 years of the 2025 Opening Year. In addition, construction GHG emissions would be reduced through the incorporation of Mitigation Measures AQ-CNST-B through AQ-CNST-G (see Chapter 5, Section 5.5.3, *Air Quality*). Compliance with AB 32 GHG reduction goals is discussed below in Impact BART Extension GHG-2. That discussion concludes that the BART Extension would be consistent with AB 32 GHG reduction goals. Accordingly, the BART Extension Alternative would result in a *less-than-significant impact* on construction GHG emissions for both the Twin-Bore and Single-Bore Options. No additional mitigation is required.

Operation

The operational analysis for the BART Extension considers electricity-related emissions from operation of the BART Extension, as well as GHG benefits associated with vehicle mode shift. As discussed above, it is anticipated that the BART Extension would increase ridership, thereby decreasing regional passenger VMT through mode shift from private automobiles to transit. Accounting for GHG emissions reductions associated with mode shift is consistent with recommendations from APTA (2009).

As shown in Table 6.9-1, operation of the BART Extension would increase electricity-related emissions. However, these emissions would be offset by benefits associated with vehicle mode shift. Accordingly, operation of the BART Extension would result in a long-term net reduction in GHG emissions. This impact would be *less than significant* under both 2025 Opening Year and 2035 Forecast Year conditions. No mitigation is required.

Table 6.9-1: Estimated Carbon Dioxide Emissions: BART Extension Alternative

Emissions Source	Carbon Dioxide (Metric Tons per Year)
2015 Existing + BART Extension Condition	
No Build Change in Vehicular Emissions from Increased Ridership	7,907,605
BART Extension Change in Vehicular Emissions from Increased Ridership	7,864,744
BART Electricity-Related Emissions	615
Net Emissions (No Build minus BART Extension)	(-42,246)
2025 Opening Year	
No Build Change in Vehicular Emissions from Increased Ridership	6,154,061
BART Extension Change in Vehicular Emissions from Increased Ridership	6,124,275
BART Electricity-Related Emissions	615
Net Emissions (No Build minus BART Extension)	(-29,171)

Emissions Source	Carbon Dioxide (Metric Tons per Year)
2035 Forecast Year	
No Build Change in Vehicular Emissions from Increased Ridership	5,314,428
BART Extension Change in Vehicular Emissions from Increased Ridership	5,291,677
BART Electricity-Related Emissions	615
Net Emissions (No Build minus BART Extension)	(-22,136)
Analysis Threshold	0
Note: Regional emissions related to VMT were estimated using the EMFAC model. Source: ARB EMFAC2014; CalEEMod version 2013.2.2; TAHA 2015.	

Impact BART Extension GHG-2: Conflict with a plan, policy, or regulation intended to reduce GHG emissions

Three plans relevant to the BART Extension have been adopted for the purposes of reducing GHG emissions: the AB 32 Scoping Plan, the City of San Jose GHG Reduction Strategy, and the City of Santa Clara CAP. Consistency with these three plans is reviewed. In addition, consistency with EO S-03-05 and EO B-30-15 is also considered, although no state or local regulations have been adopted to enforce the EO goals with respect to land use approvals.

Consistency with AB 32 Scoping Plan

The AB 32 Scoping Plan outlines a series of technologically feasible and cost-effective measures to reduce statewide GHG emissions, including expanding energy efficiency programs, increasing electricity production from renewable resources (at least 33 percent of the statewide electricity mix), and increasing automobile efficiency, implementing the Low-Carbon Fuel Standard, and developing a cap-and-trade program.

At the time the California Natural Resources Agency promulgated Guidelines section 15064.4, the agency explained that the AB 32 Scoping Plan "may not be appropriate for use in determining the significance of individual projects . . . because it is conceptual at this state and relies of the future development of regulations to implement and the strategies identified in the Scoping Plan" (California Natural Resources Agency 2009:26–27).

The technologically feasible and cost-effective measures listed in the AB 32 Scoping Plan are designed to be implemented by state agencies. Nevertheless, local governments and private developments can support AB 32 goals through consistent implementation of AB 32 Scoping Plan policies, where applicable. Extension of transit and increased electrified transit are core AB 32 strategies. Accordingly, the BART Extension would support state goals for alternative transportation. Moreover, as shown in Table 6.9-1, the BART Extension would result in a long-term GHG reduction. The BART Extension would therefore have a *less-than-*

significant impact related to consistency with the policies in the AB 32 Scoping Plan. No mitigation is required.

Consistency with the City of San Jose GHG Reduction Strategy and City of Santa Clara Climate Action Plan

The City of San Jose GHG Reduction Strategy states that urban design and land use planning are critical to the success of San Jose's Green Vision. The City aims to promote high-density commercial and residential development near transit or on infill sites. This can be accomplished by increased transit options in the city. Therefore, the discussion of long-term planning in the Green Vision is consistent with the BART Extension.

The City of Santa Clara CAP includes a focus area related to reducing VMT for the service population (i.e., residents and employees). The BART Extension would increase transit ridership within the City's service population and reduce regional VMT. This result would be consistent with the City of Santa Clara CAP goal of promoting GHG reductions by conserving resources and reducing the impacts of both existing and new development on the local and regional environment.

As described in the California Air Pollution Controls Officers Association resource document *Quantifying Greenhouse Gas Mitigation Measures*, a city general plan that locates urban land uses near transit is the single greatest tool for reducing GHG emission–related climate change. Implementation of the BART Extension and the rail system would result in a regional GHG benefit by encouraging a modal shift from single-occupancy vehicles to transit. It is anticipated that transit-oriented developments would locate infill residential and office development near transit lines that would be within walking distance and minimize automobile-dependent development. Therefore, the BART Extension would be consistent with the City of Santa Clara CAP and City of San Jose GHG Reduction Strategy. Impacts would be *less than significant*, and no mitigation is required.

Consistency with Executive Orders S-3-05 and B-30-15 (Post-2020 Goals)

EO B-30-15 established an interim GHG reduction target of 40 percent below 1990 levels by 2030, and EO S-3-05 established a long-term goal of reducing statewide GHG emissions to 80 percent below 1990 levels by 2050. Achieving these long-term GHG reduction policies will require systemic changes in how energy is produced and used. In evaluating the BART Extension emissions for consistency with EO S-3-05 and EO B-30-15, it is important to note that many of these broad-scale shifts in how energy is produced and used are outside of the control of the BART extension and unknown. It is anticipated that state programs adopted to reduce post-2020 emissions will extend strategies outlined in the AB 32 Scoping Plan. Increased transit and electrification of the transportation sector will be critical components of any post-2020 policy. Accordingly, implementation of the BART Extension will facilitate anticipated GHG strategies adopted and recommended at the state level to reduce post-2020 emissions, consistent with goals outlined under EO B-30-15 and EO S-3-05. Moreover, as shown in Table 6.9-1, the BART Extension would result in a long-term GHG reduction. The

BART Extension would therefore have a *less-than-significant impact* related to consistency with EO B-30-15 and EO S-3-05. No mitigation is required.

6.9.5.3 BART Extension with TOJD Alternative

Impact BART Extension + TOJD GHG-1: Generate GHG emissions, either directly or indirectly

Construction

Construction of the BART Extension with TOJD Alternative would generate direct emissions of CO_2, CH_4, and N_2O from mobile and stationary construction equipment exhaust as well as employee and haul truck vehicle exhaust. Indirect emissions would be generated from water use for fugitive dust control. As previously discussed, construction of the BART Extension would result in 50,200 and 50,787 MT of CO_2e for the Twin-Bore and Single-Bore Options, respectively. It is anticipated that construction of the TOJDs would result in the following emissions.

- Alum Rock/28th Street Station: 2,203 MT of CO_2e
- 13th Street Ventilation Facility: 68 MT of CO_2e
- Downtown San Jose Station: 1,342 MT of CO_2e
- Diridon Station (South and North Options): 991 MT of CO_2e
- Stockton Avenue Ventilation Facility: 69 MT of CO_2e
- Santa Clara Station: 1,657 MT of CO_2e

BAAQMD's *CEQA Guidelines* do not identify a quantitative GHG emission threshold for construction emissions. Instead, BAAQMD recommends that GHG emissions from construction be quantified and disclosed and that a determination regarding the significance of the GHG emissions be made. Both the implementation of best management practices and a project's consistency with AB 32 GHG emission reduction goals are considered.

Air quality mitigation would require BAAQMD-recommended basic construction mitigation measures (i.e., best management practices), including limiting idling times to 5 minutes or less, limiting vehicle speeds to 15 mph or less, and performing equipment maintenance and tuning in accordance with manufacturer specifications (see Chapter 5, Section 5.4.3, *Air Quality*). These best management practices have been included as Mitigation Measures AQ-CNST-B through AQ-CNST-G, and would reduce GHG emissions from on- and off-road equipment. Compliance with AB 32 GHG reduction goals is discussed under Impact BART Extension GHG-2. That discussion concludes that the BART Extension (Twin-Bore and Single-Bore Options) would be consistent with AB 32 GHG reduction goals. Impacts would be *less than significant*, and no additional mitigation is required.

Operation

Operational emissions have been estimated for the BART Extension and the TOJDs. As previously discussed, the BART Extension emissions analysis accounts for changes in regional VMT and electricity production need to power the extended system. TOJD emissions were estimated in CalEEMod and account for electricity, water, and natural gas consumption and for solid waste decomposition. Vehicle trips associated with the TOJDs are included in the regional VMT analysis utilized to estimate the change in regional emissions associated with the reduction in VMT due to increased ridership of BART.

Although emissions from area sources would not change over time, based on the CalEEMod methodology, mobile-source emissions would vary in 2015, 2025, and 2035. Therefore, a separate analysis was provided for each year. The existing plus BART Extension with TOJD condition (2015) assesses the BART Extension with TOJD Alternative as if it were to be built in the baseline condition. This is an unrealistic scenario because the project cannot be constructed and begin operations within the current year of analysis. These emissions have been presented for information only. The impact conclusion is therefore based on the 2025 Opening Year and 2035 Forecast Year. As shown in Table 6.9-2, BART Extension with TOJD emissions would decrease in 2025, but slightly increase in 2035.

A separate analysis of the TOJDs was performed to evaluate their efficiency (see Table 6.9-3). Because the BART Extension would reduce GHG emissions (see Table 6.9-1), this analysis is disclosed for informational purposes to isolate TOJD emissions and ensure that the TOJDs are constructed as efficiently as possible and all feasible mitigation is considered. Accordingly, near-term (2026) TOJD emissions are compared to BAAQMD's efficiency metric of 4.6 MT of CO_2e per year per service population (residents and employees). Horizon-year (2035) TOJD emissions are compared to a substantial progress indicator of 2.0 MT of CO_2e per year per service population. The substantial progress indicator was calculated for 2035 based on the GHG reduction goals established under EO B-30-15 and EO S-3-05 (40 percent reduction below 1990 levels by 2030 and 80 percent reduction below 1990 levels by 2050, taking into account the 1990 emissions levels and the projected 2035 statewide population and employment levels).

Table 6.9-2: Carbon Dioxide Equivalent Emissions: BART Extension with TOJD

Scenario and Emission Sources	Carbon Dioxide Equivalent Metric Tons per Year
2015 Existing + BART Extension with TOJD Condition	
Net Change in Vehicular Emissions from Increased Ridership	(-42,451)
BART Electricity-Related Emissions	615
TOJD Emissions (Area, Energy, Waste, and Water Sources)	24,518
Total Emissions	(-17,318)
2025 Opening Year	
Net Change in Vehicular Emissions from Increased Ridership	(-29,376)
BART Electricity-Related Emissions	615
TOJD Emissions (Area, Energy, Waste, and Water Sources)	24,518
Total Emissions	(-4,243)
2035 Forecast Year	
Net Change in Vehicular Emissions from Increased Ridership	(-22,341)
BART Electricity-Related Emissions	615
TOJD Emissions (Area, Energy, Waste, and Water Sources)	24,518
Total Emissions	3,202
Analysis Threshold	0
Source: ARB CalEEMod version 2013.2.2; TAHA 2015.	

Table 6.9-3: Carbon Dioxide Equivalent Emissions: TOJD

Emissions Sources	Carbon Dioxide Equivalent Metric Tons per Year
TOJD	
Alum Rock/28th Street Station	
Area	16
Energy	5,507
Waste	279
Water	373
Subtotal	6,175
Subtotal for Area Source Emissions	24,518
13th Street Ventilation Facility	
Area	<1
Energy	46
Waste	6
Water	3
Subtotal	55
Downtown San Jose Station[a]	
Area	<1
Energy	5,766
Waste	338
Water	419
Subtotal	6,523
Diridon Station (South and North Options)	
Area	<1
Energy	4,837
Waste	305
Water	410
Subtotal	5,552
Stockton Avenue Ventilation Facility	
Area	<1
Energy	53
Waste	7
Water	4
Subtotal	64

Emissions Sources	Carbon Dioxide Equivalent Metric Tons per Year
Santa Clara Station	
Area	12
Energy	5,501
Waste	272
Water	364
Subtotal	6,149
2015 Existing + BART Extension with TOJD Condition	
Area Sources	24,518
Mobile Sources (All TOJDs)	26,537
Service Population (Residents + Employees)	10,841
Service Population Annual per Capita Emissions	4.7
2025 Opening Year	
Area Sources	24,518
Mobile Sources (All TOJDs)	18,358
Service Population (Residents + Employees)	11,054
Service Population Annual per Capita Emissions	3.9
BAAQMD Significance Threshold	4.6
Exceeds Threshold?	No
2035 Forecast Year	
Area Sources	24,518
Mobile Sources (All TOJDs)	13,724
Service Population (Residents + Employees)	11,054
Service Population Annual per Capita Emissions	3.5
Substantial Progress Indicator	2.0
Exceeds Indicator?	Yes

[a] The Downtown San Jose Station represents the East Option, which includes more development than the West Option.
Source: ARB CalEEMod version 2013.2.2; TAHA 2015.

Implementation of the BART Extension would result in a regional mobile source GHG benefit by encouraging a modal shift from single-occupancy vehicles to transit. In addition, the TOJDs would locate infill residential, office, and retail development near transit lines that would be within walking distance and minimize automobile-dependent development. The BART Extension with TOJD Alternative would result in a net GHG reduction during 2025 Opening Year conditions. As shown in Table 6.9-3, the TOJDs on their own would also be constructed to an average efficiency consistent with BAAQMD's service population

threshold, which was established based on AB 32 goals. Accordingly, the BART Extension with TOJD Alternative would result in a *less-than-significant* near-term GHG impact.

The mode shift benefits observed in 2025 would not be as substantial in 2035. This is due to improvements in on-road engine technologies and increasingly stringent regulations, which are anticipated to reduce emissions from future passenger vehicles. The mode shift benefit achieved by the BART Extension would therefore not be sufficient to offset GHG emissions from increased BART electricity consumption and the TOJDs in 2035. Accordingly, the BART Extension with TOJD Alternative would result in a net increase in long-term (2035) GHG emissions. As shown in Table 6.9-3, the TOJDs on their own would also not meet the substantial progress indicator.

As discussed above, large reductions will need to be made through state (and, most likely, federal) action to achieve the deep cuts in GHG emissions recommended by AEP and outlined in EO S-03-05 and EO B-30-15. The specific project-level benefits of future state (or federal) action cannot be presumed at this time, although it is likely that the BART Extension with TOJD Alternative's actual emissions in 2035 would be lower than the levels presented in Tables 6.9-2 and 6.9-3. Although it is possible that future state and federal actions will reduce BART Extension emissions to net negative and TOJD emissions to a level below the substantial progress indicator, this cannot be presumed at this time.

Mitigation Measures GHG-A through GHG-D listed below apply to the TOJDs. In addition, Mitigation Measure AQ-CNST-I (see Chapter 5, Section 5.4.3, *Air Quality*) would reduce emissions through the use of architectural coatings with a low volatile organic compound content. Implementation of these mitigation measures would reduce GHG emissions from the BART Extension with TOJD Alternative. However, as explained above, emissions cannot be demonstrated to achieve a net negative impact. Therefore, out of an abundance of caution, it is conservatively assumed that the BART Extension with TOJD Alternative's long-term (2035) emissions would be *significant and unavoidable*.

Mitigation Measure GHG-A: Implement Energy Efficiency Measures

TOJD energy efficiency shall be 15 percent better than the 2013 Title 24, Part 11 requirements or shall meet the Title 24, Part 11 requirements that are applicable at the time of issuance of the building permits for individual phases, whichever is more stringent.

Mitigation Measure GHG-B: Participate in Food Waste Programs

Restaurants shall be required to participate 100 percent in any extant City food waste programs. This mitigation measure shall be included as a mandatory performance standard for all agreements with developers of the TOJDs.

Mitigation Measure GHG-C: Utilize Electrical Landscaping Equipment

TOJDs shall include installation of electrical outlets near all maintained landscaping areas to allow for the use of electrical landscaping equipment. This mitigation measure shall be included as a mandatory performance standard for all agreements with developers of the TOJDs.

Mitigation Measure GHG-D: Provide Preferential Parking for Electric Vehicles

TOJDs shall provide preferential parking in all parking lots for electric vehicles and shall also provide charging equipment, as follows. This mitigation measure shall be included as a mandatory performance standard for all agreements with developers of the TOJDs.

a) Residential Use: A total of 10 percent of the required parking spaces shall be provided with a listed cabinet, box, or enclosure and connected to a conduit that links the parking spaces to the electrical service in a manner approved by the building and safety official. Of the listed cabinets, boxes, or enclosures provided, 50 percent shall have the necessary electric vehicle supply equipment installed to provide active charging stations that are ready for use by residents. The remainder shall be installed at such time as they are needed for use by residents. Electrical vehicle batteries and charging technology may change substantially over the next 15 years. As such, the local jurisdiction shall have the discretion to modify the specific requirements for this measure over time, provided that 10 percent of the spaces have electrical service and 5 percent have active charging, depending on what the technology at the time requires.

b) Commercial Use: New commercial uses shall provide the electrical service capacity necessary as well as all conduits and related equipment necessary to serve 2 percent of the parking spaces with charging stations. Of these parking spaces, 50 percent shall initially be provided with the equipment necessary to function as online charging stations upon completion of development. The remainder shall be installed at such time as they are needed for use by customers, employees, or other users. Electrical vehicle batteries and charging technology may change substantially over the next 15 years. As such, the local jurisdiction shall have the discretion to modify the specific requirements for this measure over time, provided that 2 percent of the spaces have electrical service and 1 percent have active charging, depending on what the technology at the time requires.

Impact BART Extension + TOJD GHG-2: Conflict with a plan, policy, or regulation intended to reduce greenhouse gas emissions

As noted above, three plans relevant to the BART Extension with TOJD Alternative have been adopted for the purposes of reducing GHG emissions: the AB 32 Scoping Plan, the City of San Jose GHG Reduction Strategy, and the City of Santa Clara CAP. Consistency with these three plans is reviewed below. In addition, the BART Extension with TOJD

Alternative's consistency with EO S-03-05 and EO B-30-15 is considered. Note that no land use approvals. or state or local regulations have been adopted to enforce the executive orders

Consistency with AB 32 Scoping Plan

As discussed above, the AB 32 Scoping Plan outlines a series of technologically feasible and cost-effective measures to reduce statewide GHG emissions, including expanding energy efficiency programs, increasing electricity production from renewable resources, increasing automobile efficiency, implementing the Low-Carbon Fuel Standard, and developing a cap-and-trade program. While these measures are designed to be implemented by state agencies, local governments and private developments can support AB 32 goals through consistent implementation of AB 32 Scoping Plan policies, where applicable. Extension of transit, increased electrified transit, compact development, and infill are core AB 32 strategies. Accordingly, the BART Extension and TOJDs would support state goals for alternative transportation and mixed-use development. Moreover, as shown in Table 6.9-2, the BART Extension would result in a near-term (2026) GHG reduction (AB 32 target year is 2020). The BART Extension with TOJD Alternative would therefore have a *less-than-significant impact* on consistency with the policies in the AB 32 Scoping Plan. No mitigation is required.

Consistency with the City of San Jose GHG Reduction Strategy and City of Santa Clara Climate Action Plan

The City of San Jose GHG Reduction Strategy states that urban design and land use planning are critical to the success of San Jose's Green Vision. The City aims to promote high-density commercial and residential development near transit or on infill sites. The City wants to limit low-density housing by encouraging builders to create opportunities for residents and employees to walk to retail, entertainment venues, parks, and schools in all neighborhoods. This discussion of long-term planning in the Green Vision is consistent with the BART Extension with TOJD Alternative. The TOJDs would locate high-density commercial and residential land uses in proximity to a mature public transit system.

The City of Santa Clara CAP includes a focus area related to reducing VMT for the service population (i.e., residents and employees). The BART Extension with TOJD Alternative would encourage transit by locating the TOJDs near the BART Extension. This would increase the percentage of transit ridership within the City's service population and reduce regional VMT. This result would be consistent with the City of Santa Clara CAP goal of promoting GHG reductions by conserving resources and reducing the impacts of both existing and new development on the local and regional environment.

As described in the California Air Pollution Controls Officers Association resource document *Quantifying Greenhouse Gas Mitigation Measures*, a city general plan that locates urban land uses near transit is the single greatest tool for reducing GHG emissions related climate change. Implementation of the BART Extension would result in a regional GHG benefit by encouraging a modal shift from single-occupancy vehicles to transit. The TOJDs would locate infill residential and office development near transit lines that would be within

walking distance and minimize automobile-dependent development. Therefore, the BART Extension with TOJD Alternative would be consistent with the City of Santa Clara Climate Action Plan and City of San Jose GHG Reduction Strategy. Impacts would be *less than significant*, and no mitigation is required.

Consistency with Executive Orders S-3-05 and B-30-15

EO B-30-15 established an interim GHG reduction target of 40 percent below 1990 levels by 2030, and EO S-3-05 established a long-term goal of reducing statewide GHG emissions to 80 percent below 1990 levels by 2050. Achieving these long-term GHG reduction policies will require systemic changes in how energy is produced and used. In evaluating the BART Extension with TOJD Alternative's emissions for consistency with EO S-3-05 and EO B-30-15, it is important to note that many of these broad-scale shifts in how energy is produced and used are outside of the control of the BART Extension with TOJD Alternative and unknown. It is anticipated that state programs adopted to reduce post-2020 emissions will extend strategies outlined in the AB 32 Scoping Plan. Increased transit, electrification of the transportation sector, and mixed-use development will be critical components of any post-2020 policy. While implementation of the BART Extension with TOJD Alternative would extend electrified transit and support transit-oriented development, GHG emissions associated with the TOJDs are estimated to exceed the substantial progress indicator, which is based on the long-term EO goals. While it is likely that future state programs would reduce project-level emissions, the extent of those reductions are unknown. Accordingly, conclusions must be drawn from the estimates of emissions presented in this document. Therefore, out of an abundance of caution, it is conservatively assumed that the BART Extension with TOJD Alternative's emissions would be inconsistent with the goals in EO S-3-05 and EO B-30-15.

Mitigation Measures GHG-A through GHG-D listed above apply to the TOJDs. In addition, Mitigation Measure AQ-CNST-I (see Chapter 5, Section 5.4.3, *Air Quality*) would reduce emissions through the use of architectural coatings with a low volatile organic compound content. Implementation of these mitigation measures would reduce GHG emissions from the BART Extension with TOJD Alternative. However, as explained above, emissions cannot be demonstrated to be lower than the EO goals. This impact is considered *significant and unavoidable*.

6.9.6 CEQA Conclusion

Implementation of the BART Extension would result in a regional mobile source GHG benefit by encouraging a modal shift from single-occupancy vehicles to transit. In addition, the TOJDs would locate infill residential, office, and retail development near transit lines that would be within walking distance and minimize automobile-dependent development. The BART Extension would result in a net GHG reduction during 2025 Opening Year conditions. As shown in Table 6.9-3, the TOJDs on their own would also be constructed to an average efficiency consistent with BAAQMD's service population threshold, which was established based on AB 32 goals. Accordingly, the project would result in a *less-than-significant*

near-term (2026) GHG impact and would not conflict with plans adopted by state (AB 32) and local (City of San Jose GHG Reduction Strategy and City of Santa Clara CAP) governments to reduce near-term GHG emissions. This conclusion applies to both the BART Extension Alternative and the BART Extension with TOJD Alternative.

The BART Extension Alternative would continue to reduce GHG emissions under horizon (2035) year conditions. It would also facilitate implementation of anticipated transit strategies adopted and recommended at the state level to reduce post-2020 emissions, consistent with goals outlined under EO B-30-15 and EO S-3-05. Accordingly, the BART Extension Alternative would result in a *less-than-significant* impact on long-term (2035) GHG emissions.

The BART Extension with TOJD Alternative would result in a net increase in long-term (2035) GHG emissions. As shown in Table 6.9-3, the TOJDs on their own would also not meet the substantial progress indicator, which was calculated based on the long-term GHG reduction goals identified by EO S-3-05 and EO B-30-15. It is likely that once long-term state policies have been adopted to reduce GHG emissions, project-level emissions would be lower than those estimated in this document. However, specific project-level benefits of future state (or federal) policies are unknown and cannot be assumed at this time. Mitigation Measures GHG-A through GHG-D would reduce GHG emissions from the BART Extension with TOJD Alternative, but not to a net negative level. Accordingly, the BART Extension with TOJD Alternative would result in *significant and unavoidable* impacts related to long-term (2035) GHG emissions and consistency with EO S-3-05 and EO B-30-15.

Mitigation Measures GHG-C and GHG-D have the potential to result in secondary impacts due to the increase in electricity use. As explained in Section 6.7, *Energy*, although the BART Extension with TOJD Alternative would increase electricity consumption over existing conditions, VTA's Sustainability Program green strategies would help conserve energy. The BART Extension with TOJD Alternative would also facilitate implementation of the MTC's *Plan Bay Area* by promoting regional transit and reductions in single occupancy vehicle use. Therefore, minor increase in energy due to Mitigation Measures GHG-C and GHG-D would not result in secondary impacts on electricity infrastructure.

6.10 Hazards and Hazardous Materials

6.10.1 Introduction

This section discusses existing conditions and the regulatory setting regarding hazards and hazardous materials, and describes impacts under CEQA that would result from construction and operation of the CEQA Alternatives.

6.10.2 Existing and Regulatory Setting

6.10.2.1 Environmental Setting

The hazardous materials information contained herein is based on *VTA's BART Silicon Valley—Phase II Extension Project Initial Site Assessment* (ISA), prepared by BASELINE Environmental Consulting (2017~~6~~).

Hazardous Materials

The ISA identified numerous sources of hazardous materials in soil, railroad ballast, groundwater, and buildings within the alignment that could possibly be encountered during construction and operation. Please see Chapter 4, Section 4.10, *Hazards and Hazardous Materials*, for environmental setting information.

Additional environmental setting information pertinent to CEQA is provided below.

Nearby Schools

Based on a review of federal records for public and private schools with grades ranging from pre-kindergarten to 12 (National Center for Education Statistics 2015), there are 11 schools within 0.25 mile of the BART Extension (under both Twin-Bore and Single-Bore Options) (see Table 6.10-1).

Table 6.10-1: Schools within One-Quarter Mile of the BART Extension

Type	School Name	Address
Private	Bellarmine College Prep School	960 W. Hedding Street, San Jose
Private	St Leo The Great School	1051 W. San Fernando Street, San Jose
Private	St Patrick School	51 N. 9th Street, San Jose
Public	Anne Darling Elementary	333 N. 33rd Street, San Jose
Public	Horace Mann Elementary	55 N. Seventh Street, San Jose
Public	Rocketship Discovery Prep	370 Wooster Street, San Jose
Public	San José High	275 N. 24th Street, San Jose
Public	San Jose Community High	855 Lenzen Avenue, San Jose
Public	San Jose Community Middle	855 Lenzen Avenue, San Jose
Public	San Jose High Academy Plus	275 N. 24th Street, Building 1, San Jose
Public	Sunrise Middle	1149 E. Julian Street, Building G, San Jose

Nearby Airports

There are no private airstrips within 2 miles of the BART Extension (under both Twin-Bore and Single-Bore Options) (Federal Aviation Administration 2015). The nearest public-use airport is the Norman Y. Mineta San Jose International Airport, approximately 0.5 mile northeast of Santa Clara Station. The Diridon Station South and North Options (which are within the Diridon Station Area Plan Development) are approximately 0.8 mile to the southeast (City of San Jose 2014). The BART Extension would be within the Airport Influence Area due to height restrictions established by Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace*. The FAR Part 77 height restrictions are designed to protect navigable airspace around the airport (Santa Clara County Airport Land Use Commission 2011). ~~The height restrictions for structures (including construction equipment) at the BART Extension locations range from about 212 feet to 362 feet.~~

Emergency Planning

The cities of Santa Clara and San Jose participated in the Association of Bay Area Governments' development of the Santa Clara County Local Hazard Mitigation Plan, which focuses on the assessment and mitigation of risks associated with large natural and human-made disasters (e.g., hazardous materials spills, wildfire). The Santa Clara Fire Department (SCFD) and San Jose Office of Emergency Services are responsible for providing disaster planning and recovery assistance to protect citizens within their jurisdictions from injury and loss due to natural and human-made disasters.

Wildfire Risk

The California Department of Forestry and Fire Protection (CAL FIRE) has mapped Very High Fire Hazard Severity Zones in Santa Clara County to assist responsible local agencies, such as SCFD and San Jose Fire Department, in identifying measures to reduce the potential for losses of life, property, and resources from wildland fire. CAL FIRE has determined that

there are no Very High Fire Hazard Severity Zones in the cities of Santa Clara and San Jose (CAL FIRE 2008).

6.10.2.2 Regulatory Setting

The following state, regional, and local regulations are relevant to the BART Extension.

State

California Health and Safety Code

The Department of Toxic Substances Control (DTSC), part of the California Environmental Protection Agency (Cal/EPA), is the primary agency in California for regulating hazardous waste, cleaning up existing contamination, and finding ways to reduce the amount of hazardous waste produced in California. DTSC regulates hazardous waste primarily under the authority of the federal Resource Conservation and Recovery Act (RCRA) and the California Health and Safety Code (primarily Division 20, Chapters 6.5 through 10.6, and Title 22, Division 4.5). Division 20, Chapter 6.5 of the California Health and Safety Code deals with hazardous waste control through regulations pertaining to transportation, treatment, recycling, disposal, enforcement, and permitting of hazardous waste. Division 20, Chapter 6.10 contains regulations applicable to the cleanup of hazardous materials releases. Title 22, Division 4.5 contains the environmental health standards for the management of hazardous waste. This includes standards for identification of hazardous waste (Chapter 11) and standards applicable to transporters of hazardous waste (Chapter 13).

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (California Health and Safety Code, Chapter 6.11, Sections 25404–25404.9)

In California, hazardous waste and material handling and storage are regulated under the Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program), which ensures consistency throughout the state with regard to administrative requirements, permits, inspections, and enforcement. Cal/EPA oversees the program as a whole, and certifies 83 local government agencies known as Certified Unified Program Agencies (CUPAs) to implement the hazardous waste and materials standards set by five different state agencies.

SCFD and Santa Clara County Hazardous Materials Compliance Division (HMCD) are the CUPAs that oversee the implementation and enforcement of permitting requirements for the routine management of hazardous materials in the cities of Santa Clara and San Jose, respectively. As established by Cal/EPA, the Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities for the following six environmental and emergency response programs.

- Hazardous Waste Generator Program (Health and Safety Code Chapter 6.5)
- Hazardous Waste Tiered Permitting (Health and Safety Code Chapter 6.5)
- Underground Storage Tank (Health and Safety Code Chapter 6.7)

- Aboveground Storage Tank Spill Prevention, Control, and Countermeasure Plan (Health and Safety Code Chapter 6.67)
- Hazardous Materials Business Plan (Health and Safety Code Chapter 6.95)
- California Accidental Release Prevention Program (Health and Safety Code Chapter 6.95)

The purpose of the Unified Program is to ensure that facilities properly manage and disclose hazardous materials used to minimize the risk of a hazardous materials release and improve emergency response actions in the event of a release.

California Code of Regulations, Title 8—Industrial Relations

Occupational safety standards exist in federal and state laws to minimize worker safety risks from both physical and chemical hazards in the workplace. The California Division of Occupational Safety and Health (Cal/OSHA) and the federal Occupational Safety and Health Administration (OSHA) are the agencies responsible for assuring worker safety in the workplace. Cal/OSHA assumes primary responsibility for developing and enforcing standards for safe workplaces and work practices. These standards would be applicable to both construction and operation of the BART Extension. The standards included in Cal/OSHA's Title 8 include regulations pertaining to hazard control (such as administrative and engineering controls), hazardous chemical labeling and training requirements, hazardous exposure prevention, hazardous material management, and hazardous waste operations.

California Labor Code (Division 5, Parts 1 and 7)

The California Labor Code is a collection of regulations that include the regulation of the workplace to ensure appropriate training on the use and handling of hazardous materials and the operation of equipment and machines that use, store, transport, or dispose of hazardous materials. Division 5, Part 1, Chapter 2.5 ensures that employees that are in charge of the handling of hazardous materials are appropriately trained on, and informed of, the materials they are handling. Division 5, Part 7 ensures that employees who work with volatile flammable liquids are outfitted in appropriate safety gear and clothing.

California Department of Forestry and Fire Protection Fire Prevention Program

This program encompasses multiple different facets of fire prevention techniques, including fire engineering, vegetation management, fire planning, education, and law enforcement. These techniques can include fire break construction and other fire fuel reduction activities that lessen the risk of wildfire to communities and evacuation routes, and brush clearance around communities, along roadways, and evacuation routes. The fire prevention program also includes defensible space inspections, emergency evacuation planning, fire prevention education, fire hazard severity mapping, implementation of the state Fire Plan, and fire-related law enforcement activities such as arson investigation.

State Water Resources Control Board Construction Storm Water Program

Dischargers whose projects disturb 1 or more acres of soil or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity Construction General Permit under Order 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling or excavation. The Construction General Permit requires the completion and implementation of a site-specific Storm Water Pollution Prevention Plan (SWPPP).

Airport Land-Use Compatibility

Development near airports can pose a potential hazard to people and property on the ground, as well as create obstructions and other hazards to flight. The Santa Clara County Airport Land Use Commission (ALUC) has adopted Comprehensive Land Use Plans (CLUPs) for areas surrounding public-use airports within the County. The CLUPs generally apply regulations and policies promulgated by the Federal Aviation Administration (FAA) to protect the safety and compatibility of aircraft operations.

FAR Part 77, *Objects Affecting Navigable Airspace*, sets forth standards and review requirements for protecting navigable airspace near airports by restricting the height of potential structures and minimizing other potential hazards (e.g., reflective surfaces, flashing lights, electronic interference) to aircraft approaching or departing an airport. FAR Part 77 includes criteria that define sloped imaginary surfaces extending several miles from the airport runways that are used to identify structures that could obstruct air navigation.

FAA requires notification at least 30 days prior to beginning construction of proposed construction or alteration projects that would penetrate the imaginary surfaces defined by FAR Part 77 ~~or projects that would stand 200 feet tall or taller~~ (FAA Form 7460-1). Structures with heights exceeding the defined *notification surface* are required to be filed with the FAA for airspace review. FAR Part 77 also defines *obstruction surfaces,* which are considered by the FAA in its reviews of proposed structures. ~~Following notification of proposed construction or alteration, FAA may conduct an aeronautical study to determine if proposed structures and construction equipment would create an airspace hazard.~~ In some cases, the FAA may determine that a structure can exceed an obstruction surface, typically incorporating mitigation, without creating an adverse impact on aviation safety. Conversely, the FAA may determine that a structure that is below an obstruction surface would create an adverse impact on aviation safety due to other airspace considerations.

FAA commonly requires proposed structures and construction equipment affecting navigable airspace to be marked and/or lighted for increased visibility (Federal Aviation Administration and U.S. Department of Transportation 2007). Issuance of FAA "determinations of no hazard," and compliance with any conditions set forth in an FAA no-hazard determination, would ensure that no adverse impact on air safety or air traffic patterns would occur. The

City of San Jose oversees proposed developments near the Norman Y. Mineta San Jose International Airport to ensure compliance with the FAR Part 77 notification requirements and FAA's aeronautical determinations. Compliance measures may include coordination with a property owner to grant an avigation easement to the City of San Jose to establish elevation limits over project locations and protect the navigable airspace for the airport.

Regional and Local

Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD) oversees the protection of air quality in the San Francisco Bay Area Air Basin, which includes the BART Extension alignment. Hazardous and acutely hazardous emissions during construction (e.g., demolition of buildings containing asbestos) and facility operations are subject to health risk assessment regulations and permitted conditions of operation to protect nearby sensitive receptors.

Santa Clara County Local Hazard Mitigation Plan

The cities of Santa Clara and San Jose participated in the development and have adopted the Association of Bay Area Governments' Santa Clara County Local Hazard Mitigation Plan, which focuses on the assessment and mitigation of risks associated with large natural and human-made disasters (e.g., hazardous materials spills, wildfire).

6.10.3 CEQA Methods of Analysis

The significance of impacts from hazards and hazardous materials were evaluated based on the review of the existing conditions along the alignment. Sources reviewed included the ISA (BASELINE Environmental Consulting 2017~~5~~), Norman Y. Mineta San Jose International Airport's CLUP (Santa Clara County ALUC 2011), federal school records (National Center for Education Statistics 2015), and fire hazard severity mapping (CAL FIRE 2008). In addition, VTA has prepared a Contaminant Management Plan (CMP) and associated Remedial Action Plans (RAPs) for the BART Extension that will be used to assess and manage hazardous materials in soil, ballast, groundwater, and building materials that could be encountered during construction. A detailed discussion regarding the CMP and associated RAPs are included in Chapter 4, Section 4.10, *Hazards and Hazardous Materials*.

6.10.4 CEQA Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, a project would have a significant impact if it would result in any of the conditions listed below.

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

- Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment.
- Be located within an airport land use plan area or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the alignment.
- Be located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the alignment.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

6.10.5 Environmental Consequences and Mitigation Measures

This section identifies the impacts related to hazards and hazardous materials under CEQA, as well as mitigation measures necessary to reduce the level of potentially significant impacts.

6.10.5.1 No Build Alternative

The No Build Alternative consists of the existing transit and roadway networks and planned and programmed transportation improvements (see Chapter 2, Section 2.2.1, *NEPA No Build Alternative,* for a list of these projects) and other land development projects planned by the Cities of San Jose and Santa Clara.

The No Build Alternative projects could result in effects on hazardous materials typically associated with transit, highway, bicycle, and pedestrian facilities, and roadway projects, as well as land development projects. The No Build Alternative projects would likely require consideration of hazardous materials exposure during construction and operation. Typically a worker health and safety plan would be prepared and adopted to prevent exposure of maintenance workers, control emissions of hazardous dusts, and safeguard offsite transport of hazardous materials. Additionally, a Phase 2 site assessment, CMP, and associated permits could be required.

All individual projects planned under the No Build Alternative would undergo separate environmental review to identify effects due to exposure to hazardous materials. Review

would include an analysis of impacts and identification of mitigation measures to reduce potential impacts.

6.10.5.2 BART Extension Alternative

Impact BART Extension HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials

Construction

Construction activities for the BART Extension would include the routine transport, use, or disposal of hazardous materials, such as motor fuels, oils, solvents, and lubricants. Common construction activities, such as fueling, maintenance, and operation of construction equipment, could result in the exposure of workers, the public, and/or the environment to hazardous materials if the materials are not properly managed. Such transport, use, and disposal must be compliant with applicable regulations such as the RCRA, Department of Transportation Hazardous Materials Regulations (discussed in Section 4.10, *Hazards and Hazardous Materials*), and the local CUPA regulations mentioned under Section 6.10.2.2, *Regulatory Setting*. Although motor fuels, oils, solvents, and lubricants would be transported, used, and disposed of during the construction phase, these materials are typically used in construction projects and would not represent the transport, use, and disposal of acutely hazardous materials. Furthermore, a SWPPP must be prepared for coverage under the Construction General Permit in accordance with the requirements of the State Water Resources Control Board. The SWPPP requires implementation of Best Management Practices for hazardous materials storage and soil stockpiles, inspections, maintenance, training of employees, and containment of releases to prevent runoff into existing stormwater collection systems or waterways. As compliance with these regulations is mandatory, the routine transport, use, or disposal of hazardous materials during construction of the BART Extension would have a *less-than-significant* impact on human health or the environment, and no mitigation is required.

Operation

Hazardous materials, such as motor fuels, oils, solvents, and lubricants, would be routinely managed during operation of the BART Extension, particularly at the Newhall Maintenance Facility. Diesel would also be used for standby generators at each station, yard, shop, and pump station, and possibly at the train control buildings. Workers, the public, and/or the environment could be exposed to hazardous materials during routine operations if the materials are not properly managed. Workers handling hazardous materials are required to adhere to OSHA and Cal/OSHA health and safety requirements. Handling of these materials would also be compliant with applicable regulations such as the RCRA, Department of Transportation Hazardous Materials Regulations, and local CUPA regulations via implementation of a Hazardous Materials Business Plan (HMBP). HMBPs are designed to protect both human and environmental health from adverse effects as a result of the storage or possible release of hazardous materials. This is accomplished by documenting significant

amounts of hazardous materials (thresholds are 55 gallons of a liquid, 200 cubic feet of a gas, and 500 pounds of a solid) so that emergency responders can effectively protect the public in case of an emergency. Furthermore, the HMBP would be modified, if necessary, to include a description of any new hazardous materials that might be used during future operations and would be subject to approval and oversight by SCFD and HMCD, including routine inspections. As compliance with existing regulations is mandatory, the routine transport, use, or disposal of hazardous materials during operation of the BART Extension would have a *less-than-significant* impact on human health or the environment, and no mitigation is required.

Impact BART Extension HAZ-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment

Construction

Hazardous Materials Use

As mentioned under Impact BART Extension HAZ-1, construction activities for the BART Extension would include the use of hazardous materials, such as motor fuels, oils, solvents, and lubricants. Common construction activities, such as fueling, maintenance, and operation of construction equipment, could result in an accidental release of hazardous materials into the environment. The use of hazardous materials during construction would be subject to applicable regulations such as the RCRA, Department of Transportation Hazardous Materials Regulations, and local CUPA regulations, and adherence to these standards would reduce the potential occurrence of an accidental release. Furthermore, a site-specific SWPPP would be prepared for coverage under the Construction General Permit. As compliance with existing regulations is mandatory, the construction of the BART Extension would have a *less-than-significant* impact on human health or the environment related to an accidental hazardous materials release, and no mitigation is required.

Building Demolition

Construction activities for the BART Extension would include demolition of buildings that may contain hazardous materials, such as asbestos-containing materials (ACM) and lead-based paint (LBP). Improper removal and/or disposal of hazardous building materials during demolition activities could potentially result in an accidental release of hazardous materials into the environment. The removal of hazardous building materials prior to demolition is governed by federal and state regulations. Section 19827.5 of the California Health and Safety Code requires that local agencies not issue demolition or alteration permits until an applicant has demonstrated compliance with notification requirements under applicable federal regulations regarding hazardous air pollutants.

Friable ACM is considered a regulated material subject to the U.S. Environmental Protection Agency's (EPA) Asbestos National Emission Standard for Hazardous Air Pollutants

requirements (40 Code of Federal Regulations Part 61, Subpart M) and BAAQMD's demolition requirements (Regulation 11-2). EPA's and BAAQMD's asbestos regulations include requirements for agency notifications, engineering controls, waste handling, worker certifications, and reporting. All friable ACM materials must be disposed of at a landfill certified to accept friable ACM.

Loose and peeling LBP may be present and must be disposed of as a state and/or federal hazardous waste if the concentration of lead equals or exceeds applicable waste thresholds. State and federal OSHA regulations require a supervisor who is certified to identify existing and predictable lead hazards to oversee air monitoring and other protective measures during demolition activities where LBP may be present. Special protective measures and notification of Cal/OSHA are required for highly hazardous construction tasks related to lead, such as manual demolition, abrasive blasting, welding, cutting, or torch burning of structures where LBP is present.

Fluorescent lighting tubes and ballasts, mercury thermometers, and several other common items containing hazardous materials are regulated under the California Universal Waste Rule, which is less stringent than most other federal and state hazardous waste regulations. To manage universal waste in accordance with the streamlined state requirements, generators must relinquish the waste to a universal waste transporter, another universal waste handler, or a universal waste destination facility.

Prior to demolition, the CMP requires that a hazardous materials building survey be conducted by the demolition contractor to identify the presence of hazardous and contaminated materials to be disturbed and/or removed during demolition activities. If hazardous building materials (including remaining chemicals that will be removed during demolition) are identified during the hazardous building materials survey, the CMP requires the preparation of a site-specific Hazardous Materials Management Plan that describes how the materials will be handled according to applicable laws and regulations. As required by the Regional Water Quality Control Board, the CMP requirements for building demolition will be further described by site-specific RAPs (Mitigation Measure HAZ-CNST-A; see Chapter 5, Section 5.5.11, *Hazards and Hazardous Materials*). As compliance with the CMP, RAPs (Mitigation Measure HAZ-CNST-A), and existing regulations is mandatory, construction of the BART Extension would have a *less-than-significant* impact on human health or the environment related to hazardous building materials after implementation of Mitigation Measure HAZ-CNST-A.

Operation

As previously mentioned, hazardous materials would be routinely managed during operation of the BART Extension, particularly at the Newhall Maintenance Facility. An accidental release of hazardous materials during operations could pose a potential threat to human health and the environment. The management of hazardous materials is subject to applicable regulations such as the RCRA, Department of Transportation Hazardous Materials Regulations, and particularly the Unified Program administered by SCFD and HMCD. The

Unified Program would ensure that the BART Extension properly manages and discloses hazardous materials used to minimize the risk of a hazardous materials release and improve emergency response actions in the event of a release. As compliance with existing regulations is mandatory, an accidental release of hazardous materials during BART Extension operations would have a *less-than-significant* impact on human health or the environment. No mitigation is required.

Impact BART Extension HAZ-3: Emission of hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school

Construction

The handling or emission of hazardous or acutely hazardous materials near schools must consider potential health effects on children, who are considered sensitive receptors. There are 11 schools within 0.25 mile of the BART Extension (under both Twin-Bore and Single-Bore Options). Emissions or releases related to construction activities for the BART Extension would be from commonly used materials such as fossil fuels, solvents, and paints and would not include substances listed in 40 Code of Federal Regulations 355 Appendix A, *Extremely Hazardous Substances and Their Threshold Planning Quantities*.

The primary exposure pathway of concern is commonly the inhalation of air contaminants, such as particulate matter. Hazardous emissions near sensitive receptors, such as school children, are discussed in detail under Section 4.2, *Air Quality*. The primary hazardous emission of concern during construction is diesel particulate matter from heavy-duty diesel vehicles and equipment. Based on the results of air dispersion modeling and a health risk assessment, emissions of toxic air contaminants during construction of the BART Extension would have a *less-than-significant* impact on nearby sensitive receptors, such as school children, and no mitigation is required.

Hazardous materials used during construction would be managed in accordance with applicable laws and regulations. Therefore, emissions and handling of hazardous materials during construction of the BART Extension would have a *less-than-significant* impact on nearby schools. No mitigation is required.

Operation

The handling or emission of hazardous or acutely hazardous materials near schools must consider potential health effects on children, who are considered sensitive receptors. There are 11 schools within 0.25 mile of the BART Extension (under both Twin-Bore and Single-Bore Options). The BART Extension would include the emission and handling of hazardous materials, but not the handling of acutely hazardous materials.

The primary exposure pathway of concern is commonly the inhalation of air contaminants, such as particulate matter. Hazardous emissions near sensitive receptors, such as school children, are discussed in detail under Section 4.2, *Air Quality*. The primary hazardous

emission of concern during operations is diesel particulate matter from backup diesel generators. Based on the results of air dispersion modeling and a health risk assessment, emissions of toxic air contaminants during operations would have a *less-than-significant* impact on nearby sensitive receptors, such as school children, and no mitigation is required.

Furthermore, the handling of hazardous materials is subject to laws and regulations, such as the Unified Program administered by SCFD and HMCD. Therefore, emissions and handling of hazardous materials during operation of the BART Extension would have a *less-than-significant* impact on nearby schools. No mitigation is required.

Impact BART Extension HAZ-4: Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment

Construction

Based on the ISA (BASELINE Environmental Consulting 2017~~5~~), hazardous materials may be present in soil, ballast, and groundwater beneath the alignment. The ISA identified 437 sites with known releases of hazardous materials within a 1-mile radius of the BART Extension. A total of 43 of the 437 hazardous materials release sites are under active regulatory oversight and/or have land use restrictions and are located on, adjacent to, or hydraulically upgradient of the BART Extension (under both Twin-Bore and Single-Bore Options). Petroleum hydrocarbons, chlorinated solvents, and metals are the primary contaminants of concern in soil and groundwater from the 43 known hazardous materials release sites. Arsenic and lead are the primary contaminants of concern in shallow soil and ballast along existing railroad corridors. The disturbance of contaminated materials during construction activities, such as excavation and dewatering, could pose a potential threat to human health and the environment.

Dewatering of the shallow groundwater zone would be required during certain excavation activities. As described in the CMP, all extracted groundwater would be considered potentially contaminated and would require characterization to determine the appropriate treatment requirements (if necessary) for discharge/disposal. The extracted groundwater would be collected and managed for disposal/treatment in compliance with local and/or state regulations. Groundwater handling may include any of the following.

- Discharge to the local sanitary sewer system
- Discharge to the storm drain system
- Containment and disposal at an appropriately permitted offsite facility

As described in the CMP, aboveground treatment of the extracted groundwater, such as by gravity sedimentation followed with activated carbon adsorption using granular activated carbon vessels, would be performed prior to discharge. Removal of metals may be required based on permit conditions, dewatering rates, and concentrations of metals encountered during dewatering. Discharge of treated dewatering groundwater to the local sanitary sewer

system is regulated by the San Jose/Santa Clara Water Pollution Control Plant for the cities of San Jose and Santa Clara. Discharge of treated dewatering groundwater to the storm drain system is regulated by the Regional Water Quality Control Board, under a National Pollutant Discharge Elimination System (NPDES) general permit. As compliance with the CMP and existing regulations is mandatory, construction would have a *less-than-significant* impact on human health and the environment related to hazardous materials in extracted groundwater, and no mitigation is required.

The approach for assessing and managing hazardous materials in soil and ballast materials that would be encountered during earthwork activities is described in the CMP. The CMP would be implemented through site-specific RAPs prepared for and approved by the Regional Water Quality Control Board. Under the oversight of the Regional Water Quality Control Board, compliance with the CMP and RAPs is mandatory.

Implementation of Mitigation Measure HAZ-CNST-A would ensure that site-specific RAPs are prepared and implemented to reduce impacts on human health and the environment that could result from the disturbance of hazardous materials in soil and ballast materials during construction to a *less-than-significant* level.

Operation

Based on the ISA (BASELINE Environmental Consulting 2017~~5~~), hazardous materials may be present in soil, ballast, and groundwater. Sources of known and/or anticipated subsurface contamination include 43 known release sites, 5 permitted underground storage tank facilities, 69 RCRA generators sites, and existing railroad corridors. Petroleum hydrocarbons, chlorinated solvents, and metals are the primary contaminants of concern in soil and groundwater from the 43 known hazardous materials release sites. Arsenic and lead are the primary contaminants of concern in shallow soil and ballast along existing railroad corridors. Operation of the BART Extension could expose people and/or the environment to subsurface hazardous materials as described below.

Maintenance Workers

The disturbance of contaminated soil and/or ballast during maintenance activities (e.g., trenching for utilities) could pose a direct exposure hazard to maintenance workers. The highest acceptable reuse concentrations for soil and ballast materials identified in the CMP under the *Encapsulation* scenario were modeled based on potential health risks to construction workers, which would be an equivalent exposure scenario for maintenance workers. Implementation of the CMP prior to and during construction would remove any soil or ballast materials that could pose a significant health risk to maintenance workers for offsite disposal. The CMP would be implemented through site-specific RAPs prepared and approved by the Regional Water Quality Control Board. Under the oversight of the Regional Water Quality Control Board, compliance with the CMP and RAPs is mandatory.

Implementation of Mitigation Measure HAZ-CNST-A would ensure that site-specific RAPs are prepared and implemented that would reduce impacts on maintenance workers that could

result from the disturbance of hazardous materials in soil and ballast materials during operation of the BART Extension to a *less-than-significant* level.

Indoor Workers and Residents

Vapor intrusion of groundwater contaminants (e.g., chlorinated solvents) into future BART Extension buildings, such as the stations, system facilities, and maintenance facilities, could pose an inhalation hazard to indoor workers and residents. The CMP and existing RAP for the former Union Pacific Railroad Newhall Maintenance Facility do not address vapor intrusion concerns.

Implementation of Mitigation Measure HAZ-CNST-A would require the preparation of new and/or amended site-specific RAPs to assess potential vapor intrusion concerns for indoor workers and residents to reduce potential vapor intrusion impacts during operation of the BART Extension to a *less-than-significant* level.

Passengers and Offsite Residents

BART passengers at the above-grade Santa Clara Station could be exposed to hazardous materials in soil and/or ballast (if any) by direct contact and/or inhalation of dust. Offsite residents near the Santa Clara Station and above-grade corridors of tracks could also be exposed to hazardous materials in soil and/or ballast (if any) by inhalation of dust disturbed by passing trains. The CMP establishes acceptable reuse concentrations for soil and ballast materials that account for potential health impacts on passengers and offsite residents. Implementation of the CMP prior to and during construction would either encapsulate or remove any soil or ballast materials that could pose a significant health risk to passengers or offsite residents for offsite disposal. The CMP would be implemented through site-specific RAPs prepared for and approved by the Regional Water Quality Control Board. Under the oversight of the Regional Water Quality Control Board, compliance with the CMP and RAPs is mandatory.

Implementation of Mitigation Measure HAZ-CNST-A would require the preparation of new and/or amended site-specific RAPs that incorporate the findings of the ISA to reduce potential impacts on passengers and offsite residents that could result from the disturbance of hazardous materials in soil and ballast materials during operation of the BART Extension to a *less-than-significant* level.

Pump Station Dewatering

The discharge of groundwater collected by pump stations could potentially contain elevated concentrations of hazardous materials that could adversely affect the environment if not properly managed. The treatment and discharge of contaminated groundwater (if any) collected by pump stations would be subject to NPDES permits. Therefore, the extraction of contaminated groundwater during operation of the BART Extension would have a *less-than-significant* impact on the environment, and no mitigation is required.

Impact BART Extension HAZ-5: Be located within an airport land use plan area or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the alignment

Construction

Based on review of the CLUPs adopted by the Santa Clara County ALUC and the City of San Jose's *Diridon Station Area Plan*, any construction equipment that would exceed a height of ~~an elevation of approximately 212 feet~~ 212 feet above mean sea level or 120 feet in the Diridon Station area and 150 feet near the Santa Clara Station and Newhall Maintenance Facility (considering site-specific ground elevation) could potentially affect navigable airspace associated with the Norman Y. Mineta San Jose International Airport. ~~The most conservative height restriction for the BART Extension would apply to construction near the Santa Clara Station and Newhall Maintenance Facility about 0.5 mile southwest of the airport, where equipment exceeding a maximum height of about 150 feet above the ground surface could affect navigable airspace.~~ As such, construction equipment would not exceed a height of ~~150~~ 120 feet. As mentioned in Section 6.10.2.2, *Regulatory Setting,* the FAA may determine that structures (and in this case, construction equipment) below an obstruction surface could create an adverse impact on aviation safety due to other airspace considerations. Thus, construction equipment would require FAA review if they exceed FAR Part 77 notification surface thresholds of 40 to 45 feet in the Diridon Station area and 20 to 25 feet in height in the Santa Clara Station and Newhall Maintenance Facility areas. It is anticipated that FAA would ultimately provide a "determination~~s~~ of no hazard." Compliance with any conditions set forth in an FAA no-hazard determination, would ensure that no significant impact on air safety or air traffic patterns would occur. Therefore, impacts on navigable airspace for public-use airports during construction of the BART Extension would be *less than significant* because construction equipment would not exceed the designated height restrictions for protected airspace~~,~~ and would conform to FAA no-hazard determination requirements. ~~and n~~No mitigation is required.

Operation

To comply with the Santa Clara County ALUC restrictions, no structures would exceed an elevation of 150 feet above the ground surface near the Santa Clara Station and Newhall Maintenance Facility, nor the 212-foot above mean sea level limit in any other portions of the alignment. Therefore, impacts on navigable airspace for public-use airports during operation of the BART Extension would be *less than significant* because structures would not exceed the designated height restrictions for protected airspace. No mitigation is required.

Impact BART Extension HAZ-6: Be located within the vicinity of a private airstrip, resulting in a safety hazard for people residing or working in the alignment

Based on a review of FAA records, there are no private airstrips in the vicinity of the BART Extension. Therefore, construction and operation of the BART Extension would have

no impacts related to the obstruction of navigable airspace in the vicinity of a private airstrip. No mitigation is required.

Impact BART Extension HAZ-7: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan

Construction

Construction activities associated with the BART Extension would likely result in some temporary traffic delays, but would not be expected to completely interrupt or obstruct emergency vehicle access along nearby roadways. Moreover, the BART Extension would not include any characteristics (e.g., permanent road closures, long-term blocking of road access) that would physically impair or otherwise interfere with emergency response or evacuation. All large construction vehicles entering and exiting the construction staging areas would be guided by personnel using signs and flags to direct traffic. Also, during construction activities, the BART Extension would be required to comply with applicable requirements set forth by the Santa Clara County Local Hazard Mitigation Plan, SCFD, and San Jose Office of Emergency Services. Therefore, construction of the BART Extension would have a *less-than-significant* impact related to emergency response and evacuation activities. No mitigation is required.

Operation

As described in Chapter 3, *NEPA and CEQA Transportation Operation Analysis*, operation of the BART Extension would result in localized increases in traffic near the stations. However, the BART Extension is a transit project that is expected to reduce the number of cars on the road at a regional level. VTA and BART would work with the local emergency providers to ensure adequate emergency response and evacuation procedures. Any potential increase in the level of traffic congestion would not impair future emergency response and evacuation procedures. Impacts would be *less than significant*. No mitigation is required.

Impact BART Extension HAZ-8: Exposure of people or structures to a significant risk involving wildland fires

Based on review of CAL FIRE (2008) mapping, there are no Very High Fire Hazard Severity Zones on or adjacent to the alignment, as it would be located in fully developed areas of Santa Clara County and not intermixed with wildland areas. Therefore, construction and operation of the BART Extension would have *no impacts* related to wildland fires, and no mitigation is required.

6.10.5.3 BART Extension with TOJD Alternative

Impact BART Extension + TOJD HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials

Construction

Construction impacts and mitigation measures would be similar to those discussed under the BART Extension Alternative.

Operation

Hazardous materials would be routinely managed during BART Extension with TOJD Alternative operations (see the detailed discussion under Impact BART Extension HAZ-1). Because transit-oriented joint development (TOJD) would consist of office, retail, and residential land uses, its operations are expected to involve materials such as solvents, cleaning agents, paints, pesticides, propane, antifreeze, batteries, and aerosol cans. These materials are generally used in small, localized amounts, and any spills that may occur would be cleaned up as soon as they occur. Although TOJD might account for an increase in amounts of common types of hazardous materials, routine use of these products would not result in a significant hazard to residents or workers in the vicinity of the BART Extension with TOJD Alternative. In addition, it is not expected that TOJD would handle acutely hazardous materials, substances, or waste. As such, the BART Extension with TOJD Alternative would not result in a significant hazard to the public or to the environment through the routine transport, use, or disposal of hazardous waste during operations. Impacts would be *less than significant*. No mitigation is required.

Impact BART Extension + TOJD HAZ-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment

Construction

Construction impacts and mitigation measures would be similar to those discussed under the BART Extension Alternative.

Operation

As previously mentioned, hazardous materials would be routinely managed during operation of the BART Extension with TOJD Alternative. However, TOJD operations are expected to involve materials common to commercial and residential uses. These materials are generally used in small, localized amounts, and any spills that may occur would be cleaned up as soon as they occur. Impacts would be *less than significant*. No mitigation is required.

Impact BART Extension + TOJD HAZ-3: Emission of hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school

Construction

Construction impacts would be similar to those discussed under the BART Extension Alternative.

Operation

The handling of hazardous materials during operation of the TOJDs is expected to involve materials common to commercial and residential uses and would not include acutely hazardous substances. As such, the TOJDs would not result in emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school during operations. Impacts would be *less than significant*. No mitigation is required.

Impact BART Extension + TOJD HAZ-4: Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment

Construction

Construction impacts and mitigation measures would be similar to those discussed under the BART Extension Alternative.

Operation

Based on the ISA (BASELINE Environmental Consulting 2017~~5~~), hazardous materials may be present in soil, ballast, and groundwater. Petroleum hydrocarbons, chlorinated solvents, and metals are the primary contaminants of concern in soil and groundwater from known hazardous materials release sites. Arsenic and lead are the primary contaminants of concern in shallow soil and ballast along existing railroad corridors.

Maintenance Workers

Impacts on maintenance workers under the BART Extension with TOJD Alternative would be similar to those discussed under the BART Extension Alternative. Implementation of Mitigation Measure HAZ-CNST-A would ensure that site-specific RAPs are prepared and implemented that would reduce impacts on maintenance workers that could result from the disturbance of hazardous materials in soil and ballast materials during operation of the BART Extension with TOJD Alternative to a *less-than-significant* level.

Indoor Workers and Residents

Vapor intrusion of groundwater contaminants (e.g., chlorinated solvents) into future BART Extension and TOJD structures could pose an inhalation hazard to indoor workers and residents.

Implementation of Mitigation Measure HAZ-CNST-A would require the preparation of new and/or amended site-specific RAPs to assess potential vapor intrusion concerns for indoor workers and residents to reduce potential vapor intrusion impacts during operation of the BART Extension with TOJD Alternative to a *less-than-significant* level.

Passengers and Offsite Residents

BART passengers at the above-grade Santa Clara Station could be exposed to hazardous materials in soil and/or ballast (if any) by direct contact and/or inhalation of dust. Offsite residents near the Santa Clara Station and above-grade corridors of tracks could also be exposed to hazardous materials in soil and/or ballast (if any) by inhalation of dust disturbed by passing trains. The CMP establishes acceptable reuse concentrations for soil and ballast materials that account for potential health impacts on passengers and offsite residents. Implementation of the CMP prior to and during construction would either encapsulate or remove any soil or ballast materials that could pose a significant health risk to passengers or offsite residents for offsite disposal. The CMP would be implemented through site-specific RAPs prepared for and approved by the Regional Water Quality Control Board. Under the oversight of the Regional Water Quality Control Board, compliance with the CMP and RAPs is mandatory.

Implementation of Mitigation Measure HAZ-CNST-A would require the preparation of new and/or amended site-specific RAPs that incorporate the findings of the ISA to reduce potential impacts on passengers and offsite residents that could result from the disturbance of hazardous materials in soil and ballast materials during operation of the BART Extension with TOJD Alternative to a *less-than-significant* level.

Pump Station Dewatering

Impacts related to pump station dewatering under the BART Extension with TOJD Alternative would be similar to those discussed under the BART Extension Alternative. Extraction of contaminated groundwater during operation of the BART Extension with TOJD Alternative would have a *less-than-significant impact* on the environment, and no mitigation is required.

Impact BART Extension + TOJD HAZ-5: Be located within an airport land use plan area or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the alignment

Construction

Construction impacts and mitigation measures would be similar to those discussed under the BART Extension Alternative.

Operation

~~To comply with Santa Clara County ALUC restrictions, no structures would exceed an elevation of 150 feet above the ground surface near the Santa Clara Station and Newhall Maintenance Facility. The TOJD at the Diridon Station (both South and North Options) is within the approach zone of the Norman Y. Mineta San Jose International Airport and within the Diridon Station Area Plan Development, and is therefore subject to restrictive height limits of 263 feet. The TOJD in the area would consist of a maximum height of eight stories (or 120 feet) and would be well below height restrictions found in the CLUP (of 263 feet) for this area.~~

The TOJD at the Diridon Station (both North and South Options) is within the approach zone of the Norman Y. Mineta San Jose International Airport and within the Diridon Station Area Plan Development. Based on review of the CLUPs adopted by the Santa Clara County ALUC and the City of San Jose's Diridon Station Area Plan, which includes a policy setting a maximum building height of 212 feet above mean sea level or approximately 115–120 feet above ground surface for any building in the Diridon Station area, height restrictions would apply to the TOJD. If exceeding 150 feet near the Santa Clara Station and Newhall Maintenance Facility (considering site-specific ground elevation), the TOJD could potentially affect navigable airspace associated with the Norman Y. Mineta San Jose International Airport.

Additionally, the TOJD would be subject to review as per FAA Part 77 notification requirements (as discussed under Impact BART Extension HAZ-5). Therefore, impacts on navigable airspace for public-use airports during operation of the BART Extension with TOJD Alternative would be *less than significant* because structures would not exceed the designated height restrictions for protected airspace and would conform to FAA no-hazard determination requirements. No mitigation is required.

Impact BART Extension + TOJD HAZ-6: Be located within the vicinity of a private airstrip, resulting in a safety hazard for people residing or working in the alignment

Construction and operations impact and mitigation measures would be similar to those discussed under the BART Extension Alternative.

Impact BART Extension + TOJD HAZ-7: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan

Construction and operations impacts and mitigation measures would be similar to those discussed under the BART Extension Alternative.

Impact BART Extension + TOJD HAZ-8: Exposure of people or structures to a significant risk involving wildland fires

Construction and operations impacts and mitigation measures would be similar to those discussed under the BART Extension Alternative.

6.10.6 CEQA Conclusion

The BART Extension Alternative and the BART Extension with TOJD Alternative would have *less-than-significant impacts* after mitigation related to upset and accident conditions involving the release of hazardous materials and being located on a hazardous material site.

Given compliance with applicable regulations, the BART Extension Alternative and the BART Extension with TOJD Alternative would have *less-than-significant impacts* related to the routine transport, use, or disposal of hazardous materials, emission or handling of hazardous or acutely hazardous materials near a school, or being located within 2 miles of a public airport or public use airport.

The BART Extension Alternative and the BART Extension with TOJD Alternative would have *no impacts* related to being located in the vicinity of a private airstrip or public airport or potential exposure of people or structures to wildland fires.

The potential for implementation of mitigation measures to result in secondary impacts is low. *No impacts* would occur.

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6.11 Land Use

6.11.1 Introduction

This section discusses existing conditions and the regulatory setting regarding land use and describes impacts under CEQA that would result from construction and operation of the CEQA Alternatives.

A range of land uses exist along the alignment including residential, commercial, retail, institutional, and industrial uses. There are no agricultural land uses on the BART Extension or transit-oriented joint development (TOJD) sites. Figures 6.11-1 through 6.11-9, 6.11-A, and 6.11-B show existing land uses at the stations, BART Extension, and TOJD sites. Refer to Chapter 4, Section 4.11.2, *Environmental and Regulatory Setting*, for more detail regarding the types of existing land uses within the study area, and Chapter 5, *NEPA Alternatives Analysis of Construction*, for a summary of land uses adjacent to the construction staging areas (CSAs).

6.11.2 Regulatory Setting

Relevant land use goals and policies from regional agencies and the Cities of San Jose and Santa Clara are described by jurisdiction below. The following regional and local regulations are relevant to the Bart Extension.

6.11.2.1 Regional Plans and Policies

Santa Clara Valley Transportation Authority

Valley Transportation Plan

As the Congestion Management Agency for Santa Clara County, VTA developed *Valley Transportation Plan 2040* (VTP 2040), a countywide transportation plan that includes policies and programs for roadways, transit, Intelligent Transportation Systems, bicycle and pedestrian facilities, and land use (Santa Clara Valley Transportation Authority 2009). The goal of VTP 2040 is to "provide transportation facilities and services that support and enhance the county's continued success by fostering a high quality of life for Santa Clara County's residents and continued health of Santa Clara County's economy." VTP 2040 builds upon VTP 2035 and highlights the projects and programs that will be pursued in partnership with member agencies in the next 25 years.

Legend

- Transit-Oriented Joint Development
- Parking Lot
- System Facilities
- Underground Station

San Jose General Plan Land Use Designations

- Urban Village
- Residential Neighborhood
- Neighborhood / Community Commercial
- Public / Quasi-Public
- Mixed Use Neighborhood
- Open Space, Parklands and Habitat
- Light Industrial

N

NOT TO SCALE

Source: Circlepoint; Google Earth, 2015.

Graphics ... 00332.13 (6-9-2016) lm

Figure 6.11-1
San Jose General Plan Land Use Designations – Alum Rock/28th Street Station
VTA's BART Silicon Valley–Phase II Extension Project

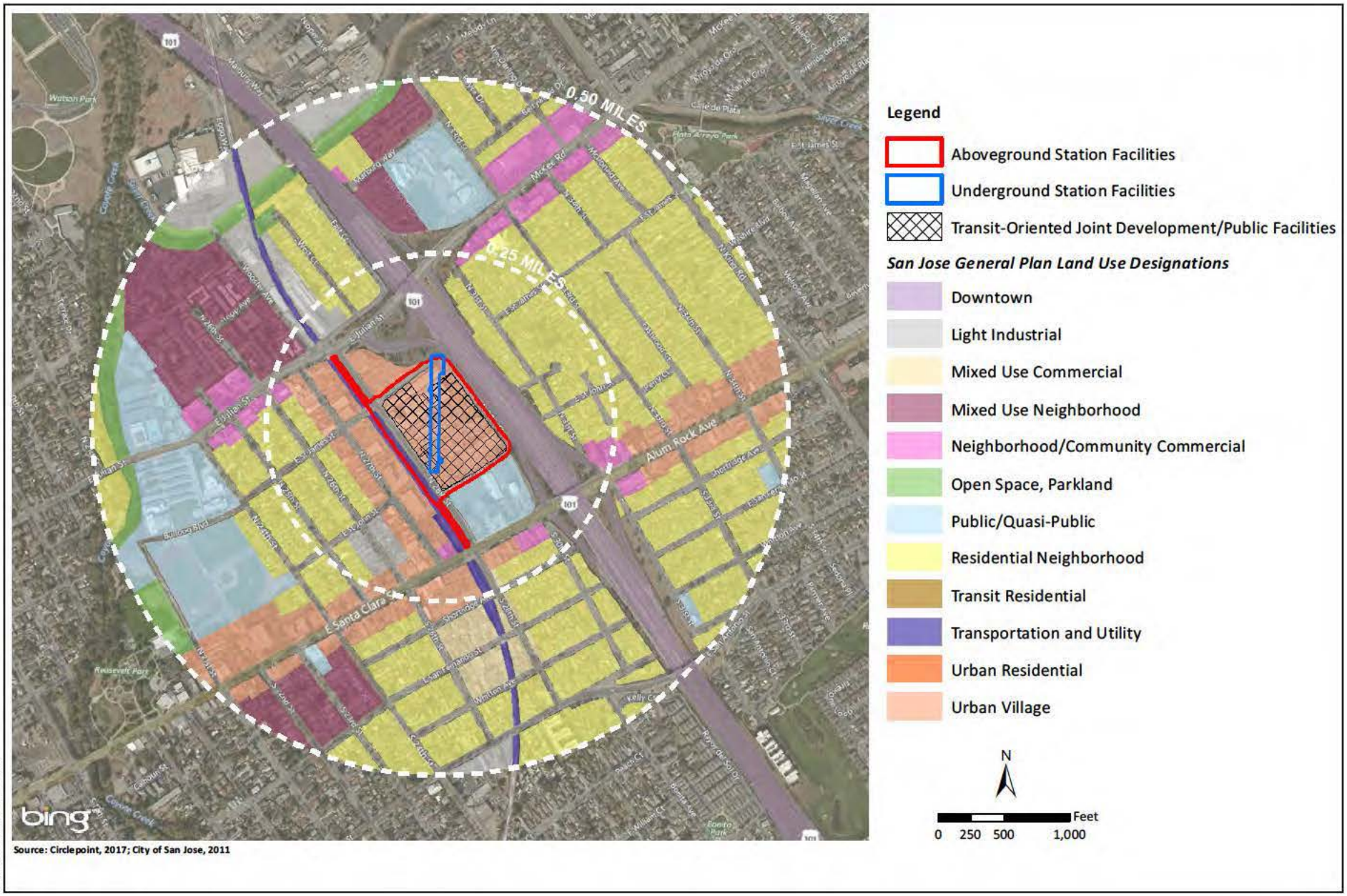
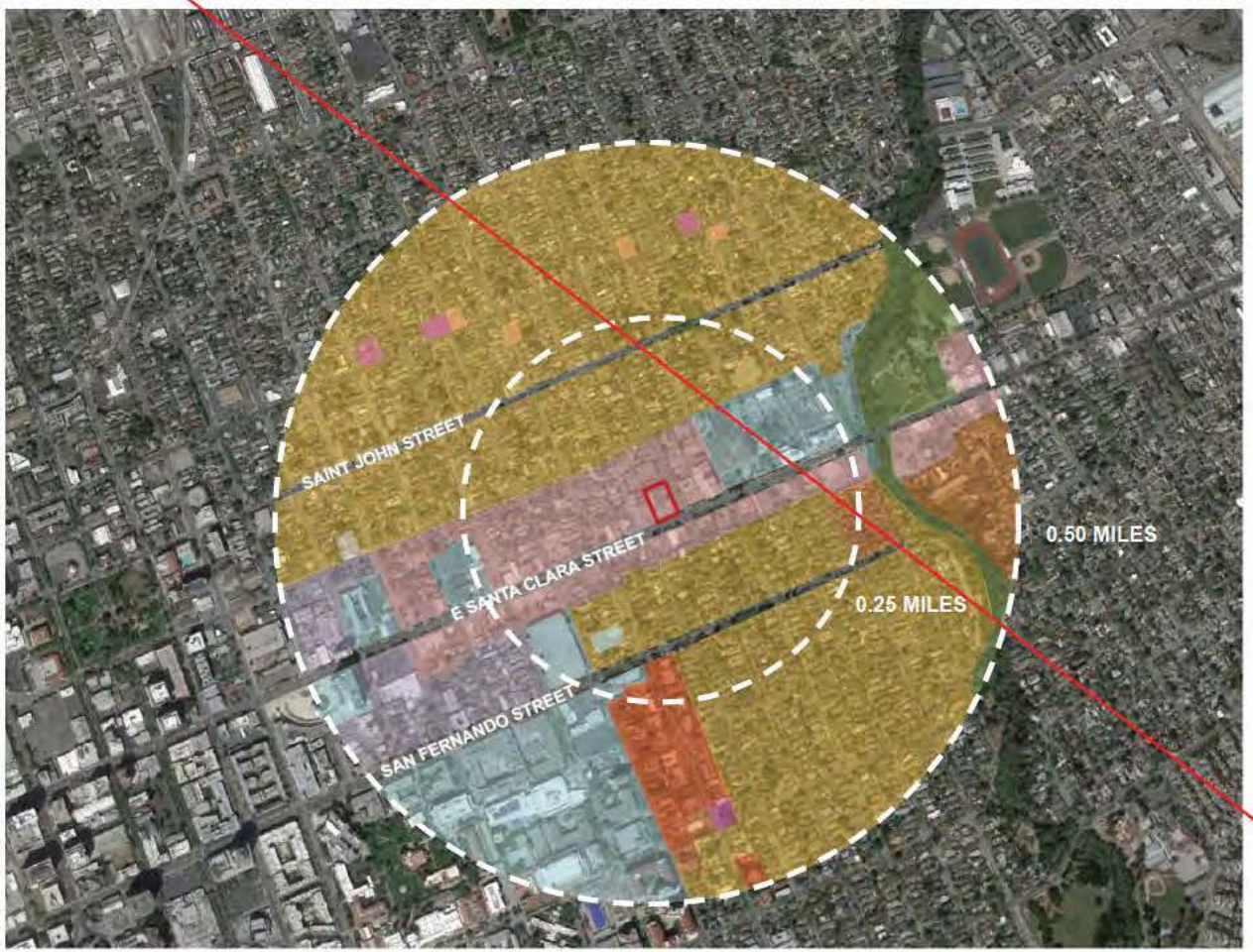


Figure 6.11-1
San Jose General Plan Land Use Designations –
Alum Rock/28th Street Station (Single and Twin Bore) (Revised)
VTA's BART Silicon Valley–Phase II Extension Project



Legend

Transit-Oriented Joint Development

San Jose General Plan Land Use Designations

- Urban Village
- Residential Neighborhood
- Neighborhood / Community Commercial
- Public / Quasi-Public
- Mixed Use Neighborhood
- Urban Residential
- Open Space, Parklands and Habitat
- Downtown

Source: Circlepoint; Google Earth, 2015.

N

NOT TO SCALE

Graphics ... 00332.13 (6-9-2016) lm

Figure 6.11-2
San Jose General Plan Land Use Designations – 13th Street Ventilation Facility
VTA's BART Silicon Valley–Phase II Extension Project

Source: Circlepoint, 2017; City of San Jose, 2011

Graphics ... 00332.13 (8-28-2017)

Figure 6.11-2
San Jose General Plan Land Use Designations – 13th Street Ventilation Facility (Revised)
VTA's BART Silicon Valley–Phase II Extension Project

Legend

- Transit-Oriented Joint Development
- Underground Station
- System Facilities

San Jose General Plan Land Use Designations

- Urban Village
- Urban Residential
- Residential Neighborhood
- Neighborhood / Community Commercial
- Public / Quasi-Public
- Mixed Use Commercial
- Transit Residential
- Open Space, Parklands and Habitat
- Downtown

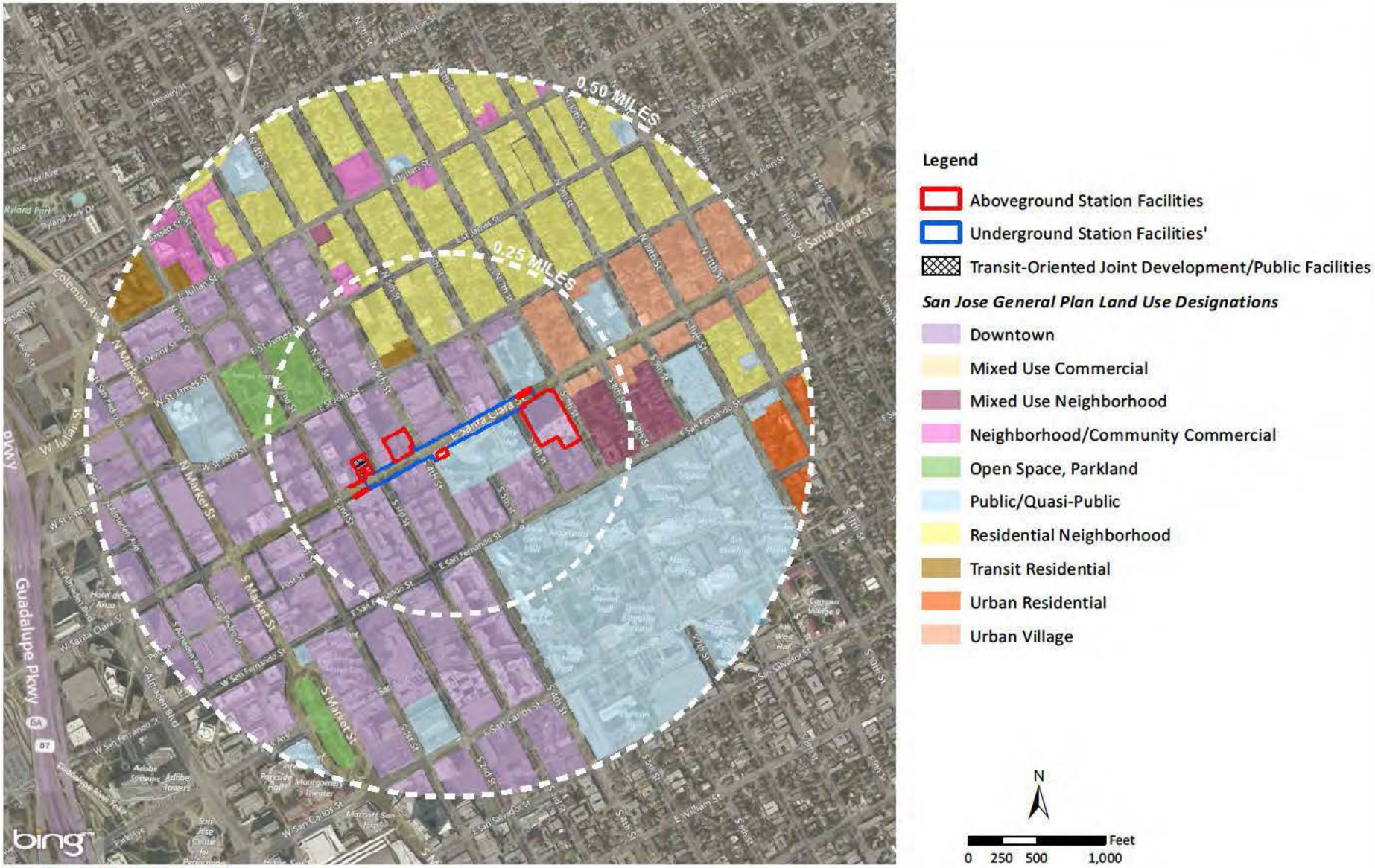
N

NOT TO SCALE

Source: Circlepoint; Google Earth, 2015.

Graphics ... 00332.13 (6-9-2016) tm

Figure 6.11-3
San Jose General Plan Land Use Designations – Downtown San Jose Station East Option
VTA's BART Silicon Valley–Phase II Extension Project



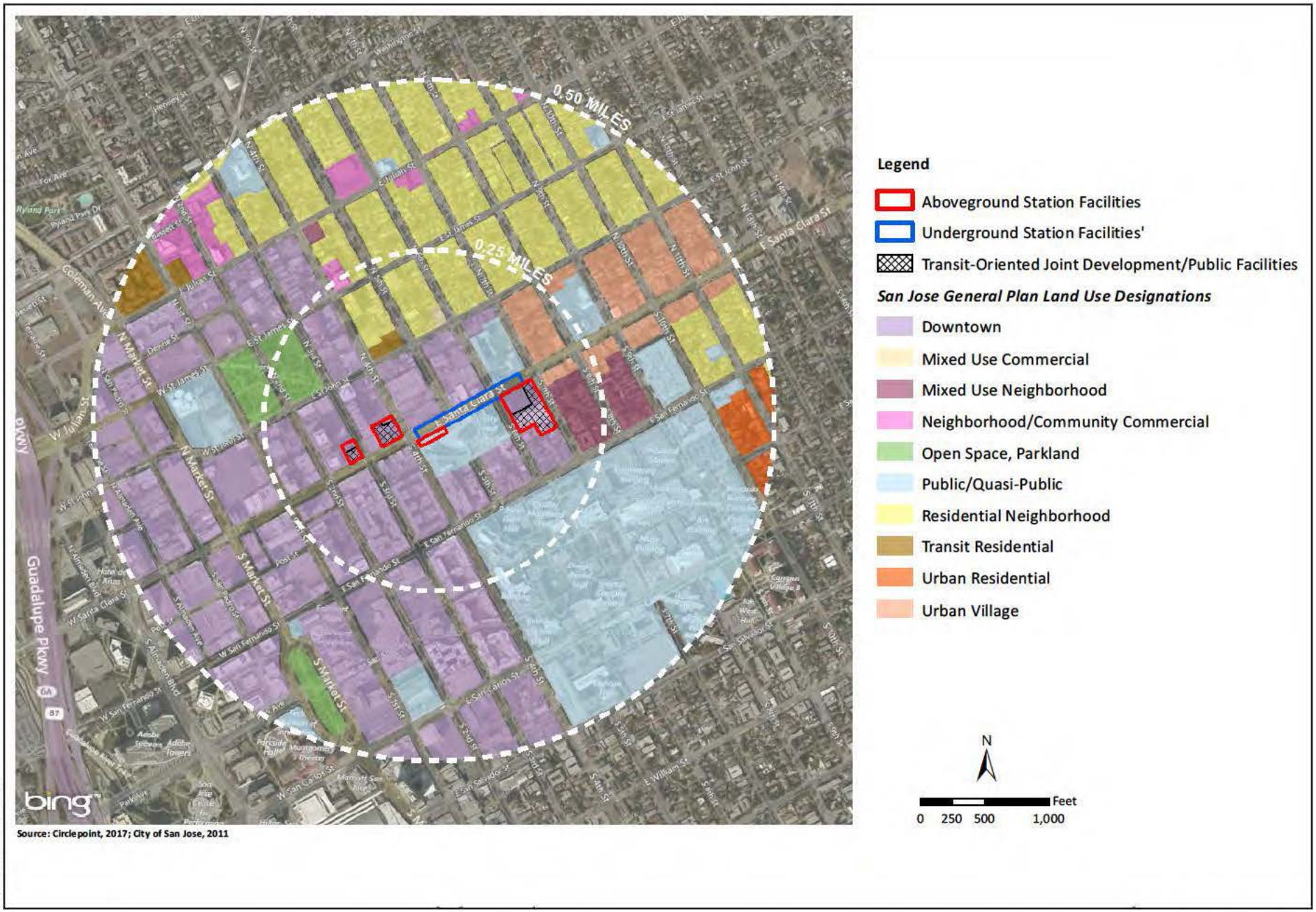
Source: Circlepoint, 2017; City of San Jose, 2011

Graphics ... 00332.13 (11-15-2017)

Figure 6.11-3

San Jose General Plan Land Use Designations – Downtown San Jose Station East Option (Twin Bore) (Revised)

VTA's BART Silicon Valley–Phase II Extension Project



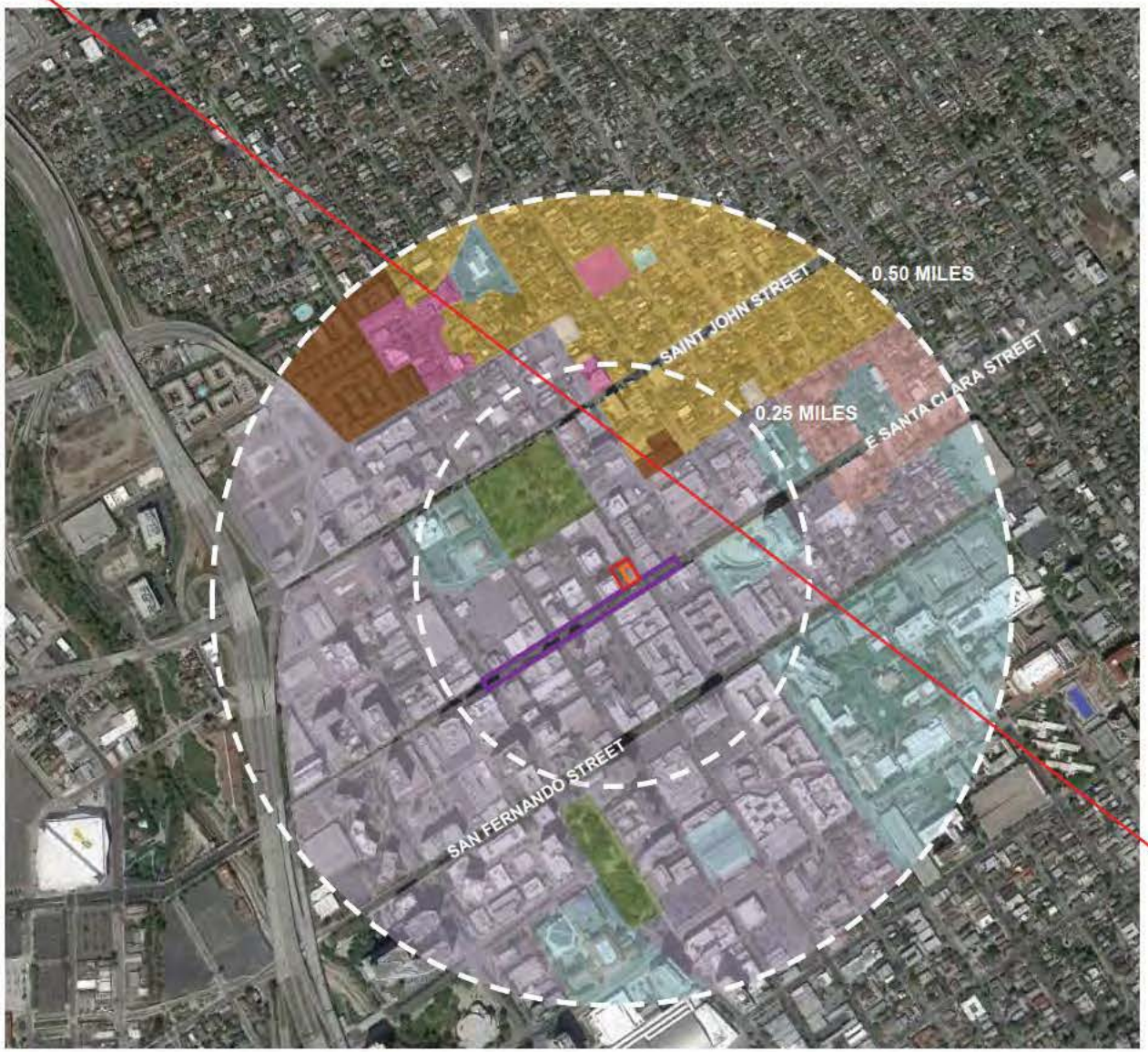
Source: Circlepoint, 2017; City of San Jose, 2011

Graphics ... 00332.13 (11-15-2017)

Figure 6.11-A

San Jose General Plan Land Use Designations – Downtown San Jose Station East Option (Single Bore)

VTA's BART Silicon Valley–Phase II Extension Project



Legend

- Transit-Oriented Joint Development
- System Facilities
- Underground Station

San Jose General Plan Land Use Designations

- Urban Village
- Urban Residential
- Residential Neighborhood
- Neighborhood / Community Commercial
- Public / Quasi-Public
- Mixed Use Commercial
- Transit Residential
- Open Space, Parklands and Habitat
- Downtown

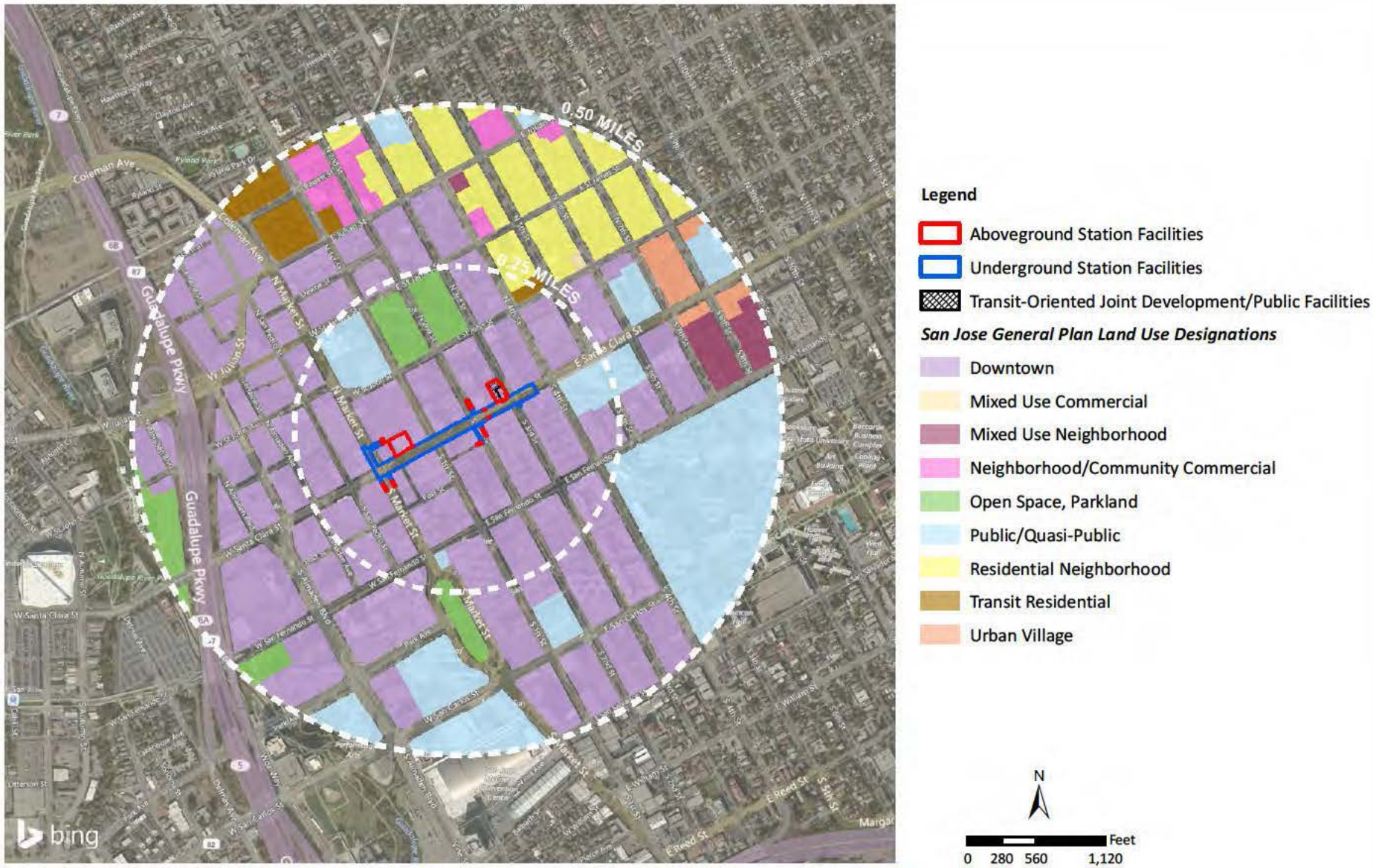
N

NOT TO SCALE

Source: Circlepoint; Google Earth, 2015.

Graphics ... 00332.13 (6-9-2016) tm

Figure 6.11-4
San Jose General Plan Land Use Designations – Downtown San Jose Station West Option
VTA's BART Silicon Valley–Phase II Extension Project



Source: Circlepoint, 2017; City of San Jose, 2011

Graphics ... 00332.13 (11-15-2017)

Figure 6.11-4

San Jose General Plan Land Use Designations – Downtown San Jose Station West Option (Twin Bore) (Revised)

VTA's BART Silicon Valley–Phase II Extension Project

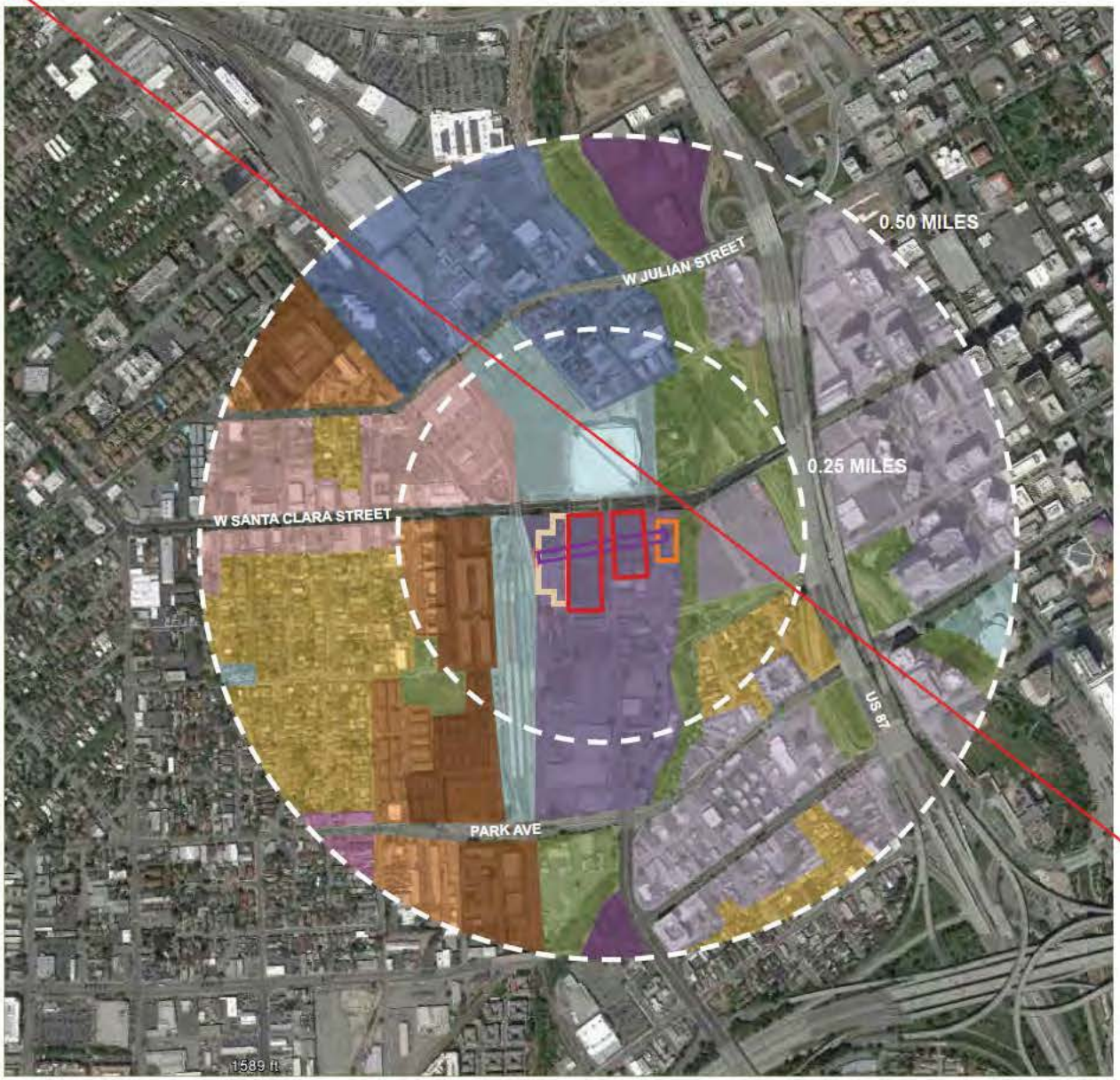
Source: Circlepoint, 2017; City of San Jose, 2011

Graphics ... 00332.13 (11-15-2017)

Figure 6.11-B

San Jose General Plan Land Use Designations – Downtown San Jose Station West Option (Single Bore)

VTA's BART Silicon Valley–Phase II Extension Project



Legend

- Transit-Oriented Joint Development / Public Facilities
- Underground Station
- System Facilities
- At Grade Station / Bus Transit Center
- Urban Village
- Residential Neighborhood
- Neighborhood / Community Commercial
- Public / Quasi-Public
- Transit Employment Center
- Mixed Use Neighborhood
- Urban Residential
- Transit Residential
- Open Space, Parklands and Habitat
- Downtown
- Commercial Downtown
- Combined Industrial / Commercial

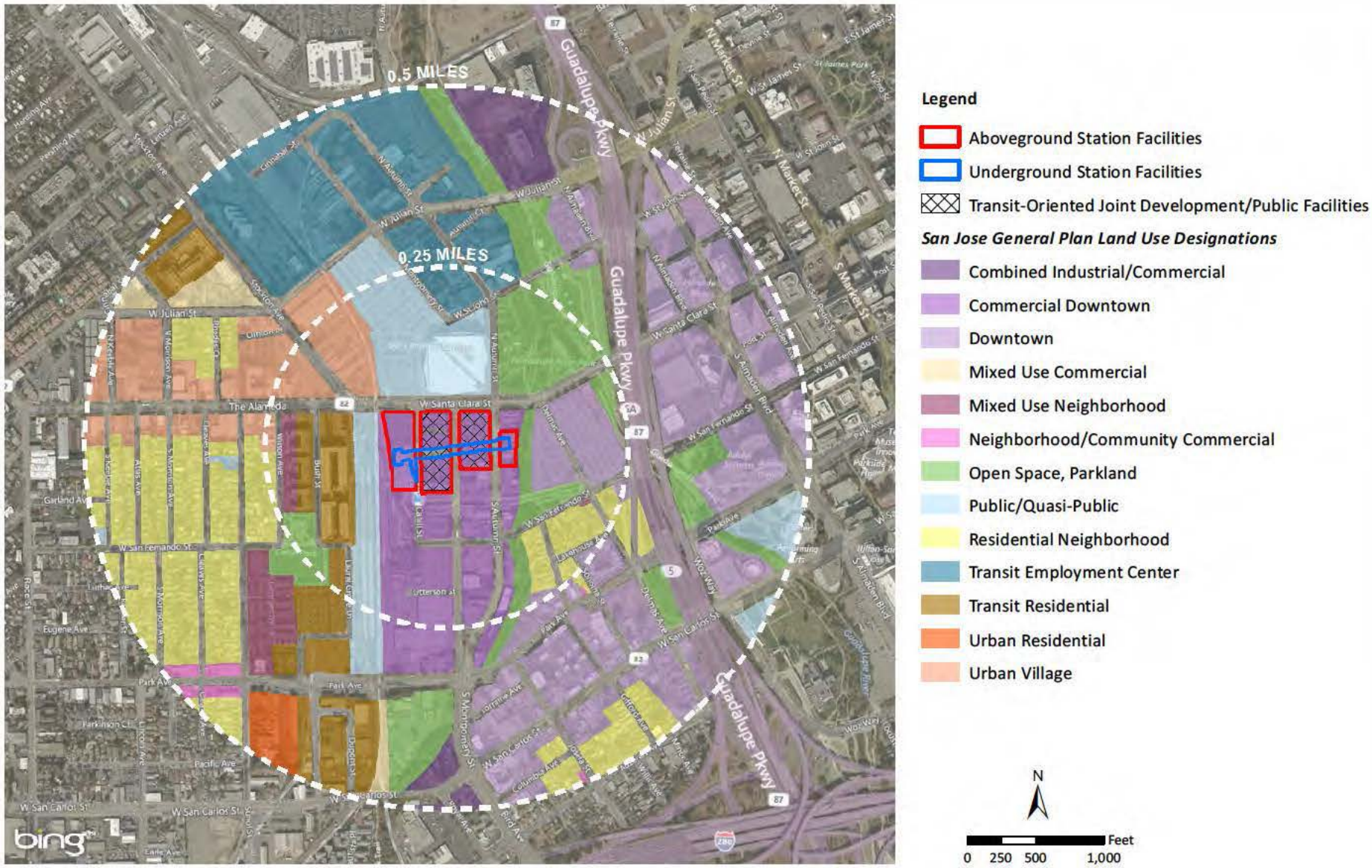
N

NOT TO SCALE

Source: Circlepoint; Google Earth, 2015.

Graphics ... 00332.13 (6-9-2016).lm

Figure 6.11-5
San Jose General Plan Land Use Designations – Diridon Station South Option
VTA's BART Silicon Valley–Phase II Extension Project



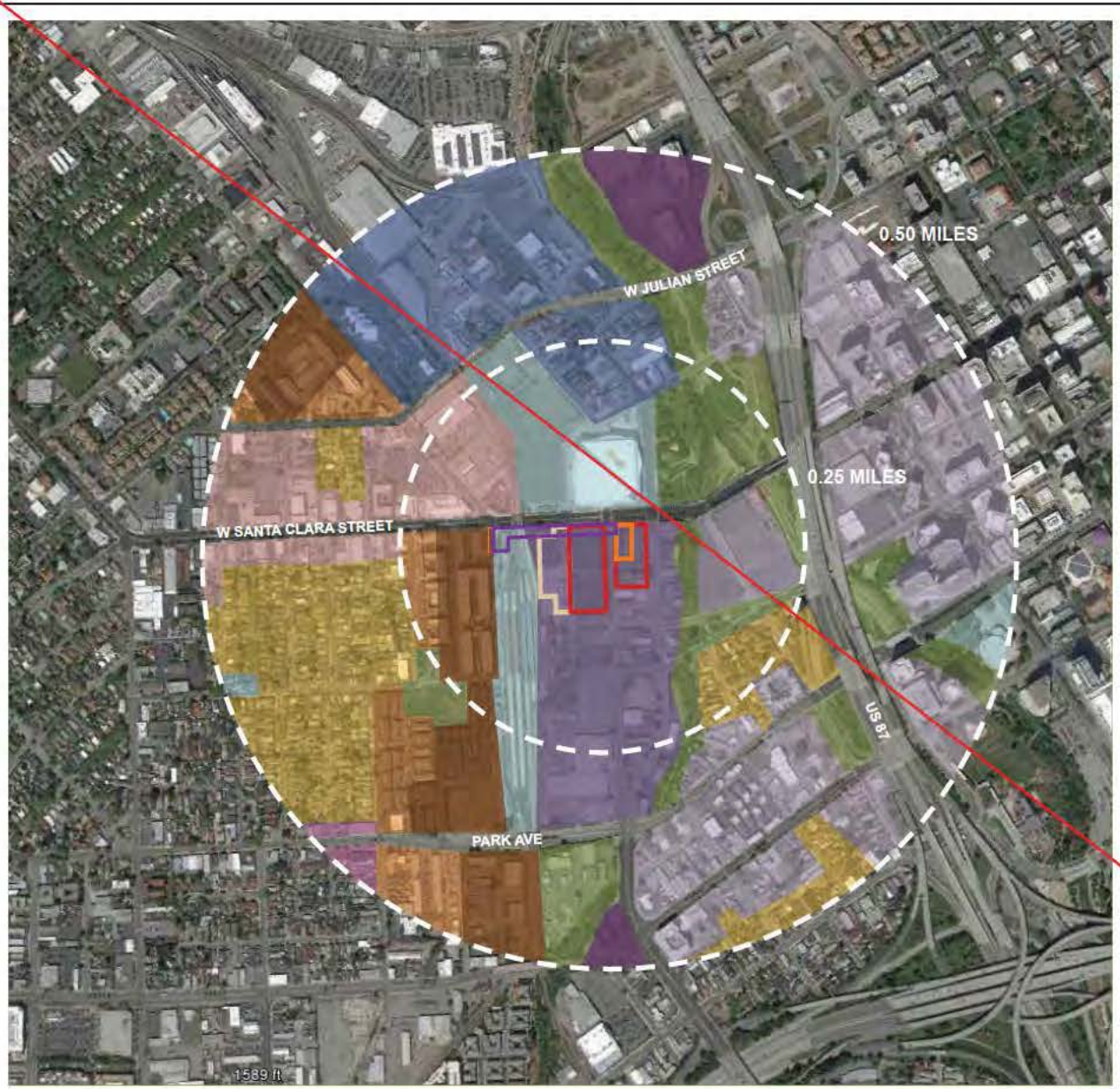
Source: Circlepoint, 2017; City of San Jose, 2011

Graphics ... 00332.13 (11-15-2017)

Figure 6.11-5

San Jose General Plan Land Use Designations – Diridon Station South Option (Single and Twin Bore) (Revised)

VTA's BART Silicon Valley–Phase II Extension Project



Legend

- Transit-Oriented Joint Development/Public Facilities
- Underground Station
- System Facilities
- At Grade Station / Bus Transit Center
- Urban Village
- Residential Neighborhood
- Neighborhood / Community Commercial
- Public / Quasi-Public
- Transit Employment Center
- Mixed Use Neighborhood
- Urban Residential
- Transit Residential
- Open Space, Parklands and Habitat
- Downtown
- Commercial Downtown
- Combined Industrial / Commercial

N

NOT TO SCALE

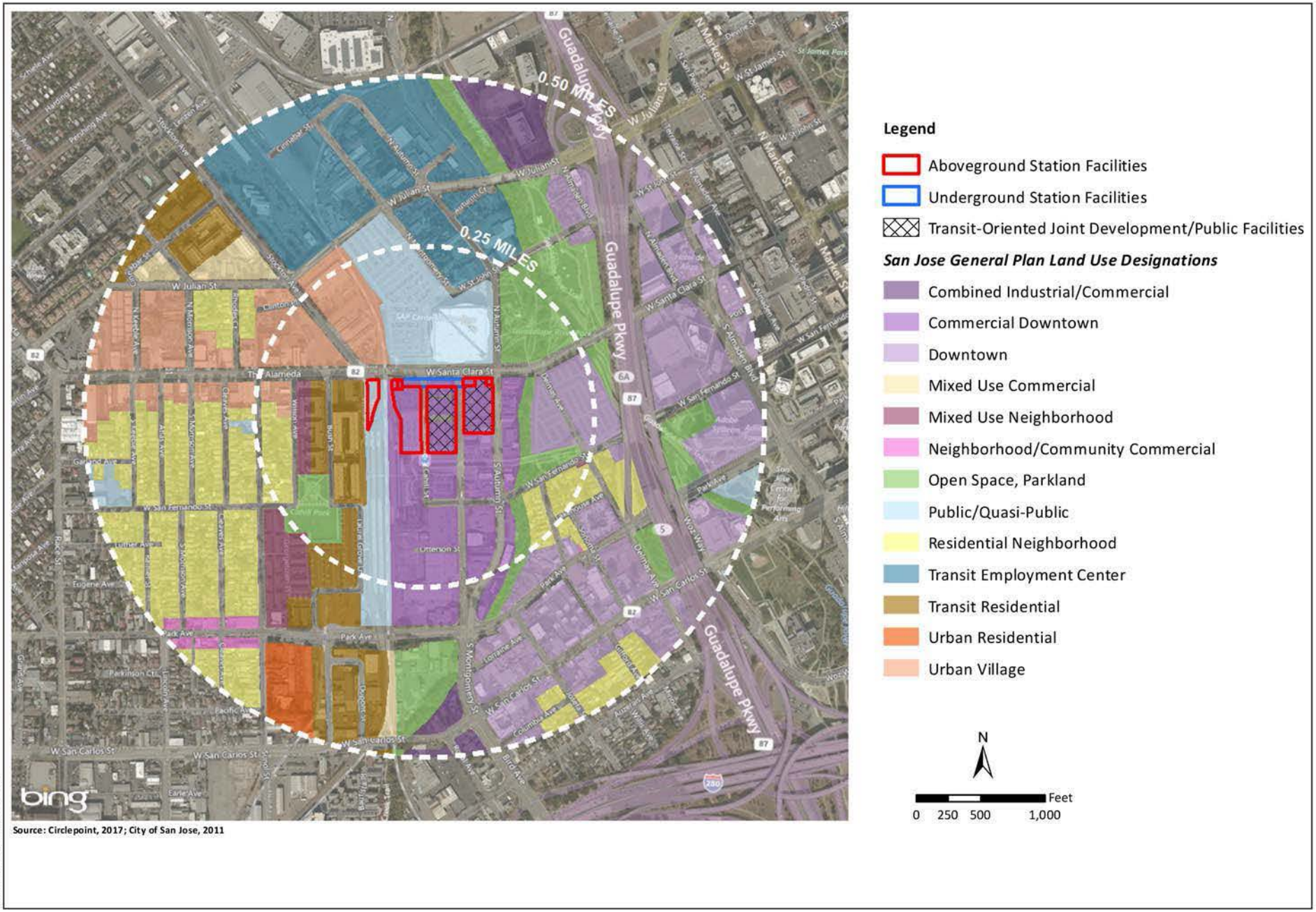
Source: Circlepoint; Google Earth, 2015.

Graphics ... 00332.13 (6-9-2016).ai

Figure 6.11-6

San Jose General Plan Land Use Designations – Diridon Station North, Single-Bore Option

VTA's BART Silicon Valley–Phase II Extension Project



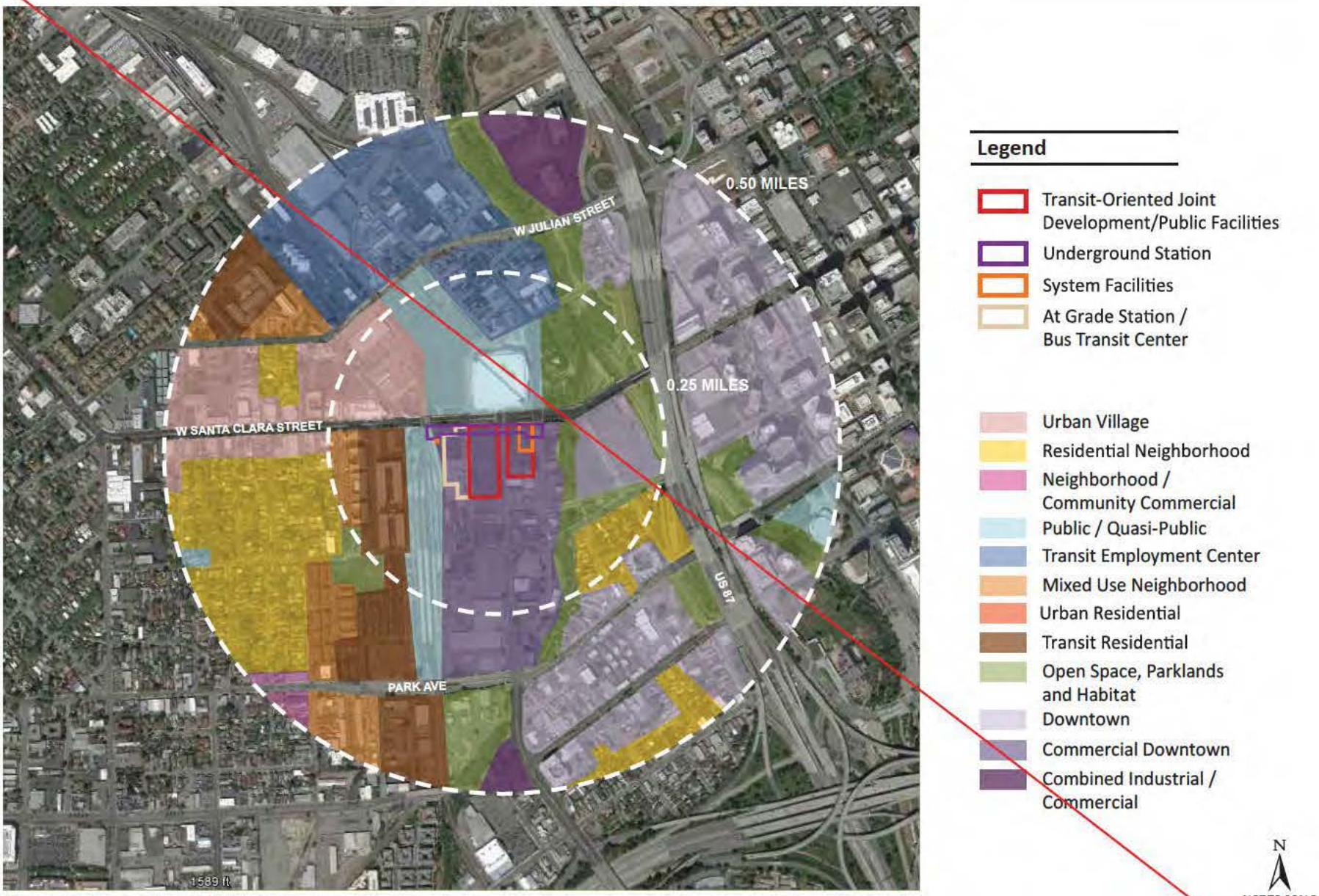
Source: Circlepoint, 2017; City of San Jose, 2011

Graphics ... 00232.13 (8-28-2017)

Figure 6.11-6

San Jose General Plan Land Use Designations – Diridon Station North Option (Single Bore) (Revised)

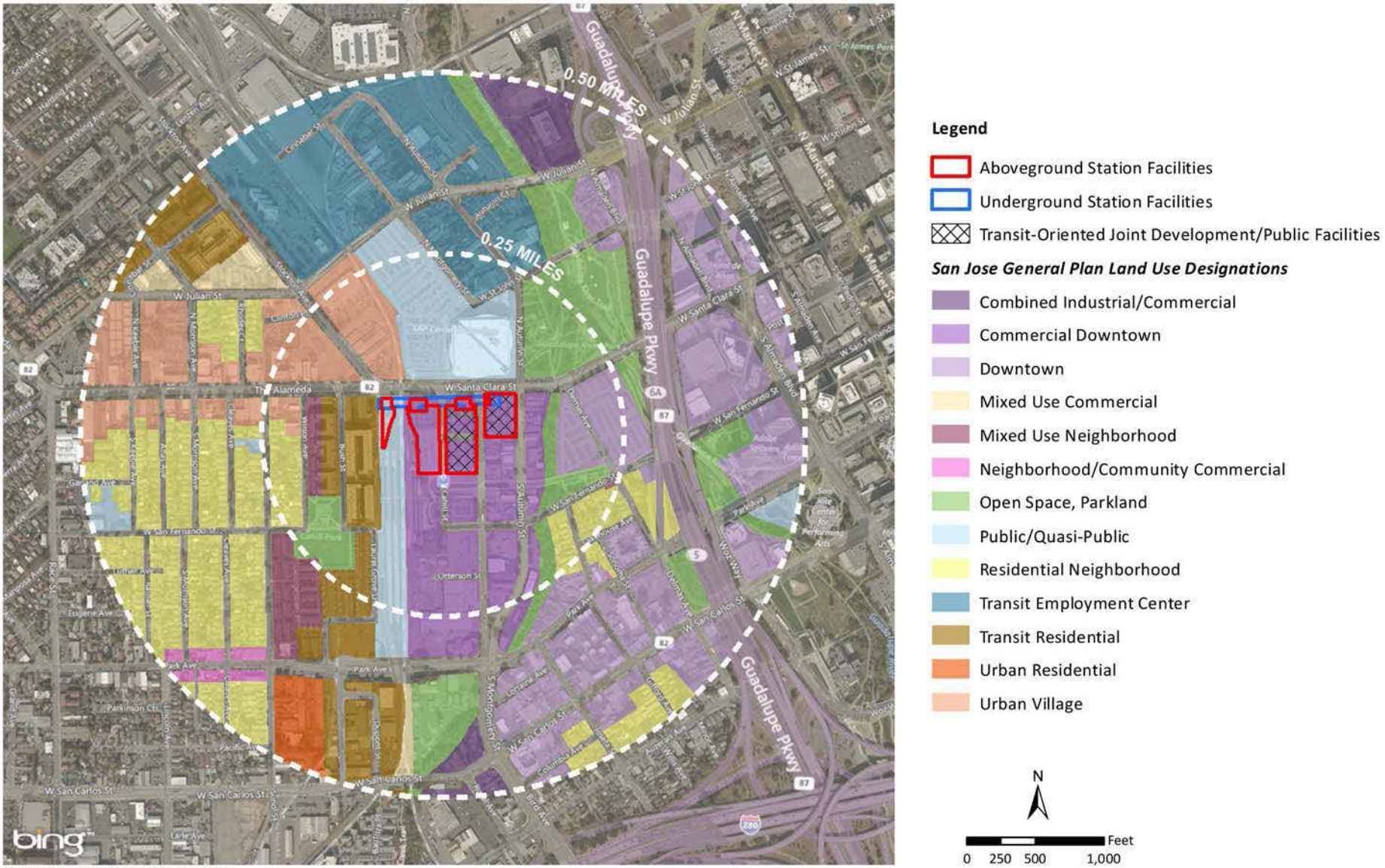
VTA's BART Silicon Valley–Phase II Extension Project



Source: Circlepoint; Google Earth, 2015.

Graphics ... 00332.13 (6-9-2016).ai

Figure 6.11-7
San Jose General Plan Land Use Designations – Diridon Station North, Twin-Bore Option
VTA's BART Silicon Valley–Phase II Extension Project



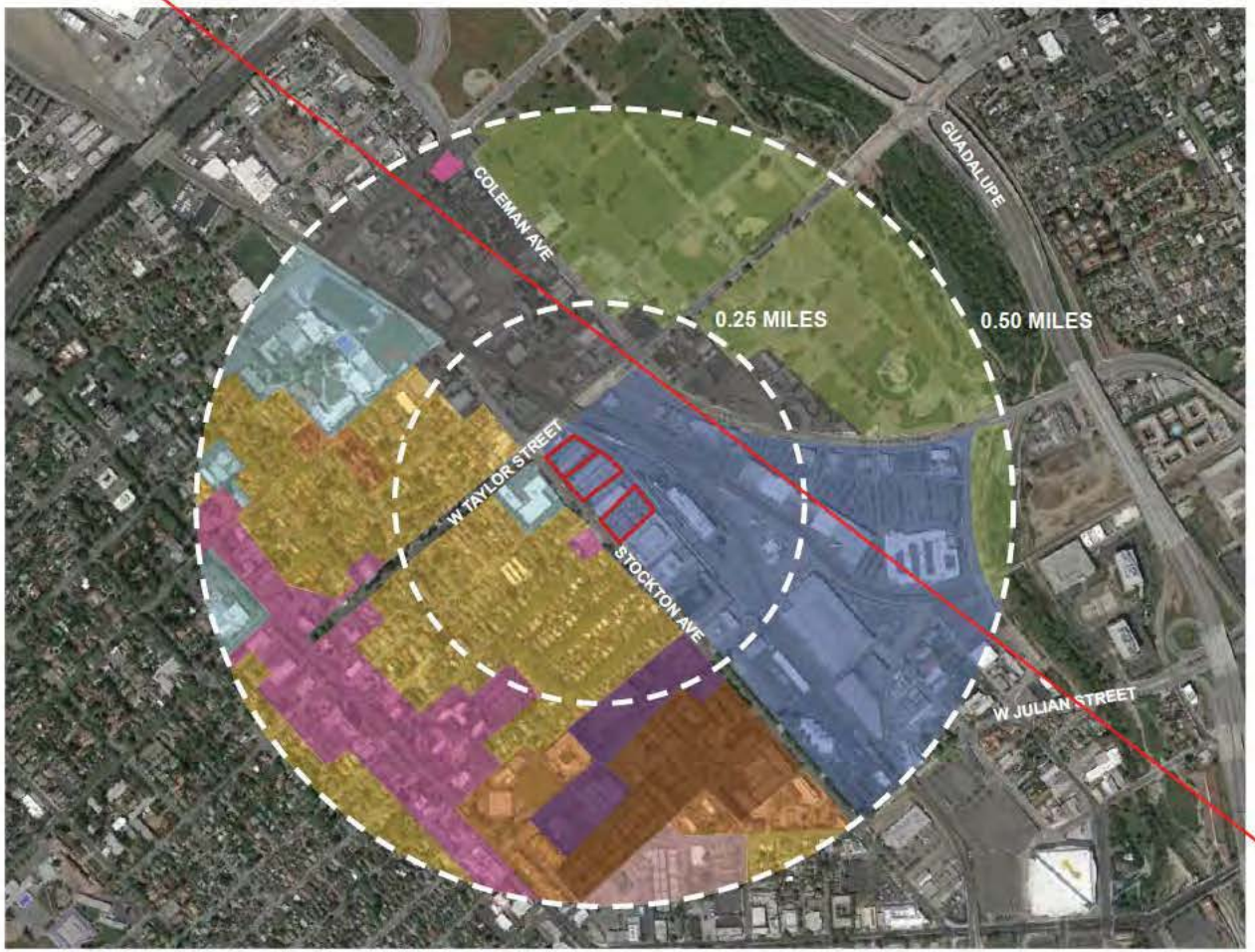
Source: Circlepoint, 2017; City of San Jose, 2011

Graphics ... 00332 13 (11-15-2017)

Figure 6.11-7

San Jose General Plan Land Use Designations – Diridon Station North Option (Twin Bore) (Revised)

VTA's BART Silicon Valley–Phase II Extension Project



Legend

- Transit-Oriented Joint Development

San Jose ***General Plan***
Land Use Designations

- Residential Neighborhood
- Public / Quasi-Public
- Open Space, Parklands and Habitat
- Combined Industrial / Commercial
- Light Industrial
- Mixed Use Neighborhood
- Transit Employment Center
- Neighborhood / Community Commercial
- Urban Village
- Transit Residential

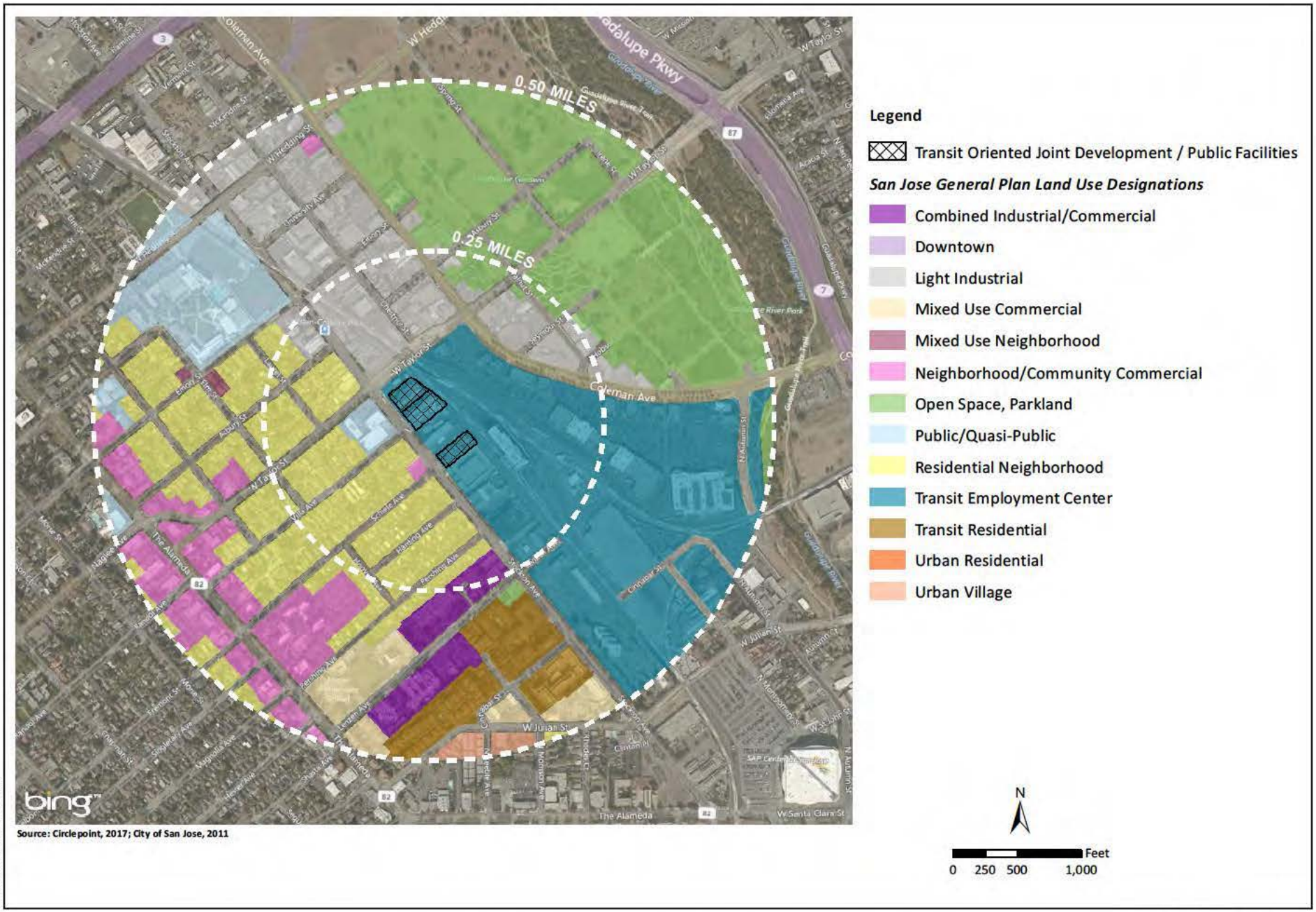
N

NOT TO SCALE

Source: Circlepoint; Google Earth, 2015.

Graphics ... 00332.13 (6-9-2016) tm

Figure 6.11-8
San Jose General Plan Land Use Designations – Stockton Avenue Ventilation Facility
VTA's BART Silicon Valley–Phase II Extension Project



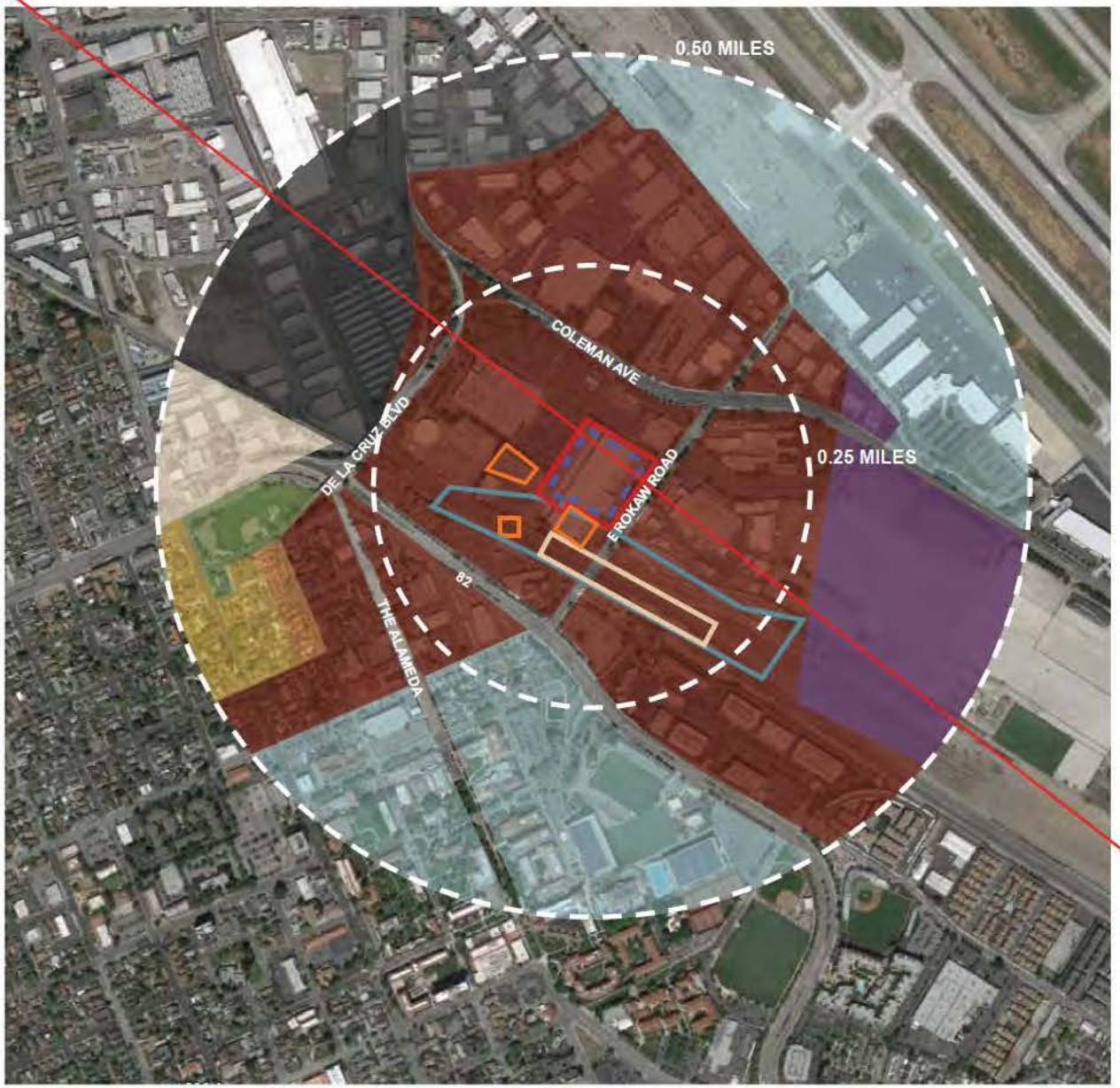
Source: Circlepoint, 2017; City of San Jose, 2011

Graphics ... 00332.13 (11-15-2017)

Figure 6.11-8

San Jose General Plan Land Use Designations – Stockton Avenue Ventilation Facility (Revised)

VTA's BART Silicon Valley–Phase II Extension Project



Legend

- Transit-Oriented Joint Development
- Parking Lot
- System Facilities
- At-Grade Station / Bus Transit Center
- Maintenance Facility with Vehicle Storage

Santa Clara General Plan Land Use Designations

- Residential Neighborhood
- Public / Quasi-Public
- Open Space, Parklands and Habitat
- Combined Industrial / Commercial
- Santa Clara Caltrain Station
- Light Industrial
- Heavy Industrial
- Mixed Use Commercial
- Mixed Use Neighborhood

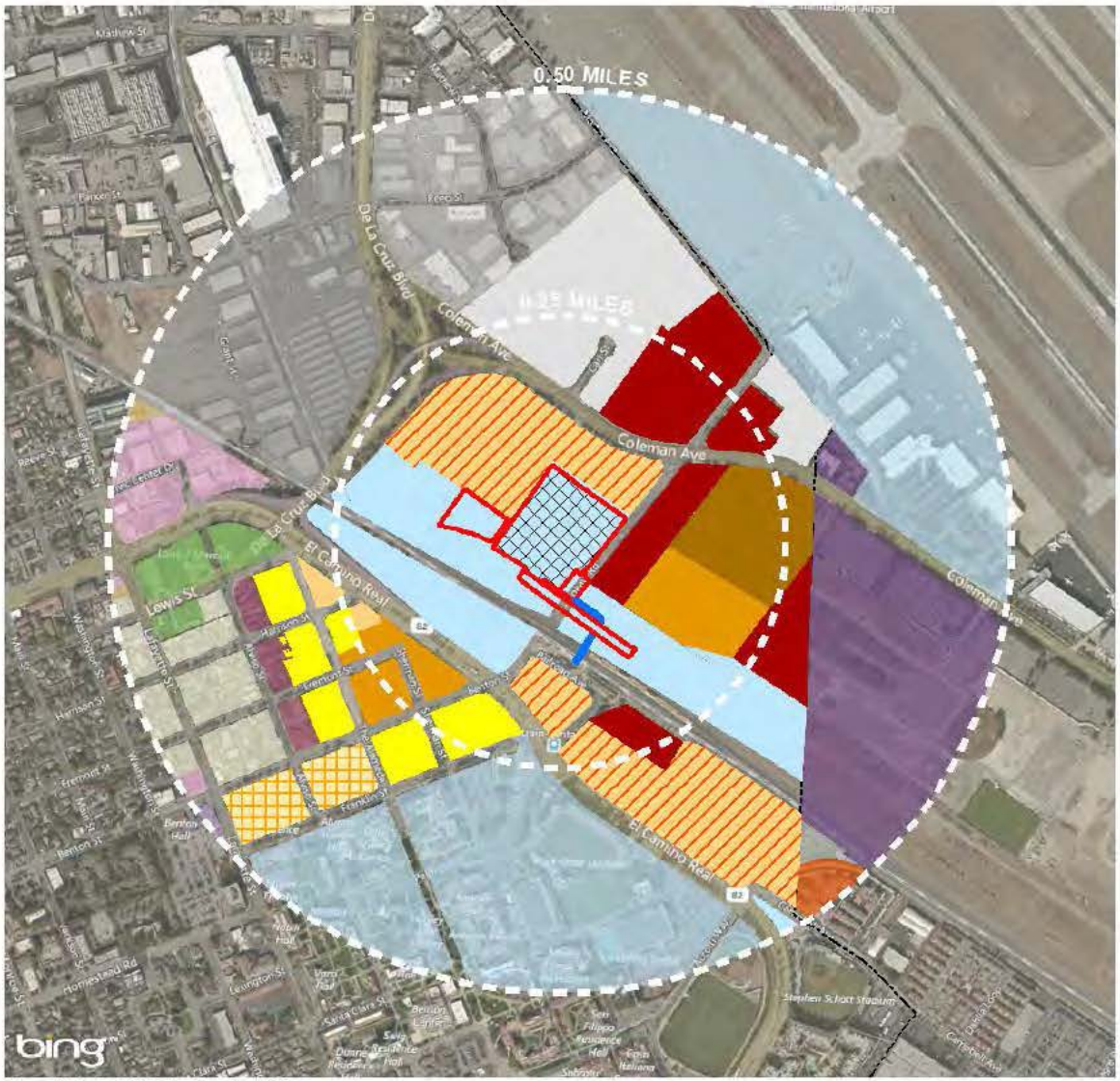
N

NOT TO SCALE

Source: Circlepoint; Google Earth, 2015.

Graphics ... 00332.13 (6-9-2016).ai

Figure 6.11-9
Santa Clara General Plan Land Use Designations – Santa Clara Station
VTA's BART Silicon Valley–Phase II Extension Project



Source: Circlepoint, 2017; City of San Jose, 2011

Legend

- Aboveground Station Facilities
- Underground Station Facilities
- Transit-Oriented Joint Development/Public Facilities

Santa Clara Station Focus Area Land Use Designations

- Santa Clara Station Low Density Residential
- Santa Clara Station Medium Density Residential
- Santa Clara Station High Density Residential
- Santa Clara Station Very High Densityy Residential
- Santa Clara Station Regional Commercial
- Santa Clara Station Regional Mixed Use
- Santa Clara Station Community Mixed Use Commercial
- Santa Clara Station Public/Quasi Public
- Santa Clara Station Light Industrial

Municipal Land Use Designations

- Combined Industrial/Commercial
- Commercial Mixed Use
- Downtown
- Heavy Industrial
- Light Industrial
- Medium Density Residential
- Neighborhood Mixed Use
- Open Space, Parklands and Habitat
- Public / Quasi Public
- Urban Residential
- Very Low Density Residential

N

0 250 500 1,000 Feet

Graphics ... 00332.13 (11-15-2017)

Figure 6.11-9

Santa Clara General Plan Land Use Designations – Santa Clara Station (Single and Twin Bore) (Revised)

VTA's BART Silicon Valley–Phase II Extension Project

Community Design and Transportation Program

VTA's Community Design and Transportation Program, approved by the VTA Board of Directors in 2002, emphasizes a series of best practice principles that, when implemented concurrently, help establish community character and identity and encourage residents and workers to walk, bike, and use transit. The program contains the following relevant principles.

- Target growth to cores, corridors, and station areas.
- Intensify land use and activities.
- Provide a mix of uses.
- Focus on existing areas.
- Create a multimodal transportation system.
- Design for pedestrians.
- Manage parking.
- Integrate transit.

Metropolitan Transportation Commission

Transportation 2035 Plan for the San Francisco Bay Area

The Metropolitan Transportation Commission (MTC) is the agency responsible for planning, coordinating, and financing transportation in the nine-county San Francisco Bay Area. MTC is responsible for developing a program of projects for the regional transportation plan, a master strategy for rail and bus transit expansion in the Bay Area.

The *Transportation 2035 Plan for the San Francisco Bay Area* (*Transportation 2035 Plan*) was adopted in April 2009 and specifies how $218 billion in anticipated federal, state, and local transportation funds will be spent in the Bay Area over 25 years. The BART Extension from Fremont to San Jose and Santa Clara is included as a major project within the *Transportation 2035 Plan* (Metropolitan Transportation Commission 2009).

Plan Bay Area (2013–2040)

Plan Bay Area reinforces land use and transportation integration pursuant to the Sustainable Communities and Climate Protection Act of 2008, also known as Senate Bill 375, and presents a vision of what the Bay Area's land use patterns and transportation networks might look like in 2040. Senate Bill 375 supports the state's climate action goals to reduce greenhouse gas emissions through coordinated transportation and land use planning with the goal of more sustainable communities. *Plan Bay Area*'s proposed transportation investments and programs are designed to support the land use pattern, which is located and planned in a manner to use the transportation system (Association of Bay Area Governments and Metropolitan Transportation Commission 2013).

Plan Bay Area serves as the 2040 Regional Transportation Plan for the Bay Area region as well as the region's Sustainable Communities Strategy as required under Senate Bill 375. The Sustainable Communities Strategy is by definition the combined land use and transportation plan. *Plan Bay Area* represents a transportation and land use blueprint of how the Bay Area addresses its transportation mobility and accessibility needs, land development, and greenhouse gas emissions reduction requirements through the year 2040. *Plan Bay Area* presents its purpose and goals, tracks trends and evaluates project performance, details financial assumptions and expenditures, profiles key investments, and sets forth actions that the region would advocate and pursue over the next several years. The BART Extension to San Jose and Santa Clara is included as a major project within *Plan Bay Area*.

Resolution 3434

MTC's Planning and Operations Committee adopted Resolution No. 3434, detailing a list of priority projects and funding agreements, in 2001. Resolution 3434 identifies nine rail extensions, significant service expansions to existing rail lines, a comprehensive regional express bus program, new ferry service, and eight enhancement programs to existing rail and bus corridors. Extending BART to San Jose is identified in Resolution 3434 as a priority project (Metropolitan Transportation Commission 2001). Resolution 3434's Transit-Oriented Development (TOD) Policy addresses multiple goals: improving the cost-effectiveness of regional investments in new transit expansions, easing the Bay Area's chronic housing shortage, creating vibrant new communities, and helping preserve regional open space. The policy ensures that transportation agencies, local jurisdictions, and members of the public and the private sector work together to create development patterns that are more supportive of transit.

There are three key elements of the regional TOD Policy.

- Corridor-level thresholds to quantify appropriate minimum levels of development around transit stations along new corridors.
- Local station area plans that address future land use changes, station access needs, circulation improvements, pedestrian-friendly design, and other key features in a TOD.
- Corridor working groups that bring together congestion management agencies, city and county planning staff, transit agencies, and other key stakeholders to define expectations, timelines, and roles and responsibilities for key stages of the transit project development process.

2008 Strategic Plan

MTC's *2008 Strategic Plan* identifies $222 million to speed project delivery and closes the funding shortfall on two Resolution 3434 projects (Metropolitan Transportation Commission 2008). The purpose of the *2008 Strategic Plan* is to provide a framework for successful program and project delivery by initially addressing (1) escalating project costs;

(2) near-term funding requests; and (3) the development of the financially constrained element of the *Transportation 2035 Plan*.

The *2008 Strategic Plan* action items include: (1) place projects into four categories to address specific program and project challenges; (2) continue to monitor project progress and milestones; (3) provide advocacy support; (4) take specific programming actions to deliver otherwise ready-to-go projects; and (5) endorse one additional regional Small Starts project.

Transportation for Livable Communities Program

The Transportation for Livable Communities Program, initiated by MTC in 2004 and updated in 2010, is a funding incentive program that promotes densification and concentrated development around transit nodes. The Transportation for Livable Communities Program encourages redevelopment efforts that add housing and economic vitality to older business and community centers throughout the Bay Area (Metropolitan Transportation Commission 2004). The program supports projects that:

- encourage pedestrian, transit, and bicycle trips.
- provide for compact development of housing and downtowns and regional activity centers.
- are part of a community's development or redevelopment activities.
- enhance a community's mobility, identity, and quality of life.

San Francisco Bay Area Rapid Transit District

BART Strategic Plan

The *BART Strategic Plan* adopted in October 2008 focuses on the role of BART in the Bay Area with an emphasis on sustainability. The following BART policy goals regarding system expansion are relevant to the BART Extension (Bay Area Rapid Transit 2008).

- Enhance regional mobility, especially access to jobs.
- Demonstrate a commitment to transit-supportive growth and development.
- Develop projects in partnership with communities that will be served.

Station area planning goals:

- Foster compact transit-oriented and transit-serving mixed-use development of BART properties, maximize transit ridership, and balance development goals with community desires.
- Promote transit ridership and enhance quality of life by encouraging and supporting transit-oriented development within walking distance of BART stations and along transit corridors that serve BART stations.

- Advance transit-supportive land use policies at the local, regional, state, and federal levels.

Relevant goals related to sustainability:

- Promote sustainable, transit-oriented development in the communities BART serves to maximize the use of BART as the primary mode of transportation.
- Enhance the use of resource-efficient and environmentally friendly access modes (e.g., bikes, walking), and other sustainable features at BART's new and existing stations.
- Integrate sustainability principles and practices including multimodal access into the planning, design, and construction of new BART stations and related facilities.

Transit-oriented development policy goals:

- Increase transit ridership and enhance quality of life at and around BART stations by encouraging and supporting high quality transit-oriented development within walking distance of BART stations.
- Increase transit-oriented development projects on and off BART property through creative planning and development partnerships with local communities.

BART System Expansion Policy

The BART System Expansion Policy was adopted in December 1999 and states goals and strategies for expanding the system, including criteria for evaluating expansion opportunities. The following goals are relevant to the BART Extension (Bay Area Rapid Transit 1999).

- Enhance regional mobility, especially access to jobs.
- Demonstrate a commitment to transit-supportive growth and development.
- Develop projects in partnership with communities that will be served.
- Assure that all projects address the needs of the District's residents.

Santa Clara Valley Habitat Conservation Plan

The Santa Clara Valley Habitat Conservation Plan (SCVHP) is a comprehensive, multi-jurisdictional plan that provides for regional habitat and species conservation at an ecosystem scale while allowing local land-use authorities to better manage anticipated growth and development.

6.11.2.2 Local Plans and Policies

City of San Jose

Envision San Jose 2040 General Plan

The *Envision San Jose 2040 General Plan* (SJGP) represents the City's assessment of the amount, type, and phasing of development needed to achieve the City's social, economic,

and environmental goals (City of San Jose 2011b). The SJGP is designed to be the policy framework for decision-making on both private development projects and City capital expenditures as San Jose's population continues to expand. Since 2011, the City has amended the SJGP, particularly for areas around some of the station sites, to allow higher densities and mixed-use development supportive of transit.

The following SJGP policies are most relevant to the BART Extension. In addition, the SJGP includes numerous other policies that may be applicable to the BART Extension, such as affordable housing, environmental justice communities, displacement prevention, and greenhouse gas reduction. These policies are identified in the respective sections of this SEIS/SEIR for these topics.

Transportation Policies

TR-1.1 Accommodate and encourage use of non-automobile transportation modes to achieve San Jose's mobility goals and reduce vehicle trip generation and vehicle miles traveled (VMT).

TR-1.2 Consider impacts on overall mobility and all travel modes when evaluating transportation impacts of new developments or infrastructure projects.

TR-1.3 Increase substantially the proportion of commute travel using modes other than the single-occupant vehicle.

TR-3.3 As part of the development review process, require that new development along existing and planned transit facilities consist of land use, development types, and intensities that contribute toward transit ridership. In addition, require that new development be designed to accommodate and provide direct access to transit facilities.

TR-3.4 Maintain and improve access to transit stops and stations for mobility-challenged population groups such as youth, the disabled, and seniors.

TR-3.5 Work with the Valley Transportation Authority (VTA) and other public transit providers to increase transit frequency and service along major corridors and to major destinations like Downtown and North San Jose.

TR-3.7 Regularly collaborate with BART to coordinate planning efforts for the proposed BART extension to San José/Santa Clara with appropriate land use designations and transportation connections.

TR-4.1 Support the development of amenities, land use, development types, and intensities that increase daily ridership on the VTA, BART, Caltrain, ACE, and Amtrak California systems and provide positive fiscal, economic, and environmental benefits to the community.

TR-8.1 Promote transit-oriented development with reduced parking requirements and promote amenities around appropriate transit hubs and stations to facilitate the use of available transit services.

Land Use Policies

LU-1.1 Encourage walking. Create safe, attractive, and accessible pedestrian connections between developments and to adjacent public streets to minimize vehicular miles traveled.

LU-1.2 Create safe, attractive, and accessible pedestrian connections between developments and to adjacent public streets to minimize vehicular miles traveled.

LU-1.6 Locate employee-intensive commercial and industrial uses within walking distance of transit stops. Encourage public transit providers to provide or increase services to areas with high concentrations of residents, workers, or visitors.

LU-5.1 In order to create complete communities, promote new commercial uses and revitalize existing commercial areas in locations that provide safe and convenient multi-modal access to a full range of goods and services.

LU-6.1 Prohibit conversion of lands designated for light and heavy industrial uses to non-industrial uses. Prohibit lands designated for industrial uses and mixed industrial commercial uses to be converted to non-employment uses. Lands that have been acquired by the City for public parks, public trails, or public open space may be re-designated from industrial or mixed-industrial lands to non-employment uses. Within the Five Wounds BART Station and 24th Street Neighborhood Urban Village areas, phased land use changes, tied to the completion of the planned BART station, may include the conversion of lands designated for Light Industrial, Heavy Industrial or other employment uses to non-employment use provided that the Urban Village areas maintain capacity for the overall total number of existing and planned jobs.

LU-9.1 Create a pedestrian-friendly environment by connecting new residential development with safe, convenient, accessible, and pleasant pedestrian facilities. Provide such connections between new development, its adjoining neighborhood, transit access points, schools, parks, and nearby commercial areas. Consistent with Transportation Policy TR-2.11, prohibit the development of new cul-de-sacs, unless it is the only feasible means of providing access to a property or properties, or gated communities, that do not provide through- and publicly-accessible bicycle and pedestrian connections.

The SJGP establishes the Urban Villages concept to create a policy framework to direct most new job and housing growth to occur within walkable and bike-friendly Urban Villages that have good access to transit and other existing infrastructure and facilities. Although each Urban Village identified within the SJGP is intended to develop within a unique context, they can be divided into four general categories: Regional Transit Urban Villages, San Jose Transit Urban Villages, Commercial Center Urban Villages, and Neighborhood Urban

Villages. The SJGP encourages new job growth at each of the Regional Transit Urban Villages within San Jose. Each village is planned with access to major transit facilities to help support regional commuting, maximize utilization of the Caltrain and BART systems, and foster the City's growth as a regional job center. Transit and Commercial Center Urban Villages and Corridors include vacant or underutilized lands near an existing or planned light rail or bus rapid transit facility.

Urban Village Plans: Five Wounds and Roosevelt Park

The development of Urban Villages is one of the major strategies embodied within the SJGP. Urban villages are walkable, bicycle-friendly, transit-oriented, mixed-use settings that provide both housing and jobs, thus supporting the SJGP's environmental goals. The Five Wounds and Roosevelt Park Urban Village Plans (City of San Jose 2013a, 2013b) both encompass the alignment and are part of the first group of urban village plans prepared by the City of San Jose and the community to further the Urban Village strategy of the SJGP. Policies contained within these plans related to the BART Extension are listed below.

Five Wounds Urban Village Plan Land Use Policies

Land Use 1. Create a high-density, mixed-use Urban Village that is pedestrian focused and enhances the quality of life for residents in surrounding communities.

Land Use 4. A significant public plaza should be included at the location of the planned Alum Rock BART station.

Land Use 17. Integrate active uses into the planned BART parking structure along the ground floor facades and above parking levels.

Build Height 1. New development within the Five Wounds Urban Village shall be consistent with the maximum height limits as shown in the Five Wounds Village Height Diagram.

Architecture 1. The design of new development in the Five Wounds Village should be of a high standard and should contribute to the positive image and vitality of the corridor.

Architecture 11. Apply architectural details to any above ground BART parking structure so it does not appear to be a parking garage. Also encourage active uses to wrap a parking structure.

Streetscape 4. As a part of the BART station project, work with the Valley Transportation Authority (VTA) to identify opportunities to develop identified streetscape amenities within the BART Station Area and plaza.

Public Art 4. Encourage and nurture the development of an Arts District within the Five Wounds Urban Village preferably between the Town Square and the Five Wounds Church (as envisioned in the BART Station Community Concept Plan).

Pedestrian Facilities 8. As a part of the street improvements for the BART project in the Five Wounds Village, provide enhanced pedestrian access at the main pedestrian BART entrance on N. 28th Street. This could include enhanced crosswalks with special paving and a pedestrian refuge and landscaped median in the center of N 28th Street.

Parking 2. In the BART Station area, provide parking in multi-story parking garages and not in surface parking lots.

Urban Plaza 2. In the development of a large urban plaza at the future Alum Rock BART Station, consider and incorporate, where feasible, the concepts and design recommendations of the Five Wounds/Brookwood Terrace BART Station Area Community Concept Plan.

Urban Plaza 3. In the development of a large urban plaza at the future Alum Rock BART Station, incorporate small landscaped areas within larger hardscape areas, and plant shade trees in locations that do not obscure views into the plaza.

Roosevelt Park Urban Village Plan Land Use Policies

Land Use 8. Create a high-density mixed-use Urban Village that is pedestrian focused and enhances the quality of life for residents in surrounding communities.

Street Frontage 1. Provide a comfortable and visually engaging pedestrian environment through the creation of an inviting pedestrian-oriented building street frontage.

Streetscape 1. Develop streetscape amenities along Santa Clara Street that contribute to the positive image of the corridor, support its businesses, and create an attractive and comfortable pedestrian and shopping environment.

Diridon Station Area Plan: Preferred Plan Final Draft Report 2013

The *Diridon Station Area Plan* provides an overview of the future development of the Diridon Station area. The plan is intended to integrate open space, transportation, and land uses to create an expansion of downtown San Jose (City of San Jose 2014). One of the primary objectives of the plan is to establish a land use plan and policy framework that will guide future development and redevelopment toward land uses that support transit ridership and economic development. The report analyzes expansion of the existing Diridon Station and the development of land uses within the 250-acre boundary surrounding the station. The general design guidelines are intended to become the basis for San Jose to establish regulations, implementation strategies, and detailed design guidelines to encourage appropriate TOD within the region. A variety of stakeholders were consulted to contribute to the creation of the plan, including individuals, businesses, agencies, institutions, and many private and public entities.

Diridon/Arena Strategic Development Plan

The San Jose Redevelopment Agency and VTA prepared the *Diridon/Arena Strategic Development Plan* for the Diridon Caltrain Station area (City of San Jose 2003). Recognizing the area as a critical hub for regional transportation, the plan addresses the inter-modal connectivity of the various modes of transport, land uses, access, and circulation. The plan identifies preferred strategies for the development of the area surrounding Diridon Caltrain Station, roughly from State Route 87 to Stockton Avenue and from Park Avenue to Cinnabar Street. The plan promotes the development and expansion of downtown San Jose by creating an integrated Diridon transportation hub, encouraging transit ridership, providing an appropriate level of parking, protecting adjacent neighborhoods from negative impacts, and creating new public amenities for residents and workers in the area. The plan identifies six broad categories of development for the Diridon/Arena area: commercial, mixed-use, incremental infill, transportation, office, and parking.

Midtown Specific Plan

San Jose prepared the *Midtown Specific Plan* to guide the conversion of older industrial uses to high-density residential, commercial, and industrial uses, and to open space (City of San Jose 2002a). The plan identifies densities and implementation policies supportive of transit.

Strong Neighborhoods Initiative

As part of San Jose's Strong Neighborhoods Initiative, several local plans have been prepared for neighborhoods. Along the alignment within San Jose, the plans are the *Five Wounds/Brookwood Terrace Neighborhood Improvement Plan*, the *Thirteenth Street Neighborhood Improvement Plan*, the *University Neighborhoods Revitalization Plan Update*, the *Market-Almaden Neighborhood Improvement Plan*, the *Delmas Park Neighborhood Improvement Plan*, and the *Burbank/Del Monte Neighborhood Improvement Plan*.

The *Five Wounds/Brookwood Terrace Neighborhood Improvement Plan* (City of San Jose 2002b) recommends the construction of a linear park and town square located generally along the railroad right-of-way alignment near Five Wounds Church and industrial uses along 28th Street. The linear park would strengthen pedestrian and visual connections between Santa Clara Street, the town square, and Julian Street. The proposed linear park would offer flexibility for future accommodation of station entrances and a ventilation facility associated with an underground BART station. The plan also recognizes the importance of BART parking, although it recommends that any parking structure minimize disruption to walking and neighborhood livability.

The *Thirteenth Street Neighborhood Improvement Plan* (City of San Jose 2002c) supports the SJGP's designation of Santa Clara Street as a TOD Corridor allowing for high-intensity new residential development with ground-floor retail. Such high-density residential development would add new housing to the downtown neighborhoods compatible with public transit investments such as the BART Extension and VTA's Downtown East Valley Project.

The *University Neighborhoods Revitalization Plan Update* (City of San Jose 2002d) identifies seven vacant and/or underutilized properties as candidates for new development. Two of the identified sites are on or adjacent to the alignment and are listed below.

- 42 South 6th Street
- Santa Clara Street between 15th and 16th Street

Recognizing the proximity of the community to the alignment and the Downtown East Valley Project, the plan encourages the development of high-density or mixed-use projects on most of these properties.

The *Market-Almaden Neighborhood Improvement Plan* (City of San Jose 2002e) encourages mixed-use development on Market Street with an emphasis on retail, commercial, and institutional uses on lower levels and high-density residential use on upper levels.

The *Delmas Park Neighborhood Improvement Plan* (City of San Jose 2002f) envisions a neighborhood that will become, over time, more pedestrian and transit-oriented, with community-focused commercial corridors and well-lit, tree-lined streets. Existing residential areas are to be preserved and enhanced through implementation of the plan.

The *Burbank/Del Monte Neighborhood Improvement Plan* (City of San Jose 2002g) recommends the reconfiguration and consolidation of parking lots in the community to encourage mixed-use development for ground-level commercial frontage and upper-level office and residential use consistent with the character of TOD Corridors.

San Jose Downtown Streetscapes Master Plan

The Downtown Streetscape Master Plan provides guidelines for the design of required streetscape features in the public right-of-way.

City of Santa Clara

City of Santa Clara 2010–2035 General Plan

The *Santa Clara 2010–2035 General Plan* (SCGP), adopted in 2010, sets forth a framework of principles, standards, policies, and programs to guide future land use decisions. The primary objective of the City of Santa Clara is to create a desirable environment for living, working, and recreation. The following policies are from the Land Use and Transportation Elements of the SCGP (City of Santa Clara 2010).

General Land Use Policies

5.3.1-G1. Reduced dependence on the single-occupant automobile.

5.3.1-G3. Development that minimizes vehicle miles traveled, capitalizes on public investment in transit and infrastructure, and is compatible with surrounding uses.

5.3.1-P7. Work with state and regional agencies to ensure that their plans and projects are consistent with the City's General Plan.

5.3.1-P15. Require new developments and major public infrastructure projects to include adequate rights-of-way to accommodate all modes of transportation.

General Mobility and Transportation Policies

5.8.1-G1. Transportation networks that support the General Plan Major Strategies as well as the Goals and Policies for Prerequisites, Land Use, Focus Areas, Neighborhood Compatibility, Public Services and Environmental Quality.

5.8.1-G2. Transportation networks that provide a safe, efficient, convenient and integrated system to move people and goods.

5.8.1-G3. Transportation networks that promote a reduction in the use of personal vehicles and vehicle miles traveled.

5.8.1-P1. Create accessible transportation network systems to meet the needs of all segments of the population, including youth, seniors, persons with disabilities, and low-income households.

5.8.1-P4. Expand transportation options and improve alternate modes that reduce greenhouse gas emissions.

Transit Network Policies

5.8.3-G1. Transit services that are accessible to all segments of the City's population.

5.8.3-G2. A transit network that supports a reduction in automobile dependence for residents, employees, and visitors.

5.8.3-P1. Support a coordinated regional transit system that circles the South Bay and the Peninsula, including existing and planned Bay Area Rapid Transit, Amtrak, Altamont Commuter Express, Caltrain, Valley Transportation Authority, and High Speed Rail facilities.

5.8.3-P6. Encourage additional multimodal transit centers and stops in order to provide convenient access to commuter rail, buses, and shuttle and taxi services.

5.8.3-P7. Provide transit stops at safe, efficient, and convenient locations to maximize ridership, including near employment centers, higher-density residential developments, and downtown.

Included in the SCGP are goals and policies related to specific focus areas. One such focus area is the Santa Clara Station area, a 244-acre portion of land containing the Santa Clara Caltrain Station. The station is planned to be a major transit hub for the Bay Area and support major strategies to promote sustainability and economic vitality. Plans include new service from the BART Extension.

Santa Clara Station Area Plan

Funded by MTC, VTA, and the Cities of Santa Clara and San Jose, the *Santa Clara Station Area Plan* has been incorporated into the SCGP as the Santa Clara Station Focus Area and guides the future development of the Santa Clara Transit Center and surrounding area (City of San Jose and Santa Clara 2007). With a planning horizon to 2030, the plan articulates a vision and policies for the future development of the Santa Clara Station Area, providing guidance for changes as appropriate to the general plans and the zoning ordinances of the two cities.

6.11.3 CEQA Methods of Analysis

As a special district, VTA's transportation facilities are exempt from local land use regulations (Government Code sections 53090 and 53901). Although VTA's transportation facilities are not subject to local land use regulations, if feasible, VTA would comply with the overall intent of the local land use regulations. The TOJD, as a non-transit use, is subject to local regulations.

The land use analysis under CEQA focuses on five primary components: the alignment, the station areas and parking structures, system facilities required for operation of the line, and the TOJDs. The BART Extension is evaluated in relation to the existing and proposed developments adjacent to and near the alignment to determine the compatibility with neighboring land uses and consistency with applicable planning documents. Appendix G of the State CEQA Guidelines is used to evaluate the significance of potential land use impacts, further described in Section 6.11.4. The land use study area incorporates areas adjacent to either side of the alignment and a 0.25-mile radius around the BART stations and TOJDs.

6.11.4 CEQA Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, a project would have a significant impact if it would result in any of the conditions listed below.

- Physically divide an established community.
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

6.11.5 Environmental Consequences and Mitigation Measures

This section identifies the impacts related to land use under CEQA and mitigation measures necessary to reduce the level of potentially significant impacts.

6.11.5.1 No Build Alternative

The No Build Alternative consists of the existing transit and roadway networks and planned and programmed transportation improvements (see Chapter 2, Section 2.2.1, *NEPA No Build Alternative*, for a list of these projects), and other land development projects planned by the Cities of San Jose and Santa Clara. The No Build Alternative projects could result in effects on land uses typically associated with transit, highway, bicycle, and pedestrian facilities, and roadway projects, as well as land development projects. These projects are anticipated to cause a similar range of the type and intensity of impacts as caused by the BART Extension Alternative or BART Extension with TOJD Alternative. This would typically include transportation, noise and vibration, air quality, and land use impacts. s. The No Build Alternative would not be as supportive of regional plans and policies to promote BART use.

All individual projects planned under the No Build Alternative would undergo separate environmental review to identify effects on land use. Review would include an analysis of impacts and identification of mitigation measures to reduce potential impacts.

6.11.5.2 BART Extension Alternative

Impact BART Extension LU-1: Physically divide an established community

Construction

Construction of the BART Extension would occur within dense urban settings surrounded by a mix of land uses including industrial, commercial, retail, civic/institutional, and residential uses. Construction can be expected to occur within any part of the footprint identified on the station plans, plans and profiles, and CSAs.

Land use impacts could result from construction-period road closures and traffic detours, which could in turn disrupt access to businesses, public facilities, and emergency vehicle access and could pose potential physical barriers to existing communities and business districts. Construction of the Santa Clara Station would not physically divide an established community because the station is on a cul-de-sac surrounded by retail, commercial, and industrial uses. Construction of Alum Rock/28th Street Station and either the Diridon Station South or North Option would not divide an existing community because there are alternate parallel routes to reach destinations within the community. One single-family residence would be displaced with the Diridon Station South and North Options on South Autumn Street (APN 259-38-009). The residence is surrounded by industrial and commercial uses and only one other residence is located on Autumn Street between Santa Clara and San Fernando Streets. The removal of this residence would not cause or contribute to the physical division of a community. In addition, the property owner would be compensated according to the federal Uniform Relocation Act, 42 United States Code Chapter 61, Government Code Section 7260 (Relocation Assistance) through Section 7267; and the state Relocation Assistance and Real Property Acquisition Guidelines (Title 25, California Administrative Code Chapter 6, Article 1, Section 6000 et seq.). Therefore, no significant impacts would

result from the BART Extension. Refer to Section 4.14, *Socioeconomics*, for more information related to displacement.

Construction of either of the Twin-Bore Downtown San Jose Station Options would require closure of Santa Clara Street for months at a time to construct the station and crossover box. Construction of the three underground stations (Alum Rock/28th Street, Downtown San Jose – East and West Options, and Diridon –South and North Options) would be constructed using a cut-and-cover method. If a large cut-and-cover excavation is located within a street, a temporary deck would be installed to allow activity to resume on the street while the remaining excavation and cut-and-cover construction continues underground. Furthermore, these impacts would be temporary in duration and would not result in a significant land use impact due to creation of a long-term physical barrier within a community. The Single-Bore Downtown San Jose Station Options would not require long-term closure of Santa Clara Street. However, periodic lane closures may be required during construction of the station entrances.

Construction of the tunnel portals would not divide an established community because they are both surrounded by industrial uses, and construction of the portals would not cause roadway closures that would greatly affect the traveling public. Construction of the two mid-tunnel ventilation structures would not physically divide an established community because there are several alternate routes in the vicinity to access locations within the community, and the construction duration would be limited. Construction activities would not divide a community because by nature construction activities are temporary. Land use impacts related to dividing a community would be less than significant. Refer to Section 6.2, *Transportation*, for more information related to construction traffic impacts and mitigation.

Operation

Alignment

The only tunnel locations where the Twin-Bore and Single Options would differ would be near Coyote Creek and entering/exiting the Diridon Station North Option. However, both of these portions of the alignment would be underground and vary only slightly; thus the discussion of surrounding land uses is the same for both the Twin-Bore and Single-Bore Options.

The alignment would pass through an existing industrial area at the Connection to Phase I Berryessa Extension terminus before descending into the East Tunnel Portal. The alignment would then proceed underground for approximately 5 miles through San Jose. Just north of Interstate 880, the alignment would emerge through the West Tunnel Portal and would travel within the existing Union Pacific Rail Road corridor within Santa Clara. No new permanent physical barriers would be created within the communities adjacent to the 5-mile-long underground alignment, and there would be no division of an existing community. The underground alignment would transition from an at-grade alignment into a trench and into a tunnel portal at both the east and west ends of the BART Extension. The aboveground

portion of the alignment north of the East Tunnel Portal would be near U.S. Highway 101 and within an existing industrial area. The aboveground portion of the alignment in Santa Clara would travel within an existing rail corridor heavily utilized by the Altamont Corridor Express, Amtrak, Caltrain, and Capitol Corridor for passenger service and Union Pacific Rail Road for infrequent freight movements. Therefore, neither aboveground segment would create a new division in an existing community. Consequently, the impact would be *less than significant*, and no mitigation is required.

Station Locations

Alum Rock/28th Street Station

Existing land uses within the Alum Rock/28th Street Station area were described in Section 4.11.2.1, *Environmental Setting*. The station is surrounded by a mix of industrial, commercial, institutional/civic, and residential land uses that operate independently from each other. Alum Rock/28th Street Station would replace existing industrial buildings but would not create new physical barriers within the community or divide an existing neighborhood. This BART station would increase the availability of transit options and allow for enhanced mobility for the surrounding neighborhoods. Therefore, the impact would be *less than significant*, and no mitigation is required.

Downtown San Jose Station (East and West Options)

Land uses surrounding both Downtown San Jose Station Options were described in Section 4.11.2.1. Both station options would have limited aboveground infrastructure. The aboveground features would be designed to blend with the existing urban fabric of the downtown area and would not create a new barrier or substantially interrupt the community interaction in the area. Furthermore, operation of the Downtown San Jose Station would not divide any existing established community in the area. Operation of a BART station in downtown San Jose would increase the availability of transit options and allow for enhanced mobility for surrounding neighborhoods. Therefore, the impact would be *less than significant*, and no mitigation is required.

Diridon Station (South and North Options)

Existing land uses within the Diridon Station South and North Option areas were described in Section 4.11.2.1. The aboveground infrastructure would include station entrance portals, systems facilities, and the reconfigured Diridon Station Bus Transit Center. These features would not create a new barrier or substantially interrupt the community interaction in the area. Additionally, the aboveground station features would be consistent with the existing transportation land uses in the station area. As previously discussed, one single-family residence would be displaced with implementation of the BART Extension at Diridon Station (South and North Options). However, the one single-family home displacement would occur in accordance with state and federal laws, the owner would be compensated appropriately, and the removal of one residence within a non-residential and predominantly industrial

neighborhood would not cause or contribute to the physical division of a community; therefore, a less-than-significant impact would result. Refer to Section 4.14, *Socioeconomics*, for more information related to this displacement.

Operation of either the Diridon Station South or North Option would not physically divide an existing established community. Furthermore, implementation of this station would increase the availability of transit options and allow for enhanced mobility for surrounding neighborhoods. Therefore, the impact would be *less than significant*, and no mitigation is required.

Santa Clara Station

Existing land uses within the Santa Clara Station area were described in Section 4.11.2.1. Santa Clara Station would be at the end of a cul-de-sac in an area surrounded by industrial and commercial/retail uses. In addition, the closest residences are to the west across the existing railroad corridor. Therefore, the station would not divide an existing community or put up barriers between any existing neighborhoods. The BART Extension would also construct the final segment of the Santa Clara Pedestrian Undercrossing, which would allow for pedestrians and cyclists to travel between El Camino Real and the Santa Clara Caltrain Station in the west directly to Brokaw Road and Coleman Avenue in the east. Furthermore, operation of this station would increase the availability of transit options for residents, retail employees, and shoppers, and allow for enhanced mobility for surrounding neighborhoods. Therefore, the impact would be *less than significant*, and no mitigation is required.

Newhall Maintenance Facility

Existing land uses surrounding the Newhall Maintenance Facility were described in Section 4.11.2.1. Given that the maintenance facility would be within the existing railroad corridor, would be farther from the residences than the active rail corridor, and would be separated from the residential uses by existing 10- to 12-foot-high soundwalls, the Newhall Maintenance Facility would not significantly affect or divide an existing community, create new physical barriers, or substantially interrupt existing community interaction in the area. Therefore, the impact would be *less than significant*, and no mitigation is required.

System Facilities

Existing land uses surrounding the systems facilities are described in Section 4.11.2.1. Supporting facilities would be contained within system facility sites, limited in size, and located along the alignment, within station areas, and often underground. The two mid-tunnel ventilation facilities, one at the northwest corner of Santa Clara and 13th Streets and another east of Stockton Avenue south of Taylor Street, would be aboveground structures housing the equipment required to ventilate the tunnel and would be the same under both the Twin-Bore and Single-Bore Options. Land uses surrounding the site of the 13th Street ventilation facility include commercial and residential uses. Commercial, residential, and industrial land uses surround the Stockton Avenue ventilation facility site options. Neither of the system facility

sites would replace any community facilities, take any roads out of the existing roadway system, or physically divide an established community. In addition, both system facility sites would be designed to be aesthetically compatible with the surrounding existing uses. Therefore, the impact would be *less than significant*, and no mitigation is required.

Impact BART Extension LU-2: Conflict with a land use plan, policy, or regulation intended to reduce an environmental effect

Construction and Operation

Construction of the BART Extension would occur within dense urban settings surrounded by a mix of land uses including industrial, commercial, retail, civic/institutional, and residential uses. Construction can be expected to occur within any part of the footprint identified on the station plans, plans and profiles, and CSAs.

As previously discussed, VTA's transportation facilities are exempt from local land use regulations; therefore, the BART Extension is exempt from City planning regulations. Although VTA's transportation facilities are not subject to local land use regulations, a consistency analysis has been provided below.

To reduce construction-related impacts, such as access disruption and traffic congestion, on adjacent land uses and communities, the unique characteristics of each area would be taken into consideration during construction planning and scheduling, and access would be maintained to the extent feasible. Construction planning would minimize nighttime construction in residential areas to the extent feasible. Potential construction-period traffic impacts and associated minimization measures are discussed in Section 6.2, *Transportation*. Additionally, construction activities could result in temporary impacts related to construction noise, degraded air quality, and lighting. Potential air quality, noise, and vibration impacts during construction and associated avoidance and minimization measures are discussed in Section 6.3, *Air Quality*, and Section 6.12, *Noise and Vibration*, respectively. Light and glare impacts on residential properties that could result from nighttime construction are addressed in Section 6.14, *Visual Quality and Aesthetics*.

Once operational, the majority of the alignment would be underground and, therefore, would not conflict with land use plans, policies, or regulations intended to reduce the severity of an environmental effect. Aboveground features would include facilities at the four stations, two mid-tunnel ventilation facilities, and two tunnel portals. Station facilities would include parking structures at Alum Rock/28th Street and Santa Clara Stations, station entrance portals, signage for underground stations (Alum Rock/28th Street, Downtown San Jose, and Diridon Stations), and system facility sites. Aboveground facilities at the mid-tunnel ventilation sites would include buildings to house the ventilation structure and associated systems facilities. Aboveground facilities at the tunnel portals would be minimal.

As shown in Tables 6.11-1 and 6.11-2, the BART Extension would be consistent with general plan land use designations and applicable specific plans. The BART Extension would be partially consistent with 14 of the land use policies in San Jose and Santa Clara, as shown in Table 6.11-1. This is because these 14 land use policies support the inclusion of mixed-use developments into new project development. The BART Extension Alternative would encourage future mixed-use development, but would not include mixed-use developments within its scope. The BART Extension Alternative would be fully consistent with the remaining 55 land use policies shown in Table 6.11-1.

The 13th Street ventilation structure, the Downtown San Jose Station East and West Options, and the Stockton Avenue ventilation facility would be consistent with the existing City of San Jose zoning for their respective locations. The following BART Extension sites are currently zoned by their respective cities as Light and Heavy Industrial.

- Alum Rock/28th Street Station (San Jose)
- Diridon Station (San Jose)
- Santa Clara Station (Santa Clara)

A Light and Heavy Industrial designation permits only certain types of industrial uses in San Jose and Santa Clara and does not allow for non-industrial uses within either City. Additionally, the SJGP contains policies related to industrial preservation. Land Use policy 6.1 specifically prohibits the conversion of lands designated for light and heavy industrial uses to non-industrial uses and prohibit lands designated for industrial uses and mixed industrial-commercial uses to be converted to non-employment uses. However, as shown in Tables 6.11-1 and 6.11-2, Alum Rock/28th Street Station would be consistent with the *Five Wounds Urban Village Plan,* the Diridon Station South and North Options would be consistent with the *Diridon Station Area Plan* and *Diridon/Arena Strategic Development Plan,* and Santa Clara Station would be consistent with the *Santa Clara Station Area Plan*. The plans mentioned above were developed by the cities with extensive public outreach and involvement. The existing industrial zoning designations at the Alum Rock/28th Street, Diridon, and Santa Clara Stations are currently outdated and inconsistent with the cities' adopted plans and general plan designations. The cities, and the communities surrounding these three stations, support and expect BART stations to be constructed at these locations. Therefore, by rezoning the three station sites listed above, VTA would bring the zoning designations into alignment with both the general plan designation of these sites and with the vision of the cities and communities.

The BART Extension would be consistent with the regional plans of MTC, Association of Bay Area Governments, VTA, and BART, and would enhance transit service to the South Bay, support the creation of a unified transit system that encircles the Bay, and encourage higher-density, mixed-use development adjacent to proposed transit stations. Therefore, the BART Extension would not conflict with any land use plan, policy, or regulation, and the impact would be *less than significant*. No mitigation is required.

Table 6.11-1: Consistency with Applicable Land Use Goals and Policies

Land Use Plan	Goal/Policy	No Build Alternative	BART Extension Alternative	BART Extension with TOJD Alternative
Envision San Jose 2040 General Plan (Transportation Policies)	TR-1.1 Accommodate and encourage use of non-automobile transportation modes to achieve San Jose's mobility goals and reduce vehicle trip generation and vehicle miles traveled (VMT).	◐	●	●
	TR-1.2 Consider impacts on overall mobility and all travel modes when evaluating transportation impacts of new developments or infrastructure projects.	●	●	●
	TR-1.3 Increase substantially the proportion of commute travel using modes other than the single-occupant vehicle.	◐	●	●
	TR-3.3. As part of the development review process, require that new development along existing and planned transit facilities consist of land use and development types and intensities that contribute toward transit ridership. In addition, require that new development be designed to accommodate and to provide direct access to transit facilities.	◐	●	●
	TR-3.4. Maintain and improve access to transit stops and stations for mobility-challenged population groups such as youth, the disabled, and seniors.	◐	●	●
	TR-3.5 Work with the Valley Transportation Authority (VTA) and other public transit providers to increase transit frequency and service along major corridors and to major destinations like Downtown and North San Jose.	◐	●	●
	TR-3.7. Regularly collaborate with BART to coordinate planning efforts for the proposed BART Extension to San José/Santa Clara with appropriate land use designations and transportation connections.	◐	●	●
	TR-4.1. Support the development of amenities and land use and development types and intensities that increase daily ridership on the VTA, BART, Caltrain, ACE and Amtrak California systems and provide positive fiscal, economic, and environmental benefits to the community.	◐	●	●
	TR-8.1 Promote transit-oriented development with reduced parking requirements and promote amenities around appropriate transit hubs and stations to facilitate the use of available transit services.	◐	●	●

Land Use Plan	Goal/Policy	No Build Alternative	BART Extension Alternative	BART Extension with TOJD Alternative
Envision San Jose 2040 General Plan (Land Use Policies)	LU-1.1. Encourage Walking. Create safe, attractive, and accessible pedestrian connections between developments and to adjacent public streets to minimize vehicular miles traveled.	◐	●	●
	LU-1.2. Create safe, attractive, and accessible pedestrian connections between developments and to adjacent public streets to minimize vehicular miles traveled.	◐	●	●
	LU-1.6. Locate employee-intensive commercial and industrial uses within walking distance of transit stops. Encourage public transit providers to provide or increase services to areas with high concentrations of residents, workers, or visitors.	◐	●	●
	LU-5.1. In order to create complete communities, promote new commercial uses and revitalize existing commercial areas in locations that provide safe and convenient multi-modal access to a full range of goods and services.	◐	●	●
	LU-6.1. Prohibit conversion of lands designated for light and heavy industrial uses to non-industrial uses. Prohibit lands designated for industrial uses and mixed industrial commercial uses to be converted to non-employment uses. Lands that have been acquired by the City for public parks, public trails, or public open space may be re-designated from industrial or mixed-industrial lands to non-employment uses. Within the Five Wounds BART Station and 24th Street Neighborhood Urban Village areas, phased land use changes, tied to the completion of the planned BART station, may include the conversion of lands designated for Light Industrial, Heavy Industrial or other employment uses to non-employment use provided that the Urban Village areas maintain capacity for the overall total number of existing and planned jobs.	●	●	●
	LU-9.1. Create a pedestrian-friendly environment by connecting new residential development with safe, convenient, accessible, and pleasant pedestrian facilities. Provide such connections between new development, its adjoining neighborhood, transit access points, schools, parks, and nearby commercial areas. Consistent with Transportation Policy TR-2.11, prohibit the development of new cul-de-sacs, unless it is the only feasible means of providing access to a property or properties, or gated communities, that do not provide through- and publicly-accessible bicycle and pedestrian connections.	◐	●	●

Land Use Plan	Goal/Policy	No Build Alternative	BART Extension Alternative	BART Extension with TOJD Alternative
Diridon Station Area Plan (DSAP) and *Diridon/Arena Strategic Development Plan* (DASDP)	DSAP provides an overview of the future development of the Diridon Station area by integrating open space, transportation, and land uses to create an expansion of downtown San Jose. One of the primary objectives of the plan is to establish a land use plan and policy framework that will guide future development and redevelopment toward land uses that support transit ridership and economic development. DASDP seeks to promote the development and expansion of downtown San Jose by creating an integrated Diridon transportation hub, encouraging transit ridership, providing an appropriate level of parking, protecting adjacent neighborhoods from negative impacts, and creating new public amenities for residents and workers in the area.	◐	●	●
Five Wounds Urban Village Plan	Land Use Policy 1. Create a high-density, mixed-use Urban Village that is pedestrian focused and enhances the quality of life for residents in surrounding communities.	◐	◐	●
	Land Use Policy 4. A significant public plaza should be included at the location of the planned Alum Rock BART station.	◐	●	●
	Land Use Policy 17. Integrate active uses into the planned BART parking structure along the ground floor facades and above parking levels.	◐	◐	●
	Build Height Policy 1. New development within the Five Wounds Urban Village shall be consistent with the maximum height limits as shown in the Five Wounds Village Height Diagram.	●	●	●
	Architecture Policy 1. The design of new development in the Five Wounds Village should be of a high standard and should contribute to the positive image and vitality of the corridor.	●	●	●
	Architecture Policy 11. Apply architectural details to any above ground BART parking structure so it does not appear to be a parking garage. Also encourage active uses to wrap a parking structure.	◐	●	●
	Streetscape Policy 4. As a part of the BART station project, work with the Valley Transportation Authority (VTA) to identify opportunities to develop identified streetscape amenities within the BART Station Area and plaza.	◐	●	●
	Public Art Policy 4. Encourage and nurture the development of an Arts District within the Five Wounds Urban Village preferably between the Town Square and the Five Wounds Church (as envisioned in the BART Station	◐	●	●

Land Use Plan	Goal/Policy	No Build Alternative	BART Extension Alternative	BART Extension with TOJD Alternative
	Community Concept Plan).			
	Pedestrian Facilities Policy 8. As a part of the street improvements for the BART project in the Five Wounds Village, provide enhanced pedestrian access at the main pedestrian BART entrance on N. 28th Street. This could include enhanced crosswalks with special paving and a pedestrian refuge and landscaped median in the center of N. 28th Street.	◐	●	●
	Parking Policy 2. In the BART Station area, provide parking in multi-story parking garages and not in surface parking lots.	◐	●	●
	Urban Plaza Policy 2. In the development of a large urban plaza at the future Alum Rock BART Station, consider and incorporate, where feasible, the concepts and design recommendations of the Five Wounds/Brookwood Terrace BART Station Area Community Concept Plan.	◐	●	●
	Urban Plaza Policy 3. In the development of a large urban plaza at the future Alum Rock BART Station, incorporate, small landscaped areas within larger hardscape areas, and plant shade trees in locations that do not obscure views into the plaza.	◐	●	●
Roosevelt Park Urban Village Plan	Land Use Policy 8. Create a high-density mixed-use Urban Village that is pedestrian focused and enhances the quality of life for residents in surrounding communities.	◐	◐	●
	Street Frontage Policy 1. Provide a comfortable and visually engaging pedestrian environment through the creation of an inviting pedestrian-oriented building street frontage.	◐	●	●
	Streetscape Policy 1. Develop streetscape amenities along Santa Clara Street that contribute to the positive image of the corridor, support its businesses and create an attractive and comfortable pedestrian and shopping environment.	◐	●	●
San Jose Riparian Corridor Policy Study	Contains development guidelines for development along creeks to help protect riparian habitat and minimize impacts on riparian resources. These guidelines address site design, building and fixtures design, landscaping, public recreation facilities (e.g. streamside trails), fire management, vegetation/habitat continuity, and techniques to protect water quality.	●	●	●

Land Use Plan	Goal/Policy	No Build Alternative	BART Extension Alternative	BART Extension with TOJD Alternative
San Jose *Midtown Specific Plan*	Foster development in the Midtown area that reinforces transit use, provides a diversity of housing types, preserves viable industrial and commercial-service uses, and complements and extends adjacent residential and commercial areas.	◐	●	●
San Jose Strong Neighborhood Initiative – *Five Wounds/Brookwood Terrace Neighborhood Improvement Plan*	Recommends the construction of a linear park to strengthen pedestrian and visual connections between Santa Clara Street, a town square, and East Julian Street. The linear park offers flexibility for future accommodation of station entrances and a ventilation facility associated with an underground BART station. Recognizes the importance of BART parking while recommending that any parking structure should minimize disruption to walking and neighborhood livability.	◐	●	●
San Jose Strong Neighborhood Initiative – *Thirteenth Street Neighborhood Improvement Plan*	Supports the SJGP designation of Santa Clara Street as a Transit-Oriented Development Corridor allowing for high-intensity new residential development with ground floor retail. Such high-density residential development would add new housing to the downtown neighborhoods compatible with public transit investments such as the BART Extension and VTA's Downtown East Valley project.	◐	◐	●
San Jose Strong Neighborhood Initiative – *University Neighborhoods Revitalization Plan Update*	Identifies six vacant and underutilized properties as candidates for new development. Recognizing the proximity of the community to the BART Extension and the Downtown East Valley Project, the plan encourages the development of high-density or mixed-use projects on most of these properties.	◐	◐	●
San Jose Strong Neighborhood Initiative – *Market-Almaden Neighborhood Improvement Plan*	Encourages mixed-use developments on Market Street, with an emphasis on retail, commercial, and institutional uses on the lower levels and high-density housing on upper levels.	◐	◐	●
San Jose Strong Neighborhood Initiative – *Delmas Park Neighborhood Improvement Plan*	Envisions the neighborhood as a pedestrian and transit-oriented area with community-focused commercial corridors, and well-lit, tree-lined streets.	◐	●	●

Land Use Plan	Goal/Policy	No Build Alternative	BART Extension Alternative	BART Extension with TOJD Alternative
San Jose Strong Neighborhood Initiative – *Burbank/Del Monte Neighborhood Improvement Plan*	Recommends the reconfiguration and consolidation of parking lots in the community to encourage mixed-use development for ground level commercial frontage and upper level office or residential use consistent with the character of transit-oriented corridors.	◑	◑	●
City of Santa Clara 2010-2035 General Plan	5.3.1-G1. Reduced dependence on the single-occupant automobile.	●	●	●
	5.3.1-G3. Development that minimizes vehicle miles traveled, capitalizes on public investment in transit and infrastructure, and is compatible with surrounding uses.	●	●	●
	5.3.1-P7. Work with State and regional agencies to ensure that their plans and projects are consistent with the City's General Plan.	●	●	●
	5.3.1-P15. Require new developments and major public infrastructure projects to include adequate rights-of-way to accommodate all modes of transportation.	●	●	●
	5.8.1-G1. Transportation networks that support the General Plan Major Strategies as well as the Goals and Policies for Prerequisites, Land Use, Focus Areas, Neighborhood Compatibility, Public Services and Environmental Quality.	◑	●	●
	5.8.1-G2. Transportation networks that provide a safe, efficient, convenient and integrated system to move people and goods.	●	●	●
	5.8.1-G3. Transportation networks that promote a reduction in the use of personal vehicles and vehicle miles traveled.	●	●	●
	5.8.1-P1. Create accessible transportation network systems to meet the needs of all segments of the population, including youth, seniors, persons with disabilities and low-income households	◑	●	●
	5.8.1-P4. Expand transportation options and improve alternate modes that reduce greenhouse gas emissions.	◑	●	●
	5.8.3-G1. Transit services that are accessible to all segments of the City's population	●	●	●

Land Use Plan	Goal/Policy	No Build Alternative	BART Extension Alternative	BART Extension with TOJD Alternative
	5.8.3-G2. A transit network that supports a reduction in automobile dependence for residents, employees, and visitors.	●	●	●
	5.8.3-P1. Support a coordinated regional transit system that circles the South Bay and the Peninsula, including existing and planned Bay Area Rapid Transit, Amtrak, Altamont Commuter Express, Caltrain, Valley Transportation Authority and High Speed Rail facilities.	◐	●	●
	5.8.3-P6. Encourage additional multimodal transit centers and stops in order to provide convenient access to commuter rail, buses, and shuttle and taxi services.	◐	●	●
	5.8.3-P7. Provide transit stops at safe, efficient and convenient locations to maximize ridership, including near employment centers, higher-density residential developments and Downtown.	◐	●	●
Santa Clara Station Area Plan	Achieving the vision for the Station Area requires development of an array of uses; ensuring balanced neighborhood development; improved connections; an enhanced public realm; and better integration of the station area with downtown Santa Clara, Santa Clara University, and surrounding neighborhoods.	◐	◐	●
Santa Clara Valley Transportation Authority – *Valley Transportation Plan 2040*	Provide transportation facilities and services that support and enhance the county's continued success by fostering a high quality of life for Santa Clara County's residents and continued health of Santa Clara County's economy.	◐	●	●
Santa Clara Valley Transportation Authority – Community Design and Transportation Program	Target growth to cores, corridors, and station areas; intensify land use and activities; provide a mix of uses; focus on existing areas; create a multimodal transportation system; and integrate transit.	◐	◐	●
Metropolitan Transportation Commission – *Transportation 2035 Plan for the San Francisco Bay Area*	Promote vital and livable communities.	◐	◐	●

Land Use Plan	Goal/Policy	No Build Alternative	BART Extension Alternative	BART Extension with TOJD Alternative
Metropolitan Transportation Commission – Resolution 3434	Establish thresholds along new corridors to determine appropriate minimum levels of development around transit station.	◐	◐	●
Metropolitan Transportation Commission – Transportation for Livable Communities Program	Promote densification and concentrated development around transit nodes.	◐	●	●
	Encourage redevelopment efforts, which add housing and economic vitality to older business and community centers throughout the San Francisco Bay Area region.	◐	●	●
Association of Bay Area Governments – *Focusing our Vision: Smart Growth and Sustainable Development*	Promote opportunities for transit use and alternative modes of transportation including rail, bus, high occupancy vehicle (HOV) systems, ferry services, as well as enhanced walking and biking. Increase connectivity between and strengthen alternative modes of transportation including improved rail, bus, ride share, ferry services, as well as walking and biking.	◐	●	●
	Enhance community livability by promoting in-fill, transit-oriented and walkable communities, and compact development as appropriate. Develop multi-family housing, mixed-use development, and alternative transportation to improve opportunities for all members of the community.	◐	◐	●
	Improve the jobs/housing linkages through the development of housing in proximity to jobs, and both in proximity to public transportation.	◐	◐	●
	Improve conditions in disadvantaged neighborhoods, ensure environmental justice, and increase access to jobs, housing, and public services for all residents in the region.	◐	●	●
	Promote and enhance open space, agricultural lands, other valued lands, watersheds and ecosystems throughout the region. Promote development patterns that protect and improve air quality.	◐	●	●
	Encourage local governments, stakeholders, and other constituents in the Bay Area to cooperate in supporting actions consistent with the adopted Smart Growth policies. Forge cooperative relationships with governments and stakeholders in surrounding regions to support actions that will lead to inter-regional Smart Growth benefits.	◐	●	●

Land Use Plan	Goal/Policy	No Build Alternative	BART Extension Alternative	BART Extension with TOJD Alternative
San Francisco Bay Area Rapid Transit District – *BART Strategic Plan: A New Era of Partnership*	Maximize transit ridership and balance transit-oriented development goals with community desires.	◐	●	●
	Promote transit ridership and enhance the quality of life by encouraging and supporting transit-oriented development within walking distance of BART stations.	◐	●	●
San Francisco Bay Area Rapid Transit District – *BART System Expansion Policy and Criteria*	Enhance regional mobility, especially access to jobs; generate new ridership on a cost-effective basis; demonstrate a commitment to transit-supportive development; enhance multi-modal access to the BART system; develop projects in partnership with the communities that will be served; implement and operate technology-appropriate service; and ensure that all projects address the needs of the District's residents.	◐	●	●

Level of consistency key: ○ = Not consistent ◐ = Partially consistent ● = Consistent
Source: Santa Clara Valley Transportation Authority 2010

Impact BART Extension LU-3: Conflict with any applicable habitat conservation plan or natural community conservation plan

Construction and Operation

The SCVHP, which is both a habitat conservation plan and natural community conservation plan, aims to enhance the viability of threatened and endangered species throughout the Santa Clara Valley. The majority of the alignment would be within the boundaries of the SCVHP. However, except for the Newhall Maintenance Facility, all of the BART Extension area has already been disturbed by urban development. A portion of the Newhall Maintenance Facility would be within the western burrowing owl (*Athene cunicularia hypogea*) survey area, and Diridon Station and the State Route 87 CSA are near the tricolored blackbird (*Agelaius tricolor*) survey area along Guadalupe River and Los Gatos Creek, both covered by the SCVHP, and construction activities could result in a significant impact on these species. Furthermore, the SCVHP regulates nitrogen deposition in the vicinity of the BART Extension. However, once operational, the BART Extension would reduce vehicle miles traveled and thus reduce nitrogen deposition, which would benefit the Bay checkerspot butterfly (*Euphydryas editha bayensis*), a species listed as threatened under the Endangered Species Act. VTA would perform preconstruction surveys, and if necessary implement avoidance measures for tricolored blackbird (Mitigation Measure BIO-CNST-E) and burrowing owl (Mitigation Measure BIO-CNST-F), to comply with the SCVHP. With implementation of these mitigation measures, this impact would be *less than significant.* Refer to Chapter 5, Section 5.5.4, *Biological Resources and Wetlands*, for mitigation measure details and more information regarding the BART Extension's consistency with the SCVHP.

6.11.5.3 BART Extension with TOJD Alternative

Impact BART Extension + TOJD LU-1: Physically divide an established community

Construction

Impacts and mitigation measures associated with construction under the BART Extension with TOJD Alternative would be similar to those analyzed under the BART Extension Alternative above.

Construction of the TOJD would occur adjacent to the four BART stations within the areas identified on the site plans as TOJD and at the two mid-tunnel ventilation structure sites. Surrounding land uses include industrial, commercial, retail, civic/institutional, and residential uses.

Construction of TOJD at the Alum Rock/28th Street and Diridon Stations would not divide an existing community because there would only be short-term lane closures on adjacent streets, and no street closures. Construction of TOJD at Santa Clara Station would not physically divide an established community because the TOJD site would be within the station campus

on a cul-de-sac surrounded by retail, commercial, and industrial uses. Construction of TOJD associated with either of the Downtown San Jose Station Options would also not divide an established community because there would only be short-term lane closures on adjacent streets, and no street closures.

Operation

Impacts associated with operations under the BART Extension with TOJD Alternative would be similar to those analyzed under the BART Extension Alternative above.

This section evaluates the potential for the TOJD, which would be constructed at the four stations and two ventilation structures, to physically divide an established community.

Alum Rock/28th Street Station TOJD

The Alum Rock/28th Street Station TOJD would consist of a maximum of 500,000 square feet of office space, 20,000 square feet of retail, and up to 275 dwelling units, with associated parking for all three land uses. This TOJD would range from four to nine stories within the station area. Because it would be contained within the station campus and would replace the existing industrial and commercial land uses on the site, the TOJD would not divide an established community. Furthermore, the TOJD would include residential dwelling units, office space, and retail and would improve access to surrounding neighborhoods through a new pedestrian/bicycle/transit gateway into the station campus. Therefore, the impact would be *less than significant*, and no mitigation is required.

Santa Clara and 13th Streets Ventilation Facility TOJD

TOJD would be on the same site as the ventilation facility at the northwest corner of Santa Clara and 13th Streets. The TOJD would consist of a maximum of 13,000 square feet of ground-level retail along the street frontage facing Santa Clara Street. A large parking lot covers most of this site, and existing land uses immediately within and adjacent to this area are primarily commercial. Residential land uses are just beyond the commercial strip to the north and south of the alignment. Given that the TOJD would be constructed within the commercial corridor along Santa Clara Street, it would not physically divide any established communities, and the impact would be *less than significant*. No mitigation is required.

Downtown San Jose Station East Option TOJD

Three TOJD sites would be adjacent to the Downtown San Jose Station East Option. The land uses at these sites would consist of a total of 160,000 square feet of retail and 300,000 square feet of office space, with underground parking. The TOJD would replace existing commercial uses and, therefore, would not physically divide an established community. The impact would be *less than significant*, and no mitigation is required.

Downtown San Jose Station West Option TOJD

The TOJD site for the Downtown San Jose Station West Option would be along Santa Clara Street, west of 3rd Street. The TOJD would consist of approximately 10,000 square feet of retail, 35,000 square feet of office space, and three levels of underground parking. This site is within an area with commercial and retail uses. The TOJD would replace existing commercial uses with retail and office uses and not physically divide an established community. Therefore, the impact would be *less than significant*, and no mitigation is required.

Diridon Station TOJD (South and North Options)

The TOJD site would be located adjacent to Diridon Station (South and North Options) under both the Twin-Bore and Single-Bore Options. The TOJD would consist of approximately 72,000 square feet of retail, up to 640,000 square feet of office space, and three levels of underground parking. The TOJD would be constructed in an area surrounded by commercial, institutional, and transportation uses and would not divide an established community. As previously discussed, one single-family residence would be displaced with implementation of the BART Extension at Diridon Station. However, the property owner would be compensated according to the Uniform Relocation Act, and therefore no significant impacts would result (refer to Section 4.14, *Socioeconomics*). Consequently, the impact would be *less than significant*, and no mitigation is required.

Stockton Avenue Ventilation Facility TOJD

TOJD would be on the east side of Stockton Avenue, south of Taylor Street. The site is currently occupied by industrial uses and is primarily covered with surface parking lots, and does not provide cohesion or connectivity for any established community in the area. Residential land uses are across Stockton Avenue to the west of the site, and the Caltrain tracks are to the northeast. The TOJD would consist of 15,000 square feet of ground-level retail along the street frontage facing Stockton Avenue. The TOJD would not create new barriers to the existing neighborhood, and the impact would be *less than significant*. No mitigation is required.

Santa Clara Station TOJD

TOJD would be adjacent to the station north of Brokaw Road and east of the Caltrain tracks, as shown on the Santa Clara Station site plan in Appendix C, *BART Station Site Plans*. The TOJD would consist of approximately 30,000 square feet of retail, up to 500,000 square feet of office space, up to 220 dwelling units, and four to eleven stories including a parking structure. Given that the property is vacant and separated from the closest residences by the existing Caltrain tracks, it does not currently provide cohesion or connectivity for any established communities, and no new barrier between neighborhoods would be created with implementation of the TOJD. Therefore, the TOJD would not physically divide an established community, and the impact would be *less than significant*. No mitigation is required.

Impact BART Extension + TOJD LU-2: Conflict with a land use plan, policy, or regulation intended to reduce an environmental effect

Construction and Operation

The BART Extension with TOJD Alternative would be fully consistent with all 69 land use policies shown in Table 6.11-1. As shown in Table 6.11-2, the BART Extension with TOJD Alternative is intended to ~~would~~ be consistent with the general plan land use designations and applicable specific plans.

At the Santa Clara and 13th Streets ventilation facility and at the Downtown San Jose Station East and West Options, the BART Extension with TOJD Alternative would be consistent with the existing City zoning for their respective locations. The Stockton Avenue ventilation facility TOJD site is designated Transit Employment Center by the SJGP and zoned Heavy Industrial. The Heavy Industrial zone is intended for a wide variety of industrial uses such as research and development, manufacturing, assembly, and testing and offices. Given that the TOJD would include a ventilation facility and a small retail portion on the street frontage, it is intended to ~~would~~ be generally consistent with the existing zoning and land use designations in San Jose.

The following sites would likely not be consistent with their current zoning by their respective cities as Light and Heavy Industrial.

- Alum Rock/28th Street Station (San Jose)
- Diridon Station (San Jose)
- Santa Clara Station (Santa Clara)

A Light and Heavy Industrial designation permits only certain types of industrial uses in San Jose and Santa Clara and does not allow for residential or mixed-use development within either city; therefore, VTA is seeking zoning amendments to rezone the Alum Rock/28th Street and Diridon Station sites as Commercial Pedestrian, and the Santa Clara TOJD site as Transit-Oriented Mixed Use. As described under Impact BART Extension LU-2 above, by rezoning these three station sites, VTA would bring the zoning designations into alignment with both the existing general plan designation of these sites and with the vision of the cities and communities. Approval of the zoning amendments would ensure that the BART Extension with TOJD Alternative is consistent with the applicable City zoning regulations. Once the zone changes are approved, the BART Extension with TOJD Alternative would be consistent with all land use policies and would not conflict with applicable land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. Additionally, the TOJD would further increase the BART Extension with TOJD Alternative's consistency with the land use and development objectives of both San Jose and Santa Clara, and those of local and regional agencies. Several policies of the SJGP and SCGP are aimed at supporting developments that would contribute toward increased transit ridership, locate employee-intensive commercial and industrial uses

within walking distance of transit stops and stations, and accommodate and provide direct access to transit facilities. Furthermore, many local urban village plans, specific plans, and neighborhood initiatives described in Table 6.11-1 encourage high-density, mixed-use developments near the station areas. Additionally, several VTA, MTC, Association of Bay Area Governments, and BART plans include policies to encourage densification and concentrated development near transit nodes, promote vital and livable communities, develop housing in proximity to jobs and develop both housing and jobs in proximity to public transportation, and enhance transit-oriented and walkable communities. Implementation of the TOJD would further assist in reaching these goals, because the TOJD would include some combination of housing, retail, office space, and parking in proximity to BART facilities. Therefore, the BART Extension with TOJD Alternative would not conflict with any land use goals aimed at reducing an environmental effect. The impact would be *less than significant*, and no mitigation is required.

Impact BART Extension + TOJD LU-3: Conflict with any applicable habitat conservation plan or natural community conservation plan

Construction and Operation

Impacts and mitigation measures associated with operations under the BART Extension with TOJD Alternative would be similar to those analyzed under the BART Extension Alternative above.

Construction of the TOJD would not have additional impacts because construction of the BART Extension would clear the sites as CSAs. However, TOJD would add additional vehicular trips, resulting in increased nitrogen. The BART Extension with TOJD Alternative would comply with the SCVHP's new trip generation compensation requirements. Also refer to Section 6.4, *Biological Resources and Wetlands*, for more information regarding consistency with the SCVHP.

Table 6.11-2: General Plan Land Use and Zoning Designations for the BART Extension with TOJD Alternative

Location	Existing Land Use	General Plan Land Use Designation	Existing Zoning (allowable uses)	Other Regulating Documents	BART Extension with TOJD Alternative Land Use	Consistent with General Plan and Other Regulating Documents?	Consistent with Existing Zoning?	Proposed Zoning
Alum Rock/28th Street Station	Industrial	Urban Village (SJGP)	Heavy Industrial (traditional industrial activities, such as heavy and light manufacturing and warehousing) (San Jose)	*Five Wounds Urban Village Plan* *Roosevelt Park Urban Village Plan* *Five Wounds/ Brookwood Terrace Neighborhood Improvement Plan*	BART station, TOJD (office, residential, retail)	Yes	No	Commercial Pedestrian[a]
Santa Clara and 13th Streets ventilation facility	Vacant	Urban Village (SJGP)	Commercial General District (large-scale retail and commercial uses) (San Jose)	*Thirteenth Street Neighborhood Improvement Plan* ~~None~~	BART ventilation facility, TOJD (retail)	Yes	Yes	N/A
Downtown San Jose Station West Option	Commercial	Downtown (SJGP)	Downtown Primary Commercial District (office, retail, service, residential, and entertainment) (San Jose)	*Diridon/Arena Strategic Development Plan* *Thirteenth Street Neighborhood Improvement Plan*	BART station and system facilities, TOJD (office, retail)	Yes	Yes	N/A
Downtown San Jose Station East Option	Commercial	Downtown (SJGP)	Commercial General (office, retail, service, residential, and entertainment) (San Jose)	*Diridon/Arena Strategic Development Plan* *Thirteenth Street Neighborhood Improvement Plan*	BART station and system facilities, TOJD (office, retail)	Yes	Yes	N/A

Location	Existing Land Use	General Plan Land Use Designation	Existing Zoning (allowable uses)	Other Regulating Documents	BART Extension with TOJD Alternative Land Use	Consistent with General Plan and Other Regulating Documents?	Consistent with Existing Zoning?	Proposed Zoning
Diridon Station South and North Options	Transit, parking, industrial	Commercial Downtown (SJGP)	Light Industrial (industrial and service establishments serving employees of the businesses located in the immediate industrial area) (San Jose)	*Diridon/Arena Strategic Development Plan* *Midtown Specific Plan*	BART station and system facilities, TOJD (office, retail)	Yes	No	Commercial Pedestrian[a]
Stockton Avenue ventilation facility	Industrial	Transit Employment Center (SJGP)	Heavy Industrial (intended for a wide variety of industrial users such as research and development, manufacturing, assembly, testing and offices [e.g. hospital]) (San Jose)	None	BART ventilation facility, TOJD (retail)	Yes	Yes	N/A
Santa Clara Station	Commercial	Santa Clara Station Focus Area (SCGP)	Heavy Industrial (intended for a wide variety of industrial users such as research [e.g. hospital]) (Santa Clara)	*Santa Clara Station Area Plan*	BART station, TOJD (office, residential, retail)	Yes	No	Transit-Oriented Mixed Use[b]

Source: City of San Jose 2011a; City of Santa Clara 2010.

Notes:

[a] Commercial Pedestrian (CP) is a zone for pedestrian-oriented retail activity and mixed residential/commercial development.

[b] The transit-oriented mixed use combining zoning district is intended to encourage quality high-density residential development in proximity to multiple transit lines and in conjunction with commercial development or redevelopment.

6.11.6 CEQA Conclusion

For both the BART Extension Alternative and the BART Extension with TOJD Alternative, the Twin-Bore Option and Downtown San Jose Station East and West Options construction-period road closures and traffic detours would disrupt access to businesses, public facilities, and emergency vehicle access. However, these would not pose long-term physical barriers to existing communities and business districts or physically divide a community; therefore, these impacts would be less than significant under CEQA. By comparison, the Single-Bore Option would only have periodic lane closures. To minimize traffic impacts related to construction, VTA would implement Mitigation Measure TRA-CNST-A, the development of a Construction Education and Outreach Plan, to provide advance notification of roadway closures throughout construction (see Chapter 5, Section 5.5.2, *Transportation*). Mitigation Measure TRA-CNST-A would not result in secondary environmental impacts.

For both BART Extension Alternative and the BART Extension with TOJD Alternative, there is potential for significant impacts regarding conservation plans during construction. Implementation of Mitigation Measures BIO-CNST-E and BIO-CSNT-F would reduce impacts to *less-than-significant* levels (see Chapter 5, Section 5.5.4, *Biological Resources and Wetlands*). Mitigation Measures BIO-CNST-E and BIO-CNST-F would not result in secondary environmental impacts.

The final property acquisitions required to construct the BART Extension Alternative may change (i.e., increase or decrease in size, change type, and/or change from permanent to temporary, etc.) during the Engineering Phase~~final design~~. Also, during the Engineering Phase~~final design~~, additional easements may be identified such as temporary construction easements, temporary access easements, and long-term maintenance and access easements. It is the intent of this and previous environmental documents, adopted by VTA, to disclose the potential environmental impacts of acquisitions known at the time the environmental document is prepared while recognizing that some adjustments may be necessary based on final design, working with individual property owners during the acquisition process, and/or during construction. Should additional modifications beyond the scope of this environmental document trigger the need for additional environmental review, VTA will prepare the necessary additional environmental analyses.

As previously discussed, one single-family residence would be displaced by the BART Extension under both the Diridon Station South and North Options. However, the one single-family home displacement would occur in accordance with state and federal laws, the owner would be compensated appropriately, and the removal of one residence within a non-residential and predominantly industrial neighborhood would not cause or contribute to the physical division of a community. Therefore, no significant impacts would result (refer to Section 4.14, *Socioeconomics*). All operational impacts related to land use would be *less than significant* under CEQA.

6.12 Noise and Vibration

6.12.1 Introduction

This section discusses existing conditions and the regulatory setting regarding noise and vibration, and it describes impacts that would result from construction and operation of the CEQA Alternatives.

6.12.2 Regulatory Setting

6.12.2.1 City of San Jose Municipal Code

City of San Jose Municipal Code Section 20.100.450 states the following with regard to construction activity within 500 feet of a residential unit.

a. Unless otherwise expressly allowed in a Development Permit or other planning approval, no applicant or agent of an applicant shall suffer or allow any construction activity on a site located within 500 feet of a residential unit before 7:00 a.m. or after 7:00 p.m., Monday through Friday, or at any time on weekends.

b. Without limiting the scope of Section 20.100.310, no applicant or agent of an applicant shall suffer or allow any construction activity on a site subject to a Development Permit or other planning approval located within 500 feet of a residential unit at any time when that activity is not allowed under the Development Permit or planning approval.

c. This section is applicable whenever a Development Permit or other planning approval is required for construction activity.

Municipal Code 20.40.600 limits noise levels at any residential property to 55 A-weighted decibels (dBA) from noise sources located on an adjacent property.

6.12.2.2 City of Santa Clara Municipal Code

City of Santa Clara Municipal Code Section 9.10.070 states that the provision of Section 9.10 shall not apply to noise, sound or vibration created by: (e) Construction activities during allowed hours, as otherwise specified in the Code. Where there is residentially zoned property within 300 feet, the hours permitted for construction are weekdays other than holidays from 7:00 a.m. to 6:00 p.m., and 9:00 a.m. to 6:00 p.m. on any Saturday.

Municipal Code 9.10 limits noise at a residential property to 55 dBA from 7:00 a.m. to 10:00 p.m. and limits the noise to 50 dBA from 10:00 p.m. to 7:00 a.m.

6.12.2.3 City of San Jose Noise Element

The City of San Jose has various noise and vibration policies contained in their General Plan and has indicated the following policies as those typically used as CEQA thresholds:

Noise

EC-1.2

Minimize the noise impacts of new development on land uses sensitive to increased noise levels (Categories 1, 2, 3 and 6) by limiting noise generation and by requiring use of noise attenuation measures such as acoustical enclosures and sound barriers, where feasible. The City considers significant noise impacts to occur if a project would:

- Cause the Day/Night Level (DNL) at noise sensitive receptors to increase by 5 dBA DNL or more where the noise levels would remain "Normally Acceptable"; or
- Cause the DNL at noise sensitive receptors to increase by 3 dBA DNL or more where noise levels would equal or exceed the "Normally Acceptable" level.

EC-1.3

Mitigate noise generation of new nonresidential land uses to 55 dBA DNL at the property line when located adjacent to existing or planned noise sensitive residential and public/quasi-public land uses.

EC-1.7

Require construction operations within San Jose to use best available noise suppression devices and techniques and limit construction hours near residential uses per the City's Municipal Code. The City considers significant construction noise impacts to occur if a project located within 500 feet of residential uses or 200 feet of commercial or office uses would

- Involve substantial noise generating activities (such as building demolition, grading, excavation, pile driving, use of impact equipment, or building framing) continuing for more than 12 months.

For such large or complex projects, a construction noise logistics plan that specifies hours of construction, noise and vibration minimization measures, posting or notification of construction schedules, and designation of a noise disturbance coordinator who would respond to neighborhood complaints will be required to be in place prior to the start of construction and implemented during construction to reduce noise impacts on neighboring residents and other uses.

EC-1.9

Require noise studies for land use proposals where known or suspected loud intermittent noise sources occur that may impact adjacent existing or planned land uses. For new residential development affected by noise from heavy rail, light rail, BART, or other single-event noise sources, implement mitigation so that recurring maximum instantaneous noise levels do not exceed 50 dBA maximum noise level (L_{max}) in bedrooms and 55 dBA L_{max} in other rooms.

Vibration

EC-2.3

Require new development to minimize vibration impacts to adjacent uses during demolition and construction. For sensitive historic structures, a vibration limit of 0.08 inch per second (in/sec) peak particle velocity (PPV) will be used to minimize the potential for cosmetic damage to a building. A vibration limit of 0.20 in/sec PPV will be used to minimize the potential for cosmetic damage at buildings of normal conventional construction.

However, as a special district, VTA's implementation of a regional transportation project is not subject to local noise and vibration regulations. Nevertheless, VTA may at their discretion impose the local construction noise and vibration limits on the contractor. The TOJD component of the BART Extension with TOJD Alternative would be subject to local noise and vibration limits.

6.12.2.4 Federal Transit Administration

Operational Noise and Vibration

Refer to Chapter 4, Section 4.12.2.3, *Regulatory Setting*, for a discussion of Federal Transit Administration (FTA) airborne noise, groundborne noise, and vibration criteria related to rail operation.

Construction Noise

Table 6.12-1 summarizes construction noise criteria provided by FTA (Federal Transit Administration 2006).

Table 6.12-1: FTA Construction Noise Criteria

	8-hour Leq (dBA)		Ldn (dBA)
Land Use	**Day**	**Night**	**30-day Average**
Residential	80	70	75[a]
Commercial	85	85	80[b]
Industrial	90	90	85[b]

[a] In urban areas with very high ambient noise levels (L_{dn} > 65 dB), L_{dn} from equipment should not exceed existing ambient by more than 10 dB.
[b] Use a 24-hour L_{eq} not L_{dn}.

Construction Vibration

FTA provides criteria for two types of impact from construction vibration. The criteria address impacts due to annoyance and impacts due to building damage. For evaluating annoyance impacts the criteria presented in Section 4.12.2.3 are applicable and depend on the duration of the vibration generated.

Construction vibration impacts can result in short-term annoyance and can be classified as Infrequent Events as indicated in Table 4.12-3 in Section 4.12, *Noise and Vibration*. FTA

guidelines for construction vibration criteria that minimize the risk of building damage are presented in Table 6.12-2. The criteria are specified in terms of ~~peak particle velocity (~~PPV~~)~~ in inches per second. The damage related criteria depend on the age and construction of the receptor building and also on how well it has been maintained if it is an older building.

Table 6.12-2: FTA Construction Vibration Criteria

Building Category	Peak Particle Velocity (in/sec)	Approximate Vibration Level (Lv)[a]
I. Reinforced-concrete, steel or timber (no plaster)	0.5	102
II. Engineered concrete masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry building	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90
[a] Root mean square velocity in decibels (VdB) re 1 micro-inch/second		

Historic buildings were identified within the study area. They are close enough to warrant analysis. FTA recommends a PPV criterion of 0.12 inch per second for buildings that are extremely susceptible to vibration, which might include fragile historic buildings depending on their construction, age and level of maintenance. At this level of PPV, an historic building that is fragile may suffer cosmetic damage, characterized by fine cracking (in plaster or masonry) or the re-opening or widening of old cracks. At this level of vibration there is no risk of structural damage.

6.12.3 CEQA Methods of Analysis

6.12.3.1 Construction

Construction noise and vibration impacts for the tunnel segment were analyzed in previous environmental studies for the BART Extension (HMM/Bechtel SVRT 2005). HMM/Bechtel SVRT (2005) presents a detailed evaluation of construction noise impacts for the BART Extension using assumptions provided at that time. The construction phasing, anticipated construction equipment and their duration of use have not materially changed for the current undertaking. The results of the 2005 construction impact study are summarized herein. The 2005 construction impact analysis evaluated seven areas of construction.

1. Downtown San Jose Station
2. Alum Rock Station
3. Diridon/Arena Station
4. Portals
5. 15th Street ventilation shaft
6. Schiele Avenue ventilation shaft
7. Gap breaker stations (5)

There have been changes to the project since 2005. Currently, there are two options for the Downtown San Jose Station (East and West); otherwise, the locations of the construction sites are very similar or the same as those in 2005. The ventilation shaft facility formerly at 15th Street would now be at 13th Street. The ventilation facility at Schiele Avenue is actually four alternative locations along Stockton Avenue and is now labeled Stockton Avenue ventilation facility. The Santa Clara Station was not included in the referenced 2005 study. The only noise receptor near the Santa Clara Station construction site would be the Candlewood Suites, which would be approximately 300 feet away at the closest point of the station.

Construction Equipment

Typical construction equipment would include backhoes, bulldozers, end-loaders, cranes, wrecking balls, forklifts, haul trucks, jackhammers, excavators, boom drill rigs, crawler cranes, crawler bulldozers/loaders, pavement breakers, loader/bobcats, trucks, excavators, generator/compressors, water trucks for dust control, and concrete and materials/equipment trucks. Significant oversized equipment will be used extensively, such as crane, bulldozers, loaders, pavement breakers, excavators, and backhoes. A soil mix wall batch plant for cement slurry preparation will be required for cut-and-cover excavation.

Tunnel Construction

The tunnels would be constructed using one or more tunnel boring machines (TBM). The TBM is anticipated to progress at a rate of from 30 to 75 feet a day depending on soil conditions encountered. The TBM would be a source of groundborne noise and/or vibration, the impact of which depends on the proximity of the tunnel to sensitive receptors and soil conditions encountered.

The soil excavated by the TBM would be removed from the tunnel by either by a muck train or a conveyor system. Typically muck trains operate on small jointed rails supported on wood crossties laid on the tunnel floor. This type of soil removal can be source of groundborne noise depending on the proximity of the tunnel to sensitive receptors and soil conditions encountered. Generally, a soil conveyor system generates no perceptible noise or vibration for receptors on the surface above.

Portal, Station Box, Ventilation Facility, and Underground Crossover Construction

The portals, the three underground station boxes, one underground crossover, and two mid-tunnel ventilation structures would be constructed by a cut-and-cover construction method. Demolition of existing structures would be required at various locations where cut-and-cover occurs. Cut-and-cover construction involves excavation from the street or ground level. Temporary shoring walls would be required to support the walls during excavation. A typical method for doing this is soil-cement mix wall or slurry diaphragm wall.

A soil mix wall construction involves either drilling many holes with an auger or digging a trench, both of which generate airborne noise and ground vibration.

Truck Haul Routes

Trucks hauling equipment, materials and soil can be a source of noise impact depending on the routes selected.

Construction Noise

Noise emission levels for the various anticipated construction equipment, the number of pieces of equipment, and the anticipated percentage of time the equipment will be used each hour and during each construction shift are provided in tables in Reference 14 for each of the construction phases. Based on these data, hourly equivalent (L_{eq}) noise levels were projected at the nearest noise-sensitive receptors for each phase of construction. The analysis concluded that L_{eq} levels for an 8-hour period would be similar to the hourly L_{eq} levels. The noise emission levels used in the 2005 analysis for the anticipated construction equipment are provided in Table 6.12-3.

Table 6.12-3: Construction Equipment and Noise Emission Levels

Equipment Type	Usage Factor (Percentage of Time Used During Each Hour and During Each Shift)	Typical Sound Level @ 50 feet dBA
Excavators (Cat 235, Cat 245, Cat 225)	75%	82 Cat 245 70 Cat 235 82 Cat 225
Dump trucks	10%	81
Front end loaders (Cat 966, Cat 988)	75%	81
Dozers (Cat D-6, Cat D-8)	75%	82 Cat D-6 85 Cat D-8
Concrete trucks	25%	77
Small construction vehicles (pickup trucks)	25%	68
Cranes (Manitowoc 4100, Grove 20T RT)	50%	81 Manitowoc 74 Grove
Large diameter drill-rig (Casagrande C800)	75%	81
Small diameter drill-rig (Soilmec 825)	25%	80
Diesel generators (150 KW)	100%	69a
Flat-bed semi-trucks	10%	81
Diesel pumping equipment	100%	77
Compressed-air construction tools	25%	81
Tie-back installation drilling equipment	75%	75
Concrete pumping truck	25%	77
Rail welding plant (Holland Welder)	75%	77
Air compressors (125 cfm, 250 cfm)	75%	70*
Earth pressure balance tunnel boring machine	60%	70
Muck conveyor	75%	65
Grout batch plant	75%	80
Supply train, including locomotive (25–35 ton)	50%	70 @5mph near portal
Welding equipment (400 Amp)	50%	73
Grout silos	100%	70
Grout mixers	100%	71
Grout pumps	100%	77
[a] Assumed to be acoustically treated with proper noise control		

The L_{eq} for a single piece of equipment is obtained from the following formula.

$$L_{eq}(equip) = E.L. + 10 \times \log10(U.F.) - 20 \times \log10(D/50) - 10 \times G \times \log10(D/50)$$

Where $L_{eq}(equip)$ is the L_{eq} at a receiver resulting for operation of a single piece of equipment over a specified time period, E.L. is the noise emission level (i.e., typical sound level) of the particular piece of equipment at the reference distance of 50 feet as obtained in Table 6.12-3, G is a constant to account for topography and ground effects, D is the distance

from the receiver to the piece of equipment, and U.F. is the usage factor that accounts for the fraction of time that the equipment is in use over the specified time period. The factor G is obtained from Chapter 6 of the FTA Guidance Manual. For most situation G can conservatively be taken to be equal to zero (0), which it is for hard ground.

The combination of noise "L_{eq}(combined)" from more than one piece of equipment operating during the same time period is obtained from the decibel addition of the L_{eq} of each single piece of equipment as given by:

$$L_{eq}(\text{combined}) = 10 \times \log10(10L_{eq}1/10 + 10L_{eq}2/10 + 10L_{eq}3/10 + \cdots + 10L_{eq}N/10)$$

Where $L_{eq}1$, $L_{eq}2$, $L_{eq}3$, $L_{eq}N$ are the individual L_{eq} for 1 through N pieces of equipment.

Construction Vibration

The TBM create vibration as the cutting head rotates and removes soil at the tunnel face. With an anticipated rate of from 30 to 75 feet a day advancement of the tunnel face vibration may be perceptible as either groundborne noise or vibration from 3 to 4 days. If the soil excavated by the TBM is removed from the tunnel by a muck train operating on jointed rails supported on wood crossties laid on the tunnel floor, this can be a significant source of groundborne noise impact depending on the proximity of sensitive receptors.

The cut-and-cover construction for the portals, the underground station boxes, underground crossover, and mid-tunnel ventilation structures can be a source of vibration impact depending on the proximity of nearby receptors. Demolition of existing structure can also be a source of vibration impact. Table 6.12-4 provides typical vibration levels for equipment generally used in the type of construction anticipated. Driven piles either with impact hammer or sonic would not be used unless vibration levels are below the acceptable criteria.

Table 6.12-4: Typical Vibration Levels for Construction Equipment

Equipment		PPV at 25 feet (in/sec)	Approximate L_v [a] at 25 feet
Clam shovel drop (slurry wall)		0.202	94
Hydromill (slurry wall)	in soil	0.008	66
	in rock	0.017	75
Vibratory roller		0.210	94
Hoe ram		0.089	87
Large bulldozer		0.089	87
Caisson drilling		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

Source: FTA Guidance Manual
[a] Root mean square velocity in decibels (VdB) re 1 micro-inch/second

For the purpose of assessing the potential for damage to buildings due to construction activity for the equipment listed in Table 6.12-4, the peak particle velocity vibration at distances other than 25 feet can obtained using the following formula.

$$PPVequip = PPVref \times (25/D)1.5$$

where: PPVequip is the peak particle velocity in inches/second of the equipment adjusted for distance, PPVref is the reference vibration level in inches/second at 25 feet obtained from Table 6.12-4, D is the distance in feet between the equipment and receiver.

For the purpose of assessing the potential for annoyance or interference with vibration-sensitive activities, the vibration level at any distance D can be obtained from the following equation.

$$Lv(D) = Lv(25ft) - 30 \times \log10(D/25)$$

To assess the potential for annoyance, this level of vibration is compared to the infrequent events criteria in Table 4.12-3 depending on the type of receiver.

For vibration generated by TBM operation, Dowding (2000) provides data for soil and rock. The data for TBM in rock was used to project vibration levels at the ground surface due to TBM operation.

Transit Operations

Refer to Section 4.12 for a discussion of analysis methods for transit operation noise and vibration.

6.12.4 CEQA Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the project would have a significant impact if it would result in any of the conditions listed below.

- Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies.
- Expose persons to or generate excessive groundborne vibration or groundborne noise levels.
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- Result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the project.
- Be located within an airport land use plan area, or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels.

- Be located in the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels.

6.12.5 Environmental Consequences

This section identifies the impacts related to noise and vibration under CEQA, as well as mitigation measures necessary to reduce the level of potentially significant impacts.

6.12.5.1 No Build Alternative

The No Build Alternative consists of the existing transit and roadway networks and planned and transportation programmed improvements (see Chapter 2, Section 2.2.1, *NEPA No Build Alternative*, for a list of these projects). The No Build Alternative projects could result in effects due to noise and vibration typically associated with transit, highway, bicycle, and pedestrian facilities, and roadway projects, as well as land development projects.

All individual projects planned under the No Build Alternative would undergo separate environmental review to identify effects due to noise and vibration. Review would include an analysis of impacts and identification of mitigation measures to reduce potential impacts.

6.12.5.2 BART Extension Alternative

Impact BART Extension NOI-1: Expose persons to or generate noise in excess of local or agency standards

Construction

The following analysis draws upon the construction noise and vibration analysis performed in 2005 (HMM/Bechtel SVRT 2005). Land uses at stations and along the alignment have not changed dramatically since the completion of that study.

Portals

It was determined in 2005 that construction at the east and west portal sites would not cause noise impacts. A noise impact analysis was performed for the slurry batch plant at the East and West Portals. The batch plant was assumed to operate 24 hours a day and 7 days a week. Although the noise sources may be supplied inside an enclosure, in order to present the worst-case scenario, it was assumed that the noise sources within the batch plant would be unshielded acoustically.

East Portal

The land use around the East Portal is primarily industrial. The closest building is 340 feet away on Las Plumas Avenue. The projected 8-hour L_{eq} is 71 dBA, which is less than the daytime criterion of 90 dBA (see Table 6.12-1). The slurry batch plant noise was determined to result in no impact at the East Portal. No noise impact is projected for the East Portal construction.

West Portal

There are four single-family homes (single-story) on Stockton Avenue approximately 500 feet from the site of the West Portal. The projected 8-hour L_{eq} is 70 dBA. The daytime L_{eq} criterion is 80 dBA and 70 dBA for nighttime (see Table 6.12-1). No noise impact is projected for the West Portal construction.

Noise from the slurry batch plant at the West Portal is projected to result in a minor noise impact on residences located on the west side of the alignment. The projected nighttime 8-hour L_{eq} is 71 dBA, which would exceed the criterion by 1 dBA. The projected L_{dn} is 77 dBA, would exceed the criterion by 2 dBA. A temporary noise barrier shielding the batch plant noise sources identified under Mitigation Measure NV-CNST-C would reduce this impact to a *less-than-significant* level.

Alum Rock/28th Street Station

The adjacent land use is primarily light industrial on both sides of N. 28th Street. The closest sensitive receiver is the Five Wounds Portuguese National Church, which would be at least 350 feet from the station box construction. The closest residences are on 27th Street. Four single-family residences would be between 400 and 750 feet away. At these distances the 8-hour L_{eq} is projected to be from 63 to 72 dBA. This would exceed the nighttime criterion for residences, but not the daytime criterion (see Table 6.12-1).

A significant noise impact would occur if there were nighttime work. Implementation of Mitigation Measures NV-CNST-A through NV-CNST-O would reduce this impact to a *less-than-significant* level (see Chapter 5, Section 5.5.13, *Noise and Vibration,* for all construction-related mitigation).

Ventilation Facilities13th Street Ventilation Structure

There are residences at 85 feet and at 95 feet away from the 13th Street ventilation structure. Consequently, construction of the 13th Street Ventilation Structure FSS is predicted to result in significant construction noise impacts. Implementation of Mitigation Measures NV-CNST-A through NV-CNST-O would reduce this impact to a *less-than-significant* level.

Stockton Avenue Ventilation Structure

There is one residence that is approximately 120 feet from the Stockton Avenue Ventilation Structure FSS. Construction of either of the two southernmost alternative sites would result in significant construction noise impacts. Implementation of Mitigation Measures NV-CNST-A through NV-CNST-O would reduce this impact to a *less-than-significant* level.

Downtown San Jose Station

Downtown San Jose Station East Option

This option is two blocks to the east of the West Option. The City office building is between 4th and 6th Streets and at its closest is 100 to 150 feet away. The projected noise level is an

8-hour L_{eq} of 79 dBA, which is less than the 85 dBA criterion for commercial spaces, which could include offices. The other buildings between 4th and 3rd Streets are similar to those for the Downtown San Jose Station West Option, which include residences above ground floor and commercial spaces. A significant noise impact on some of the residences could occur for the Downtown San Jose Station East option.

A significant noise impact to noise sensitive uses could occur for the Downtown San Jose East Option. Even after implementation of Mitigation Measures NV-CNST-A through NV-CNST-O, this impact would be *significant and unavoidable*.

Downtown San Jose Station West Option

There are several apartments on both sides of Santa Clara Street on the upper floors of buildings between 3rd and 4th Streets. The Town Park Towers, a 10-story apartment building, is located on 3rd Street about 200 feet from Santa Clara Street. While the lower floors on the west side are somewhat shielded by adjacent buildings, on the east side all units have a clear line of sight to Santa Clara Street. All other buildings along Santa Clara Street are commercial at ground floor with offices above.

The buildings on Santa Clara Street are approximately 40 feet from the centerline of the closest construction activity. For commercial buildings in the area, Phase I and Phase III construction would essentially be in compliance with the 8-hour L_{eq} noise limit of 85 dBA with possibly occasional exceedances of 1 to 2 dBA. For the residences in the area, nighttime construction could exceed the 8-hour L_{eq} limit of 70 dBA by as much as 15 to 18 dBA, making nighttime construction difficult to mitigate. During the daytime, the limit is 80 dBA, which is projected to be exceeded by 5 to 8 dBA. It is projected that some of the units at the Town Park Towers could be exposed to an 8-hour L_{eq} of 76 dBA, which exceeds the nighttime limit but not the daytime limit.

A significant noise impact on noise sensitive uses could occur for the Downtown San Jose Station West Option. Even after implementation of Mitigation Measures NV-CNST-A through NV-CNST-O, this impact would remain *significant and unavoidable.*

Diridon Station (South and North Options)

The area surrounding the Diridon Station (South and North Options) is primarily characterized by a mix of commercial buildings (the closest would be 140 feet from the staging area), a church (255 feet away), and residences (the closest multi-family residence would be 200 feet away). The noise levels would exceed the threshold and would therefore result in a significant impact. Implementation of Mitigation Measures NV-CNST-A through NV-CNST-O would reduce noise impacts, but not would guarantee that the noise levels would be less than the threshold. Therefore, construction noise impacts for the Diridon Station (South and North Options) would be *significant and unavoidable*.

Santa Clara Station

The area surrounding the station site is characterized by a mix of commercial, light industry hotel and residences. The closest multi-family receptor is approximately 615 feet away and the hotel is approximately 400 feet from the construction site. The noise threshold would not be exceeded at any sensitive receptors. Therefore, *less than significant* noise impacts would occur during construction of the Santa Clara station.

Newhall Maintenance Facility

The area surrounding the Newhall Maintenance Facility is characterized by a mix of commercial, light industry, and residential land uses. The nearest multi-family residential use and hotel are approximately 400 feet away. The noise threshold would not be exceeded at any sensitive receptors. Therefore, impacts would be *less than significant* during construction.

Operation

As described under BART Extension Impact NOI-3, there are several elements of the BART facilities that would generate noise in excess of local or agency standards. The increase in wayside noise levels from train operations at all ground level and second story receptors are projected to be less than the 5 dBA threshold that indicates a significant impact under CEQA. Therefore, impacts would be *less than significant*, and no mitigation is required.

BART ancillary facility noise impacts were analyzed in a memorandum prepared by Wilson, Ihrig & Associates (2006). The results of these analyses are summarized below. Analyses for ventilation shafts at the Santa Clara and 13th Street and Stockton were evaluated in *VTA's BART Silicon Valley—Phase II Extension Project Noise and Vibration Technical Report* (Wilson, Ihrig & Associates 2017~~6~~).

Tunnel Ventilation Shafts

Emergency Ventilation Fan Noise

Untreated ventilation facilities could produce a noise level of 67 to 77 dB at 50 feet. This could result in exceedance to the City of San Jose's noise limit of 55 dBA at residences within 200 to 630 feet of these facilities. This would be a significant impact. Implementation of Mitigation Measure NV-A in Section 4.12, *Noise and Vibration*, would reduce this impact to a *less-than-significant* level.

~~Mitigation Measure NV-A: Implement Noise Reduction Treatments at Ancillary Facilities~~

~~Noise reduction treatments will be implemented at ancillary facilities such as tunnel ventilation shafts, piston relief shafts, traction power substations, and emergency backup generators such that noise levels comply with applicable Cities of San Jose and Santa Clara noise criteria at nearby developed land uses. Treatments that will be implemented, if necessary, include but are not limited to:~~

- ~~Sound attenuators and acoustical absorptive treatments in ventilation shafts and facilities.~~
- ~~Sound attenuators for the tunnel emergency ventilation fans.~~
- ~~Perimeter noise walls (nominally an 8 feet high wall) placed around emergency generators.~~

Train Noise

Noise from BART trains operating in the subway tunnels can be transmitted to the surface via the ventilation shafts.

Santa Clara and 13th Streets Ventilation Facility

Long-term ambient noise measurements were conducted near the Santa Clara and 13th Streets Ventilation Facility in 2008. Ambient noise measurements were conducted in 2015 at two of the same locations studied in 2008. Table 6.12-5 summarizes the results of the 2008 and 2015 ambient noise measurements. Measurement locations are depicted in Figure 4.12-6 in Section 4.12, *Noise and Vibration*.

Table 6.12-5: Ambient Noise in Santa Clara and 13th Street Neighborhood

Measurement Location Label	Ambient L_{dn} (dBA)				
	2008		2015		Ambient Used in Analysis
	Range	Average	Range	Average	
A	61–62	61.5	--	--	62
B	70–71	70.5	67	67	71
C	62–64	63	62–63	62.5	63
E	64–67	65.5	--	--	66
H	59–60	59.5	--	--	60
I	61–64	62.5	--	--	63

The ambient noise at Location B was measured to be 3.5 dBA lower in 2015 as compared with 2008. The ambient noise at Location C did not change. Because higher existing ambient noise levels are more critical (more likely to require mitigation) and there is no consistent trend, the greater of the ambient readings from 2008 and 2015 was used in the impact analysis to characterize the ambient at the six locations.

There are two noise sources associated with ventilation facilities: noise from trains running in the tunnel and the testing of emergency ventilation fans. Trains run continuously during revenue hours and have potential for impacting ambient noise over the course of a day.

Table 6.12-6 presents the projected noise from train noise exiting the tunnel from the ventilation shaft. The train noise emitted from the Santa Clara/13th Street ventilation shaft is minimal. No noise impacts are projected to occur from this source of operational noise. Therefore, no mitigation is required for train noise that exits the tunnel from the ventilation shaft.

Table 6.12-6: Airborne Train Noise from Santa Clara/13th Street Ventilation Facility

Civil Station	Receiver Location Address	Land Use	Vehicle Speed (mph)	Distance to Vent Structure (ft)	Existing Ambient L_{dn}/L_{eq} (dBA)	Total L_{dn}/L_{eq} (dBA)	Increase over Existing Ambient (dBA)	Moderate Impact Increase Threshold (dBA)	Impact Type
657	30 North 13th Street	MFR	67	85	67	67.1	0.1	1.2	NI
658	602 East Santa Clara Street – Indian Health Center of Santa Clara Valley	Institutional	67	145	69	69.0	0.0	1.1	NI
658	28 South 13th Street	SFR	67	280	63	63.0	0.0	1.6	NI
660	29 South 13th Street – Duong Bich-Hai Thi, DDS	Institutional	67	260	63	63.0	0.0	1.6	NI
660	26 South 12th Street	SFR	67	250	63	63.0	0.0	1.6	NI
661	551 East Santa Clara Street – Holistic Health Care Clinic (Chiropractic)	Institutional	67	80	69	69.1	0.1	1.1	NI
661	32 North 12th Street	MFR	67	100	66	66.1	0.1	1.3	NI
662	15 South 12th Street	SFR	67	270	64	64.0	0.0	1.5	NI
663	12 South 11th Street	MFR	67	395	64	64.0	0.0	1.5	NI
665	32 North 11th Street	MFR	67	360	66	66.0	0.0	1.3	NI

MFR = Multifamily residence
SFR = Single family residence
NI = No Impact
mph = miles per hour
ft = feet
dBA = A-weighted decibels

Stockton Avenue Ventilation Facility

Long-term ambient measurements were conducted near the site of the Stockton Avenue Ventilation Facility in 2008 to characterize the existing conditions. In 2015, ambient noise measurements were repeated at three of the four same locations to determine changes that might have occurred. Table 6.12-7 summarizes the results of the 2008 and 2015 ambient noise measurements. Measurement locations are depicted in Figure 4.12-7.

Table 6.12-7: Ambient Noise in Stockton Avenue Neighborhood

Measurement Location Label	Ambient L_{dn} (dBA)				
	2008		2015		Ambient Used in Analysis
	Range	Average	Range	Average	
L	66-68	67	68-70	69	69
N	64-66	65	69-70	69.5	70
O	60-63	61.5	--	--	62
P	67-70	68.5	68-70	69	69

The ambient noise levels at Location N increased by 4.5 dBA. Because higher existing ambient noise levels are more critical (more likely to require mitigation) and there is no consistent trend, the greater of the ambient readings from 2008 and 2015 was used in the impact analysis to characterize the ambient at the four locations.

Table 6.12-8 presents the projected noise from train noise exiting the tunnel from the ventilation shaft. The train noise emitted from the Stockton ventilation shaft is minimal. No noise impacts are projected to occur for this source of operational noise. Therefore, no mitigation is required for train noise that exits the tunnel from the ventilation shaft.

Table 6.12-8: Airborne Train Noise from Stockton Ventilation Shaft

Civil Station	Receiver Location Address	Land Use	Vehicle Speed (mph)	Distance to Vent Structure (ft)	Existing Ambient L_{dn}/L_{eq} (dBA)	Total L_{dn}/L_{eq} (dBA)	Increase over Existing Ambient (dBA)	Moderate Impact Increase Threshold (dBA)	Impact Type
782	701 Harding Avenue	SFR	67	345	70	70.0	0.0	1.6	NI
784	551 Stockton Avenue	SFR	67	195	70	70.0	0.0	1.1	NI
785	599 Stockton Avenue	SFR	67	115	70	70.0	0.0	1.1	NI
787	733 Schiele Avenue	SFR	67	250	63	63.0	0.0	1.1	NI
788	623 Stockton Avenue	SFR	67	165	69	69.0	0.0	1.1	NI
788	635 Stockton Avenue	SFR	67	180	69	69.0	0.0	1.7	NI
789	641 Stockton Avenue	SFR	67	140	69	69.0	0.0	1.6	NI
794	647 Stockton Avenue	SFR	67	120	69	69.0	0.0	1.0	NI
796	759 Villa Street	SFR	67	330	62	62.0	0.0	0.0	NI
796	745 West Taylor Street	SFR	67	340	63	63.0	0.0	0.0	NI
797	727 Stockton Avenue	SFR	67	400	70	70.0	0.0	0.0	NI

SFR = Single family residence
NI = No Impact
mph = miles per hour
ft = feet
dBA = A-weighted decibels

Pressure Relief Shaft

Based on previous BART projects, the sound attenuators that would be required to reduce the noise from tunnel emergency ventilation fans would be more than adequate to reduce the sound of trains. Introducing two silencers in the pressure relief shaft as specified in Mitigation Measure NV-A (one to control noise within the tunnel and station, the other to control noise at the surface) can reduce the train noise by more than 15 dBA. This would be a *less-than-significant* impact.

Traction Power Substations

Based on previous BART projects (e.g., BART SFO) traction power substations (TPSS) that are beyond 250 feet from residences would not require noise mitigation. There are TPSS that lie within 250 feet of receptors at the Downtown San Jose Station West Option and Diridon Station South and North Options. Tables 6.12-9 through 6.12-11 summarize the noise analysis at each location. The FTA Guidance Manual provides a reference ~~maximum noise level (~~L_{max}~~)~~ noise level of 63 dBA for substations. Using a noise level criterion of 55 dBA, there would be one impact each at the Downtown San Jose Station West Option, Diridon Station South Option, and Diridon Station North Option. Implementation of Mitigation Measure NV-A would reduce this impact to a *less-than-significant* level.

Table 6.12-9: Predicted TPSS Noise Levels Near the Downtown San Jose Station West Option

Receptor	Land Use	Distance to TPSS (ft)	Projected Maximum Noise Level (dBA)	Impact Threshold (dBA)	Impact Type
97 East Santa Clara Street	MFR	20	71.0	55	Impact
101 East Santa Clara Street	MFR	125	55.0	55	No Impact
60 North 3rd St	MFR	175	52.1	55	No Impact
100 East Santa Clara Street	MFR	166	52.6	55	No Impact
126 East Santa Clara Street	MFR	220	50.1	55	No Impact
20 South 2nd Street	MFR	210	50.5	55	No Impact
MFR = Multifamily residence ft = feet dBA = A-weighted decibels					

Table 6.12-10: Predicted TPSS Noise Levels Near the Diridon Station South Option

Receptor	Land Use	Distance to TPSS (ft)	Projected Maximum Noise Level (dBA)	Impact Threshold (dBA)	Impact Type
35 South Autumn Street	Single-family residence	90	57.9	55	Impact
ft = feet dBA = A-weighted decibels					

Table 6.12-11: Predicted TPSS Noise Levels Near the Diridon Station North Option

Receptor	Land Use	Distance to TPSS (ft)	Projected Maximum Noise Level (dBA)	Impact Threshold (dBA)	Impact Type
35 South Autumn Street	Single-family residence	90	57.9	55	Impact
ft = feet dBA = A-weighted decibels					

Emergency Backup Generators

Emergency backup generators would be located at the Alum Rock/28th Street and Downtown San Jose Stations.

Alum Rock Generator

The Alum Rock generator would be located at grade, within a concrete structure. Although specific details on the size of the generator are not available it is anticipated that noise from operation of the generator could exceed 55 dBA. However, there are no nearby noise-sensitive receptors. As such, impacts would be *less-than-significant,* and no mitigation is required.

Downtown San Jose Station Generator

The generator for the Downtown San Jose Station would be fully enclosed by the station structure. Noise from operation of the generator could exceed 55 dBA at nearby receptors and result in an adverse impact. Implementation of Mitigation Measure NV-A would reduce this impact to a *less-than-significant* level.

Newhall Maintenance Facility

The Newhall Maintenance Facility tracks were studied in 2006 as part of the preliminary engineering design process. The maintenance facility and storage yard tracks location and usage have not changed significantly since 2006. Therefore, the previous noise analysis (ATS Consulting 2006a, 2006b) conclusions remain valid, and, as shown in Table 6.12-12, there

would be *no noise impacts* from train activity within the Newhall Maintenance Facility, nor would there be noise impacts from facility activity. Accordingly, no mitigation would be required.

Table 6.12-12: Estimated Noise Levels at Noise-Sensitive Receptors near Newhall Maintenance Facility

Potential Outdoor Noise Sources	Estimated L_{dn} at Representative Receptors			
	R-1 Chestnut	R-2 Elm	R-3 Future Res. on Campbell	R-4 Candlewood Suites Hotel
Train Movements on Transfer Track	47	47	50	57
Train Movements on Storage Tracks	39	44	49	31
Hi-Rail Vehicle	41	44	46	46
Carwash	34	35	36	42
Cleaning/Blow-Down	29	30	32	45
Noise from Maintenance Shops	40	41	44	49
Vehicular Traffic Into/Out of Facility	52	N/A	N/A	N/A
Total Maintenance Facility Noise	54	51	54	58
Existing L_{dn}	61	65	65	65
FTA Impact Threshold	58	61	61	61
Impact (Y/N)	N	N	N	N
Source: ATS Consulting 2006a, 2006b..				

Impact BART Extension NOI-2: Expose persons to or generate excessive groundborne vibration or groundborne noise

Construction

Except for TBM operation, most construction vibration would occur during daytime hours. Operation of the TBM would be two 10-hour shifts with an estimated progress at a rate of from 30 to 75 feet a day depending on soil conditions encountered.

Tunnel Construction – TBM

The depth of the tunnel centerline below the ground surfaces typically ranges from approximately 40 to 60 feet with the Twin-Bore Option. Some residences would be located directly over the tunnels. For those residences the distance from the tunnel center is 45 feet or more. At 45 feet the vibration level (measured as PPV) is projected to be less than 0.02 inches/second. In terms of human perception, this vibration could vary from 75 to 83 VdB depending on soil conditions. Typically, residences are at least 75 feet away from a tunnel centerline and vibration would be less than 75 VdB. The Single-Bore Option tunnel boring machine is larger and would generate greater vibration. However, the Single-Bore Option would be at a greater depth, which would offset the greater vibration and result in vibration levels comparable to the Twin-Bore Option.

Impacts on Buildings (Cosmetic Building Damage)

A PPV of 0.02 inches/second is substantially below the most conservative building damage criterion of 0.12 inches/second, which addresses the potential for cosmetic damage (e.g., plaster cracks) to buildings in a fragile condition (e.g., possible older historic buildings). Consequently, there are no projected impacts to buildings due to TBM operation.

Impacts on Occupants (Annoyance)

The FTA impact criterion for infrequent events is 80 VdB for residences and for occasional events it is 75 VdB and for frequent events it is 72 VdB. Since the perceptible vibration would last no more than four days per tunnel and typically only three days, the occasional events criterion (75 VdB) would be applicable. This level of vibration may be perceptible to some people.

For residences that are at least 75 feet horizontally from a tunnel centerline, the vibration would be less than the criterion (72 VdB) for frequent events. For residences less than 75 feet, the vibration would be perceptible depending on the depth of the tunnel and the horizontal distance the residence is from the tunnel centerline.

It is projected that residences within a horizontal distance of 50 feet of the tunnel centerline may be exposed to significant impacts by TBM vibration for a period of up to four days per tunnel, which includes approximately three dozen residences that could be impacted by TBM vibration for a period of up to four days per tunnel. Implementation of Mitigation Measure NV-CNST-P through NV-CNST-S would reduce this impact to a *less-than-significant* level.

Tunnel Construction – Muck Train

Soils excavated by the TBM would be removed by a muck train or conveyor system. Muck trains have been found to cause groundborne noise impacts in the past and are assumed to result in significant vibration impacts. Implementation of Mitigation Measures NV-CNST-P through NV-CNST-S would reduce this impact to *less-than-significant* level.

Station Excavation

Vibration from station and ventilation shaft excavation would be generated from implementation of excavation shoring and tiebacks where necessary. Construction of the Downtown San Jose Station would require demolition and removal of the existing roadway and in some places possibly the sidewalk. After the station box is completed the roadway would be rebuilt.

Table 6.12-13 indicates the various demolition and construction activities and the equipment that would produce vibration. Also indicated are the distance beyond which the vibration should be less than 0.12 inch per second PPV. Where a range of distance is shown, the distance depends on the actual equipment used and/or the local soil conditions.

Table 6.12-13: Demolition and Construction Vibration

Activity	Equipment	Distance (feet)[a]
Demolition	Hoe Ram	20
	Jackhammer	10 to 15
Excavation	Trencher	20
	Caisson Drilling	20
	Hydro Mill Slurry Wall	5 to 10
	Drilling for Tiebacks	6 to 8
Roadway Subgrade Compaction	Vibratory Roller	35 to 40
[a] Distance to reach 0.12 inch per second		

The results in Table 6.12-13 indicate that structures close to station excavation could be exposed to excessive vibration. This impact is therefore considered to be significant. Implementation of Mitigation Measures NV-CNST-P through NV-CNST-R would reduce this impact to a *less-than-significant* level.

Operation

At-grade Segment

All sensitive receptors adjacent to the at-grade segment of the alignment, which starts approximately 600 feet north of I-880, would be over 200 feet (i.e., 223 feet and greater) from the nearest track. The Screening Distance for a rail rapid transit system such as BART is 200 feet. Consequently, there would be *no impact* from groundborne noise and vibration for the at-grade segment of the BART Extension.

Tunnel Segment – Twin-Bore Option

Tables 4-8 through 4-10 in *VTA's BART Silicon Valley—Phase II Extension Project Noise and Vibration Technical Report* (Wilson, Ihrig & Associates 201~~6~~7) and Tables 4.12-16 through 4.12-20 in Section 4.12, *Noise and Vibration*, indicate groundborne vibration and noise levels along the tunnel segment. Groundborne vibration and noise levels are presented as a range of projected values reflecting the use of a modeling factor, which conservatively accounts for the various uncertainties in the model. The levels at each receptor location are based on distance to and depth of the track, train design speed, wheel/rail interaction forces, dynamic characteristics of rail support system, soil conditions, and the dynamic response of the receptor building. Determinations of noise and vibration impacts are based on the upper value of the predicted range. Table cells that are shaded indicate impacts.

As indicated in Tables 4.12-16 through 4.12-20 in Section 4.12, *Noise and Vibration*, no vibration impacts are projected for the BART Extension's tunnel alignment when comparing the FTA 1/3-octave band criteria to the predicted levels of vibration. The analysis does indicate that groundborne noise levels are projected to exceed the FTA criteria for many

receptors, as shown in Tables 4.12-16 through 4.12-20 in Section 4.12, *Noise and Vibration*. This would result in significant noise impacts.

Mitigation Measure NV-B, in Section 4.12, *Noise and Vibration,* is an Isolated Slab Track (IST), which can provide approximately 13 dBA of noise reduction. An IST is a form of floating slab track (FST). In the case of special trackwork (i.e., crossover), Mitigation Measure NV-B, can also be used underneath a crossover. Implementation of Mitigation Measure NV-B would reduce the impacts of groundborne noise to *less than significant*.

~~**Mitigation Measure NV-B: Reduce Groundborne Noise Levels**~~

~~The mitigation strategy to achieve the FTA groundborne noise criteria is an Isolated Slab Track (IST), which is a special form of concrete slab track design similar to but not as effective as a floating slab track (FST) system. The IST system is constructed with a continuous elastomeric mat instead of discrete elastomeric pads that are typically used for an FST system. The IST can be designed to provide approximately 13 dBA of noise reduction. The locations for implementing mitigation are shown in Table 4.12-16 through 4.12-20. The specific mitigation strategy will be determined in final design and could include alternative strategies that similarly achieve the FTA groundborne noise criteria.~~

Tunnel Segment – Single-Bore Option

An analysis was performed comparing projected groundborne noise levels from the Single-Bore Option to the Twin-Bore Option. The conclusion from this analysis is that due to the greater depth of the single-bore tunnel the projected groundborne noise levels for the lower level of the single-bore tunnel would be less (from 1 to 2 dBA) than those from the twin-bore tunnel. Based on an analysis for a similar bi-level tunnel groundborne noise from the upper level are projected to be substantially less than for the lower level.

In the engineering phase of the Phase II Project, vibration propagation test data will be required for tunnel depths of the single-bore tunnel to allow for more detailed analysis and determination of specific mitigation required, if this is the preferred alternative. For purposes of this analysis, where groundborne noise level exceed the noise criterion by 1 dBA for the Twin-Bore Option, it was determined that mitigation for the lower level of the single-bore tunnel would be less than for the Twin-Bore Option. It is expected that for the upper level, the groundborne noise mitigation would be substantially less for the upper level of the single-bore tunnel compared to the mitigation for the twin-bore tunnel.

Impact BART Extension NOI-3: Permanently increase ambient noise levels in the vicinity

Construction

Construction of the BART Extension would be temporary by nature and thus would not result in any permanent increase of ambient noise levels along the alignment. Refer to Impact BART Extension NOI-4 for temporary ambient noise impacts from construction.

Operation

Airborne noise impacts from train operations can occur where trains are running on track aboveground, at ventilation facilities where train noise is transmitted to the surface from the tunnel below, and from storage yard tracks and maintenance facility activities.

Wayside Train Noise

Table 4-2 in *VTA's BART Silicon Valley—Phase II Extension Project Noise and Vibration Technical Report* (Wilson, Ihrig & Associates 2017~~6~~) presents the projected wayside noise levels for ground-floor receptors. For ground-floor receptors, wayside noise would result in no impact for all but one receiver (Candlewood Suites at 481 El Camino Real in Santa Clara). For the other ground-floor receptors, the projected increase is 0.8 dBA or less and the threshold for Moderate Impact (see Figure 4.12-8) for these receptors is 1.2 or greater based on existing ambient ranging from 62 to 67 dBA. With an existing day-night sound level (L_{dn}) of 65 dBA at Candlewood Suites, the threshold for Moderate Impact is 1.4 dBA. The increase in noise level for this receptor is projected to be 2 dBA. The mitigation policy adopted for the Phase II Project is to mitigate Moderate Impacts only when the increase in noise levels is greater than 5 dBA. For the purpose of CEQA, noise increases of 5 dBA or less with a Moderate Impact is a *less-than-significant* impact.

Table 4-3 in *VTA's BART Silicon Valley—Phase II Extension Project Noise and Vibration Technical Report* (Wilson, Ihrig & Associates 2016~~7~~) presents the projected wayside noise levels for second story receivers. For second story receivers, wayside noise is projected to impact two receivers (Dahlia Loop SFR complex and Candlewood Suites) with Moderate Impacts. The threshold for Moderate Impact for Dahlia Loop SFR is 1.2 dBA. The increase in noise level at the second story of this receptor is 1.7 dBA. For Candlewood Suites, the increase in noise level is projected to be 2 dBA. Because the mitigation policy is to mitigate Moderate Impacts only when the increase in noise levels is greater than 5 dBA, no mitigation is anticipated and these Moderate Impacts would be considered *less than significant* under CEQA.

Tunnel Ventilation Shafts

There are two noise sources associated with ventilation facilities: noise from trains running in the tunnel and the testing of emergency ventilation fans. Trains run continuously during revenue hours and have potential for impacting ambient noise over the course of a day.

The train noise emitted from the Santa Clara/13th Street and Stockton Avenue ventilation shafts would be minimal. There would be *no impact* from this source of operational noise and no mitigation is required.

Newhall Maintenance Facility

As described under Impact BART Extension NOI-1, the Newhall Maintenance Facility tracks were studied in 2006 as part of the preliminary engineering design process. The maintenance facility and storage yard tracks location and usage have not changed significantly since 2006.

Therefore, the previous noise analysis (ATS Consultants 2006a,b) conclusions remain valid, and there would be *no impact* from train activity within the Newhall Maintenance Facility, nor would there be noise impacts from facility activity.

Impact BART Extension NOI-4: Temporarily or periodically increase ambient noise levels

Construction

As discussed under Impact BART Extension NOI-1, construction could temporarily increase noise levels and result in a significant noise impact if nighttime construction were to occur. Potential impacts on ambient noise levels due to nighttime construction could occur at the Alum Rock/28th Street Station, and both the east and west options for the Downtown San Jose Station. The construction of the 13th Street and Stockton Avenue Ventilation Facility could also temporarily increase ambient noise levels and result in a significant noise impact. Implementation of Mitigation Measures NV-CNST-A through NV-CNST-O would reduce this impact to a *less-than-significant* level.

Operation

There would be no temporary ambient noise impacts from operations. Refer to Impact BART Extension NOI-3 for permanent ambient noise impacts from BART Extension operation.

Impact BART Extension NOI-5: Expose people in the area to excessive airport noise

Construction

The Mineta San Jose International Airport is near the alignment. However, construction workers would not be permanently located near the airport during construction. All construction work near the BART Extension would be transient by nature. As such, there would be *no impact*.

Operation

The Mineta San Jose International Airport is near the alignment. However, no people would be permanently located near the airport due to operation of the BART Extension. All users of the BART Extension would be transient by nature. As such, there would be *no impact*.

6.12.5.3 BART Extension with TOJD Alternative

The TOJD includes construction of commercial and residential buildings in the vicinity of the four stations and the two ventilation facilities.

Impact BART Extension + TOJD NOI-1: Expose persons to or generate noise in excess of local or agency standards

Construction

Alum Rock/28th Street Station

Construction noise impacts associated with TOJD at this site would be greater than those for construction of the Alum Rock/28th Street Station, as described under Impact BART Extension NOI-1 due to the more extensive construction above ground. This impact is therefore considered to be significant. However, implementation of Mitigation Measures NV-CNST-A through NV-CNST-O would reduce both BART Extension and TOJD noise impacts to a *less-than-significant* level.

Santa Clara and 13th Streets Ventilation Facility

Residences are located to the north and adjacent to the site. Construction noise impacts associated with TOJD at this site would be similar to those for construction of the BART Extension ventilation facility since both would be enclosed within the same building. This impact is therefore considered to be significant because the BART Extension construction noise impacts were considered significant. Implementation of Mitigation Measures NV-CNST-A through NV-CNST-O would reduce this impact to a *less-than-significant* level.

Downtown San Jose Station (East and West Options)

There are existing residences near both the east and west station options. Construction noise impacts associated with TOJD at this site would be greater than those for construction of the Downtown San Jose Station, as described under Impact BART Extension NOI-1. This is due to more extensive aboveground construction. This impact is therefore considered to be significant. Implementation of Mitigation Measures NV-CNST-A through NV-CNST-O would reduce both BART Extension and TOJD noise impacts, but the residual impact would be *significant and unavoidable*.

Diridon Station (South and North Options)

There are commercial uses, churches, or multi-family residences in proximity to the construction area for the Diridon Station South or North Options. Construction noise impacts associated with TOJD at this site would be greater than those for construction of the Diridon Station, as described under Impact BART Extension NOI-1. This is due to more extensive aboveground construction. This impact is therefore considered to be significant. Implementation of Mitigation Measures NV-CNST-A through NV-CNST-O would reduce both BART Extension and TOJD impacts, but the residual impact would be *significant and unavoidable*.

Stockton Avenue Ventilation Facility

Existing residences are located to the southwest and across Stockton Avenue. Construction noise impacts associated with TOJD at this site would be similar to those for construction of

the BART Extension ventilation facility, as both which would be enclosed within the same building. This impact is therefore considered to be significant because the BART Extension construction noise impacts were considered significant. However, implementation of Mitigation Measures NV-CNST-A through NV-CNST-O would reduce this impact to a *less-than-significant* level.

Santa Clara Station

The closest noise sensitive receptors are multi-family residences and a hotel approximately 400 feet from the construction area. These uses are also across the existing railroad tracks. Construction noise impacts associated with TOJD at this site would be greater than those for construction of the Santa Clara Station, as described under Impact BART Extension NOI-1. This is due to more extensive aboveground construction. However, the construction noise would not exceed the threshold. Therefore, noise impacts would be *less than significant*.

Newhall Maintenance Facility

The nearest multi-family residential use and hotel are approximately 400 feet from the construction area. The noise threshold would not be exceeded at any sensitive receptors. Therefore, *less-than-significant* impacts from noise are projected during construction of the maintenance facility.

Operation

Operation impacts for the BART Extension are discussed under Impact BART Extension NOI-1. No significant additional operational noise impacts are anticipated from TOJD operations. For these reasons, impacts from operation of the BART Extension and TOJD would be *less than significant with mitigation* related to excess noise levels.

Impact BART Extension + TOJD NOI-2: Expose persons to or generate excessive groundborne vibration or groundborne noise

Construction

Construction impacts associated with the BART Extension with TOJD would be greater than those for construction of only the BART Extension facilities.

Residences within 50 feet of the tunnel centerline could be affected by TBM vibration during tunnel construction, and by muck train removal of the soil excavated during construction. This impact is therefore considered to be significant. Construction of the TOJD would include pile driving that could result in significant groundborne vibration impacts. Implementation of Mitigation Measures NV-CNST-A through NV-CNST-O would reduce both BART Extension and TOJD groundborne vibration and noise impacts to a *less-than-significant* level.

Operation

BART Extension operations would result in groundborne noise impacts as described above and in Chapter 4, Section 4.12. Implementation of Mitigation Measure NV-B would reduce this impact to a *less-than-significant* level.

Impact BART Extension + TOJD NOI-3: Permanently increase ambient noise levels in the vicinity

Construction

Construction impacts are temporary by nature and would not result in any permanent increase in ambient noise levels. Refer to Impact BART Extension + TOJD NOI-4 for temporary ambient noise level impacts.

Operation

Operation impacts for the BART Extension are discussed under BART Extension NOI-3. No additional significant operational noise impacts are anticipated from TOJD operations. For these reasons, impacts from operation of the BART Extension with TOJD Alternative would be *less than significant* related to a permanent increase ambient noise levels in the vicinity.

Impact BART Extension + TOJD NOI-4: Temporarily or periodically increase ambient noise levels

Construction

Construction impacts on ambient noise levels associated with TOJD would be greater to those for construction of the BART Extension. Refer to Impact BART Extension NOI-4 for analysis of the construction impacts of the BART Extension. This impact is considered to be significant. Implementation of Mitigation Measures NV-CNST-A through NV-CNST-O would reduce both BART Extension and TOJD ambient noise impacts, but impacts would remain *significant and unavoidable* for the Downtown San Jose (East and West Options) and Diridon (South and North Options) Stations.

Operation

There would not be a significant increase in ambient noise levels due to operation of the TOJD along with the BART Extension. There would be *no impact*.

Impact BART Extension + TOJD NOI-5: Expose people in the area to excessive airport noise

Construction

The Mineta San Jose International Airport is near the alignment. However, construction workers would not be permanently located near an airport during construction. All

construction work near the BART Extension and TOJD would be transient by nature. As such, there would be *no impact*.

Operations

The Mineta San Jose International Airport is near the alignment. The Comprehensive Land Use Plan for Mineta San Jose International Airport includes several policies that pertain to noise compatibility and are relevant to the BART Extension with TOJD Alternative. The Comprehensive Land Use Plan summarizes land use compatibility standards from the General Plan for the impact area of Mineta San Jose International Airport. These standards include prohibiting "any significant new residential development in the adverse noise environment created by the San José International Airport (65 CNEL and over)." Policy N-4 states:

> No residential or transient lodging construction shall be permitted within the 65 dB CNEL contour boundary unless it can be demonstrated that the resulting interior sound levels will be less than 45 dB CNEL and there are no outdoor patios or outdoor activity areas associated with the residential portion of a mixed use residential project or a multi-unit residential project.

The City of San Jose's adopted aircraft noise projections (generated more recently than those used in the ALUC's CLUP and available for viewing on the www.flysanjose.com website) do not show any of the TOJD sites to be located within the 65-CNEL impact area. ~~Residential uses proposed as part of TOJD could be exposed to noise from the airport in excess of 65 CNEL.~~ This impact is therefore considered to be *less than significant*. ~~Implementation of Mitigation Measure NV-C would reduce this impact to a *less-than-significant* level.~~ No mitigation is necessary.

~~Mitigation Measure NV-C: Implement Acoustical Design of Residential Uses~~

~~Residential uses proposed as part of joint development will be designed so that noise exposure complies with applicable noise standards in the Mineta San Jose International Airport Comprehensive Land Use Plan. Measures that can be implemented include but are not limited to installation of noise-reducing treatments in new buildings such as the following.~~

~~High-performance, sound-rated double-glazed windows.~~

~~Sound-rated doors.~~

~~Sound-rated exterior wall construction.~~

~~Special acoustical details for vents.~~

~~Acoustical caulking at all exterior façade penetrations.~~

~~Sound-rated roof and ceiling constructions.~~

~~Adequate mechanical ventilation so that windows and doors may be kept closed at the discretion of the building occupants to control environmental noise intrusion.~~

6.12.6 CEQA Conclusion

The BART Extension Alternative would have a *less-than-significant impact*, a *less-than-significant impact after mitigation,* or a *significant and unavoidable impact* (for construction noise impacts in the vicinity of the Downtown San Jose [East and West Options] and Diridon [South and North Options] Stations) under CEQA depending on the location. Mitigation measures are provided to reduce BART Extension Alternative noise and vibration impacts. The BART Extension with TOJD Alternative would have greater construction impacts than the BART Extension Alternative because of the more extensive aboveground construction activities and below ground activities such as pile driving. However, mitigation measures would reduce these construction noise impacts to a *less-than-significant* level except at the Downtown San Jose (East and West Options) and Diridon (South and North Options) Stations. Operational noise and vibration impacts for both the BART Extension Alternative and the BART Extension with TOJD Alternative would be *less than significant with mitigation*.

Construction-period noise barriers and permanent noise walls proposed as mitigation have the potential to result in secondary aesthetic impacts. However, these secondary impacts would be typical of construction projects in urban areas and would not result in significant secondary impacts. The aesthetic impacts of these noise barriers are addressed in Section 5.5.17, *Visual Quality and Aesthetics*, and in Section 6.14, *Visual Quality and Aesthetics*.

6.13 Utilities and Service Systems

6.13.1 Introduction

This section describes impacts for utilities and service systems that would result from construction and operation of the CEQA Alternatives. Existing conditions are provided in Chapter 4, Section 4.15.2.1, *Environmental Setting*.

6.13.2 Regulatory Setting

There are no federal regulations associated with utilities that apply to the BART Extension and BART Extension with Transit-Oriented Joint Development (TOJD) Alternatives. State and local regulations are discussed below.

6.13.2.1 State

Assembly Bill 939

Assembly Bill 939 established the California Integrated Waste Management Board, which requires California counties to prepare integrated waste management plans and California municipalities to divert 50 percent of the waste stream.

California Public Utilities Commission

The California Public Utilities Commission (CPUC) is charged by Article 12 of the California State Constitution with the authority to regulate privately owned utilities within the State of California. Utilities under CPUC jurisdiction that would cross the BART Extension include the distribution facilities of privately owned electric, gas, pipeline, sewer, telecommunications, and water companies. The CPUC also has oversight authority over safety aspects of rail transit passenger carriers, such as BART (Public Utility Code §99152). California law requires CPUC authorization prior to the construction of at-grade rail crossings at public streets, roads, and highways. In addition, CPUC authorization is required for the disposition of properties owned by public utilities and dedicated to the performance of the utilities' duties to the public (Public Utilities Code §851).

California Senate Bill (SB) 610

Senate Bill (SB) 610 requires that water supply and demand information be prepared for projects that are the subject of an EIR. Water Code Section 10912 defines a "project" as, among other things, any proposal subject to discretionary approvals that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling-unit project.

California Urban Water Management Planning Act of 1983

Urban Water Management Plans (UWMPs) are prepared by California's urban water suppliers to support long-term resource planning and ensure that adequate water supplies are available to meet existing and future water demands. Every urban water supplier that either provides over 3,000 acre-feet[1] (AF) of water annually, or serves more than 3,000 urban connections, is required to assess the reliability of its water sources over a 20-year planning horizon, and report its progress on 20 percent reduction in per-capita urban water consumption by the year 2020. The plans must be prepared every 5 years and submitted to the California Department of Water Resources.

6.13.2.2 Local

Envision San Jose 2040 General Plan

The following *Envision San Jose 2040 General Plan* (San Jose General Plan) policies apply to the BART Extension and BART Extension with TOJD Alternatives (City of San Jose 2011).

IN-1.5 Require new development to provide adequate facilities or pay its fair share of the cost for facilities needed to provide services to accommodate growth without adversely impacting current service levels.

IN-3.7 Design new projects to minimize potential damage due to storm waters and flooding to the site and other properties.

IN-3.9 Require developers to prepare drainage plans that define needed drainage improvements for proposed developments per City standards.

IN-3.10 Incorporate appropriate stormwater treatment measures in development projects to achieve stormwater quality and quantity standards and objectives in compliance with the City's National Pollutant Discharge Elimination System (NPDES) permit.

IN-3.5 Require mitigation for development which will have the potential to reduce downstream LOS to lower than "D", or development which would be served by downstream lines already operating at a LOS lower than "D". Mitigation measures to improve the LOS to "D" or better can be provided by either acting independently or jointly with other developments in the same area or in coordination with the City's Sanitary Sewer Capital Improvement Program.

IP-15.1 New development is required to construct and dedicate to the City all public improvements directly attributable to the site. This includes neighborhood or community parks and recreation facilities, sewer extensions, sewer laterals, street improvements, sidewalks, street lighting, fire hydrants and the like. In the

[1] 1 acre-foot is approximately 325,851 gallons.

implementation of the level of service policies for transportation, sanitary sewers, and neighborhood and community parks, development is required to finance improvements to nearby intersections or downstream sewer mains in which capacity would be exceeded, and dedicate land, pay an in lieu fee or finance improvements for parks and recreation needs which would result from the development.

MS-18.1 Demonstrate environmental leadership by adopting citywide policies that encourage or require new and existing development to incorporate measures to reduce potable water demand and/or increase water efficiency in order to reduce the City's need for imported water.

MS-18.3 Demonstrate environmental leadership by encouraging the creation and use of new technologies that reduce potable water demand and/or increase the efficiency of water use.

MS-18.15 Adopt city water use efficiency codes and standards and work with local, regional, state, and other public and private agencies to increase water use efficiency within San Jose and neighboring jurisdictions.

MS-19.4 Require the use of recycled water wherever feasible and cost-effective to serve existing and new development.

City of Santa Clara 2010–2035 General Plan

The following *City of Santa Clara 2010–2035 General Plan* (Santa Clara General Plan) policies apply to the BART Extension and BART Extension with TOJD Alternatives (City of Santa Clara 2010a).

5.10.1-P5 Require adequate wastewater treatment and sewer conveyance capacity for all new development.

5.10.4-P1 Promote water conservation through development standards, building requirements, landscape design guidelines, education, compliance with the State Water Conservation Landscaping Ordinance and other applicable City-wide policies and programs.

5.10.4-P2 Expand water conservation and reuse efforts throughout the City.

5.10.4-P3 Promote water conservation, recycled water use and sufficient water importation to ensure an adequate water supply.

5.10.4-P4 Require an adequate water supply and water quality for all new development.

5.10.4-P5 Prohibit new development that would reduce water quality below acceptable State and local standards.

5.10.4-P6 Maximize the use of recycled water for construction, maintenance, irrigation and other appropriate applications.

5.10.4-P7 Require installation of native and low-water consumption plant species when landscaping new development and public spaces to reduce water usage.

5.10.4-P8 Require all new development within a reasonable distance of existing or proposed recycled water distribution systems to connect to the system for landscape irrigation.

6.13.3 CEQA Methods of Analysis

The BART Extension and BART Extension with TOJD Alternatives would require water, stormwater, wastewater, ~~and~~ solid waste, electrical, and communication services. Demands to water, stormwater, wastewater, and solid waste ~~these~~ services were analyzed against the capacity of existing infrastructure and water entitlements in accordance with the CEQA thresholds of significance (listed below) to determine if a potentially significant or significant impact would occur. There are no CEQA thresholds of significance for electrical and communication services.

6.13.4 CEQA Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, a project would have a significant impact if it would result in any of the following conditions.

- Exceed the wastewater treatment requirements of the applicable Regional Water Quality Control Board.
- Have insufficient water supplies to serve the project from existing entitlements and resources, therefore requiring new or expanded entitlements.
- Result in a determination by the wastewater treatment provider that serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Be served by a landfill without sufficient permitted capacity to accommodate the project's solid waste disposal needs.
- Not comply with federal, state, and local statutes and regulations related to solid waste.

6.13.5 Environmental Consequences

This section identifies the impacts on utilities and service systems under CEQA, as well as mitigation measures necessary to reduce potentially significant impacts to a less-than-significant level.

6.13.5.1 No Build Alternative

The No Build Alternative consists of the existing transit and roadway networks and planned and programmed transportation improvements (see Chapter 2, Section 2.2.1, *NEPA No Build Alternative*, for lists of these projects) and other land development projects planned by the Cities of San Jose and Santa Clara.

The No Build Alternative projects could result in effects on utilities and service systems typically associated with transit, highway, bicycle, and pedestrian facilities, and roadway projects, as well as land development projects. All individual projects planned under the No Build Alternative would undergo separate environmental review to identify effects on utilities and service systems. Review would include an analysis of impacts and identification of mitigation measures to reduce potential impacts

6.13.5.2 BART Extension Alternative

Impact BART Extension UTIL-1: Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board

Construction

Groundwater encountered during construction of the BART Extension Alternative would be pumped from the excavation zone and tested for contaminants. Uncontaminated groundwater would be discharged into the storm or sanitary sewer system. Contaminated groundwater would receive onsite treatment and/or disposal at a permitted offsite facility in accordance with applicable laws and regulations. Therefore, there would be no exceedance of Regional Water Quality Control Board (RWQCB) treatment requirements. A *less-than-significant* impact would occur. No mitigation is required.

Operation

Operation of the BART Extension Alternative would result in wastewater generation at the BART stations and Newhall Maintenance Facility from lavatories, janitorial uses, train washing, and other sources. The BART Extension Alternative would not generate or release industrial wastewater that would conflict with RWQCB treatment requirements. Therefore, there would be no exceedance of RWQCB treatment requirements. A *less-than-significant* impact would occur. No mitigation is required.

Impact BART Extension UTIL-2: Have insufficient water supplies to serve the BART Extension Alternative from existing entitlements and resources, therefore requiring new or expanded entitlements

Construction

Water trucks would be used for dust control during construction of the BART Extension Alternative. Water would also be required to operate the tunnel boring machines. Depending on the availability of recycled water near the individual construction sites at the time of construction, use of recycled water is a possibility for dust control. This water demand would be temporary and incremental, representing a *less-than-significant* impact. No mitigation is required.

Operation

San Jose

The Alum Rock/28th Street, Downtown San Jose, and Diridon BART Stations would require water supply for operational purposes, including restrooms and custodial needs. Approximately 2,000 gallons per day (gpd) of water would be required across the three stations. The Newhall Maintenance Facility would also require 6,000 gpd of water, mostly related to the train car washer (San Jose Water Company 2016).

Water supplied to San Jose's BART facilities would be provided by San Jose Water Company (SJWC). SJWC prepared a Water Supply Assessment (WSA) for the BART Extension, which was approved by the City of San Jose on January 27, 2016. According to this WSA, SJWC supplied customers with 122,834 AF of water in 2010 (SJWC 2016). The BART Extension Alternative's water demands in San Jose would be approximately15.7 AF per year, which represents a negligible (0.01 percent) increase from SJWC's 2010 water demand.[2] Based on SJWC's assessment, existing water entitlements would be sufficient to service the BART Extension Alternative. A *less-than-significant* impact would occur. No mitigation is required.

Santa Clara

The Santa Clara BART station would require water supply for operational purposes, including restrooms and custodial needs. The portion of the Newhall Maintenance Facility located in Santa Clara would also require water supply, mostly related to the train car washer. Daily water usage at the BART station and Newhall Maintenance Facility in Santa Clara would be approximately 4,841.8 gallons (0.02 AF), which would be provided by Santa Clara Water and Sewer Utility (SCWSU).

SCWSU prepared a WSA that was approved by the City of Santa Clara on April 5, 2016. This WSA analyzed water demand associated with the BART Extension Alternative's station

[2] 15.7 AF (estimated annual water usage at BART Extension Alternative in San Jose) divided by 336 AF (annual water supplied by SJWC in 2010) = 0.0001

and facilities within Santa Clara. According to this WSA, SCWSU supplied 63.6 AF of water per day to customers in 2010 (SCWSU 2016). Therefore, the BART Extension Alternative's water demand in Santa Clara represents a negligible (0.02 percent) increase in SCWSU's 2010 water demand.[3] Based on SCWSU's assessment, existing water entitlements would be sufficient to service the BART Extension Alternative. A *less-than-significant* impact would occur. No mitigation is required.

Impact BART Extension UTIL-3: Result in a determination by the wastewater treatment provider that serves or may serve the BART Extension that it has inadequate capacity to serve the projected demand in addition to the provider's existing commitments

Construction

Groundwater pumped from the BART Extension Alternative's excavation zones during construction may be discharged into the sanitary sewer system. This process would increase wastewater flows to the San Jose/Santa Clara Regional Wastewater Facility (RWF) ~~Water Pollution Control Plant (WPCP)~~. However, construction-related groundwater discharge into the sanitary sewer system would be temporary and would not permanently affect capacity at the RWF~~WPCP~~. Therefore, this impact would be *less than significant*. No mitigation is required.

Operation

Operation of the BART Extension Alternative would result in incremental wastewater generation at the BART stations and Newhall Maintenance Facility. RWF~~WPCP~~ treats wastewater from both San Jose and Santa Clara and has the capacity to treat 167 million gallons per day (mgd) of wastewater during average dry-weather conditions. The RWF~~WPCP~~ currently operates at 65 percent of its 167 mgd treatment capacity.

The total amount of wastewater generated by operation of the BART Extension Alternative would not exceed the estimated 12,841.8 gpd of water supplied by SJWC and SCWSU. Assuming 100 percent of this water is converted to wastewater, operation of the BART Extension would increase wastewater flows to the RWF~~WPCP~~ by 12,841.8 gpd, or 0.01 percent of the RWF's~~WPCP's~~ remaining capacity.[4] This incremental increase in wastewater flows to the RWF~~WPCP~~ represents a *less-than-significant* impact, and no mitigation is required.

During BART operations, several pump stations would collect groundwater seepage and/or rainwater at the lowest elevation points along the tunnel track alignment, which may then be collected and off-hauled to a local sanitary sewer. Dewatering may also be necessary to

[3] 0.02 AF (estimated daily water usage at the BART Extension Alternative in Santa Clara) divided by 63.6 AF (daily water supplied by SCWSU in 2010) = 0.0003 AF.

[4] 12,841.8 gallons (estimated daily water requirements for BART Extension Alternative) divided by 108,550,000 gallons (remaining daily WPCP capacity) = 0.00012 gallons

remove groundwater that infiltrates the cut and cover stations, tunnels, and underground facilities; however, the total quantity of removed groundwater water is anticipated to be minimal. This impact would be *less than significant*. No mitigation is required.

Impact BART Extension UTIL-4: Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects

Construction

Water trucks would be used for dust control during BART Extension construction. Water would also be required to operate the tunnel boring machines. Depending on the availability of recycled water near the individual construction sites at the time of construction, use of recycled water is a possibility for dust control. This water demand would be temporary and incremental, representing a *less-than-significant* impact. No mitigation is required.

Operation

Water Treatment Infrastructure

SJWC and SCWSU adopted UWMPs in 2010 (San Jose Water Company 2011; City of Santa Clara Water and Sewer Utility 2011). A UWMP must demonstrate that the water supplier has sufficient entitlements and infrastructure to meet future water demands in its service area. Future water demands are determined using population growth estimates from the relevant general plan. If existing water treatment facilities would be insufficient to service increased population anticipated by a general plan, the UWMP must identify new or expanded water treatment facilities to meet additional water demand.

If a development project is compliant with its general plan, that project's impact on water treatment facilities would be captured and planned for in the corresponding UWMP. If a development project is not compliant with its general plan, it would require evaluation to determine if it independently triggers a need for new or expanded facilities.

The BART Extension is compliant with the San Jose General Plan and the Santa Clara General Plan. As such, the BART Extension's water demand is consistent with SJWC's 2010 UWMP growth projections and SCWSU's 2010 UWMP growth projections. Therefore, the BART Extension's impact on water treatment facilities is captured in SJWC'S 2010 UWMP and SCWSU's 2010 UWMP and would not trigger a need for new or expanded water treatment facilities beyond the needs identified in these documents. This impact would be *less than significant*. No mitigation is required.

Water Conveyance Infrastructure

SJWC owns and operates the water conveyance system that would serve the BART Extension Alternative in San Jose. SCWSU owns and operates the water conveyance system that would serve the BART Extension Alternative in Santa Clara. SJWC and SCWSU would

be responsible for providing onsite water infrastructure to connect BART stations and facilities to the existing water supply system.

Water supply at the BART stations and facilities may contribute to capacity deficiencies within offsite supply networks, which represents a potential impact to utility systems. With implementation of Mitigation Measures UTIL-A and UTIL-B (see Section 4.15, *Utilities*), this impact would be *less than significant*.

~~**Mitigation Measure UTIL-A: Prepare a San Jose Water Supply Infrastructure Capacity Assessment**~~

~~VTA will coordinate with SJWC and prepare a Cooperative Agreement to establish the BART Extension Alternative's participation in improvements to offsite water supply infrastructure. The SJWC may conduct a detailed engineering study and flow analysis to determine the extent of these impacts.~~

~~Capacity-relief upgrades will occur during the utility relocation phase of construction and will be implemented in accordance with SJWC requirements. Construction activities will be subject to provisions outlined in this environmental document, including implementation of the construction education and outreach plan, to reduce potential impacts.~~

~~**Mitigation Measure UTIL-B: Prepare a Santa Clara Water Supply Infrastructure Capacity Assessment**~~

~~VTA will coordinate with SCWSU and prepare a Cooperative Agreement to establish the BART Extension Alternative's participation in improvements to offsite water supply infrastructure. The SCWSU may conduct a detailed engineering study and flow analysis to determine the extent of these impacts.~~

~~Capacity-relief upgrades will occur during the utility relocation phase of construction, and will be implemented in accordance with Chapter 17.15.210 of the Santa Clara City Code. Construction activities will be subject to provisions outlined in this environmental document, including implementation of the construction education and outreach plan, to reduce potential impacts.~~

Wastewater Treatment

San Jose's average wastewater generation is 69.8 mgd, or 64 percent of San Jose's total allocated 108.6 mgd of wastewater flow to the RWF~~WPCP~~. The BART Extension Alternative within San Jose would increase the amount of wastewater flowing to the RWF~~WPCP~~ by approximately 8,000 gpd, or 0.02 percent of San Jose's remaining allocated capacity at the RWF~~WPCP~~.[5]

[5] 8,000 gallons (daily water requirements for San Jose's portions of the BART Extension Alternative) divided by 38,800,000 gallons (San Jose's remaining capacity at the RWF~~WPCP~~) = 0.0002.

Santa Clara's average wastewater generation is approximately 13.3 mgd, or 59 percent of Santa Clara's allocated 22.585 mgd of wastewater flow to the RWF~~WPCP~~. The BART Extension Alternative in Santa Clara would increase the amount of wastewater flowing to the RWF~~WPCP~~ by approximately 4,841.8 gpd, or 0.05 percent of Santa Clara's remaining allocated capacity at the RWF~~WPCP~~.[6]

The BART Extension would incrementally increase the amount of wastewater flowing to the WPCP, but would not trigger the need for new or expanded wastewater treatment facilities. This impact would be *less than significant*. No mitigation is required.

Wastewater Conveyance Infrastructure

Wastewater generated by operation of the BART Extension Alternative in San Jose would be conveyed to the RWF~~WPCP~~ through the San Jose sanitary sewer system. Wastewater generated by operation of the BART Extension Alternative in Santa Clara would be conveyed to the RWF~~WPCP~~ through the Santa Clara sanitary sewer system.

The BART Extension Alternative would be responsible for providing onsite sewer infrastructure, such as laterals and extensions, connecting BART stations and facilities to the existing sewer system. New sewer infrastructure would be designed in accordance with applicable LOS guidelines and installed during BART Extension construction.

Wastewater generated at the BART stations and facilities may contribute to capacity deficiencies within offsite sewer systems, which represents a potential impact to utility systems. With implementation of Mitigation Measures UTIL-C and UTIL-D (see Section 4.15, *Utilities*), this impact would be *less than significant*.

~~**Mitigation Measure UTIL-C: Prepare a San Jose Sewer Capacity Assessment**~~

~~VTA will coordinate with the San Jose Department of Public Works and prepare a Cooperative Agreement to establish the BART Extension Alternative's participation in improvements to offsite sanitary sewer capacity deficiencies. The San Jose Department of Public Works may conduct a detailed engineering study and hydraulic analysis to determine the extent of these impacts.~~

~~New development in San Jose that would increase wastewater flow to capacity-deficient areas of the sanitary sewer system must contribute to system improvements. VTA will mitigate impacts on downstream sewer systems in San Jose through payment of the Sanitary Sewer Connection Fee, which is used to rehabilitate and enhance sewer capacity through San Jose's Sanitary Sewer Capital Improvement Program.~~

~~If payment to the Sanitary Sewer Connection Fee does not adequately mitigate potential offsite sewer capacity impacts related to the BART Extension, direct upgrades to the sewer system will be required. If sewer system overcapacity is a result of projected~~

[6] 4,841.8 gallons (daily water requirements for Santa Clara's portions of the BART Extension Alternative) divided by 9,285,000 gallons (Santa Clara's remaining capacity at the RWF~~WPCP~~) = 0.0005

~~cumulative development, San Jose and VTA shall develop a Cooperative Agreement to determine the BART Extension Alternative's participation in upgrades to the current system.~~

~~Capacity-relief upgrades will occur during the BART Extension's construction phase, and will be conducted in accordance with applicable San Jose standards regarding sewer infrastructure improvements. Generally, sewer infrastructure improvements will be located within the existing public right-of-way, with minimal potential to impact sensitive environmental resources. Construction activities will be subject to provisions outlined in this environmental document, including implementation of the construction education and outreach plan, to reduce potential impacts.~~

~~Mitigation Measure UTIL-D: Prepare a Santa Clara Sewer Capacity Assessment~~

~~VTA will coordinate with SCWSU and prepare a Cooperative Agreement to establish the BART Extension Alternative's participation in improvements to offsite sanitary sewer capacity deficiencies. SCWSU may conduct a detailed engineering study and hydraulic analysis to determine the extent of these impacts.~~

~~New development in Santa Clara that would increase wastewater flow to capacity-deficient areas of the sanitary sewer system must contribute to system improvements. VTA will mitigate impacts on downstream sewer systems in Santa Clara through payment of the Sanitary Sewer Connection Charge, which is used to rehabilitate and enhance sewer capacity through Santa Clara's Capital Improvement Program.~~

~~If payment to the Sanitary Sewer Connection Charge does not adequately mitigate potential offsite sewer capacity impacts related to the BART Extension, direct upgrades to the sewer system may be required. If sewer system overcapacity is a result of cumulative development, Santa Clara and VTA shall develop a Cooperative Agreement to determine the BART Extension Alternative's proportional participation to the upgrades to current system capacity.~~

~~Capacity-relief upgrades improvements would occur during the BART Extension's construction phase, and will be implemented in accordance with Chapter 17.15.210-280 of the Santa Clara City Code. Generally, sewer infrastructure improvements will be located within the existing public right-of-way, with minimal potential to impact sensitive environmental resources. Construction activities will be subject to provisions outlined in this environmental document, including implementation of the construction education and outreach plan, to reduce potential impacts~~.

Impact BART Extension UTIL-5: Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects

Analysis of stormwater impacts resulting from the BART Extension is provided in Section 6.15, *Water Resources, Water Quality, and Floodplains*.

Impact BART Extension UTIL-6: Be served by a landfill with sufficient permitted capacity to accommodate the BART Extension's solid waste disposal needs

Construction

Construction of the BART Extension would generate solid waste requiring special consideration, such as material extracted during tunnel boring. Excavation of the underground station structures, system facilities, and tunnel portals/corridors are expected to generate 1,450,000–1,520,000 cubic yards of material with the Twin-Bore Option and approximately 1,830,000 cubic yards of material with the Single-Bore Option. Soils extracted during tunnel construction would be tested for contaminants and disposed of in accordance with all applicable regulations, as determined by VTA's Contaminant Management Plan as discussed in Section 6.10, *Hazards and Hazardous Materials*.

Demolition of existing structures, buildings, pavement, and other site features would primarily occur at the four stations, two mid-tunnel ventilation structure sites, and two tunnel portals. The BART Extension would be required to divert at least 75 percent of demolition debris in San Jose and 50 percent of demolition debris in Santa Clara to comply with local Construction and Demolition Diversion/Recycling programs. Remaining debris would be hauled to landfills serving the construction area, representing a one-time impact on solid waste facilities.

The Newby Island Landfill currently services San Jose and Santa Clara, and has a remaining capacity of approximately 21.2 million tons (California Department of Resources Recycling and Recovery 2015). Therefore, the Newby Island Landfill has sufficient capacity to handle the debris generated by demolition of existing structures to accommodate construction of BART facilities. This impact would be *less than significant*, and no mitigation is required.

Operation

BART facilities would generate solid waste related to users at the stations. The three stations in San Jose would generate approximately 3.3 tons per day (tpd) of solid waste, and the Santa Clara Station would generate approximately 1.1 tpd of solid waste. The Newhall Maintenance Facility would generate approximately 0.8 tpd of solid waste in San Jose, and 0.7 tpd in Santa Clara. In total, 5.9 tpd of solid waste would be generated by the BART facilities. Daily maintenance of the tracks and right-of-way may also require waste disposal, but this amount of waste is expected to be negligible.

The Newby Island Landfill has a maximum permitted throughput of 4,000 tpd of solid waste, and currently receives an average of 2,600 tpd of solid waste (Boccaleoni pers. comm.). Solid waste generated by the BART facilities would represent 0.4 percent of Newby Island Landfill's remaining daily capacity.[7]

[7] 5.9 tons (daily solid waste generated by the BART Extension Alternative) divided by 1,400 tons (daily input capacity remaining at Newby Island Landfill) = 0.004.

The BART Extension Alternative is scheduled for operation beginning in 2026, and therefore extends beyond San Jose and Santa Clara's current contracts with the Newby Island Landfill. These contracts were based on Newby Island Landfill's original 2025 closure date. In 2014, the state granted an expansion of the Newby Island Landfill and extended the landfill's estimated closure date from 2024 to 2041. Though it is uncertain whether San Jose and Santa Clara will continue to dispose of solid waste at the Newby Island Landfill beyond 2024, this facility has sufficient capacity to accept solid waste generated by the BART Extension Alternative. Therefore, solid waste generated by the BART Extension Alternative would not exceed the collective capacity of regional landfills that may serve the BART Extension beyond 2024. This impact would be *less than significant*. No mitigation is required.

Impact BART Extension UTIL-7: Comply with federal, state, and local statutes and regulations related to solid waste

Hazardous materials, such as motor fuels, oils, solvents, and lubricants, would be routinely managed during construction and operation of the BART Extension, particularly at the Newhall Maintenance Facility. As discussed in Section 6.10, *Hazards and Hazardous Materials*, handling of these materials would be compliant with applicable regulations regarding the disposal of hazardous materials. This impact would be *less than significant*. No mitigation is required.

6.13.5.3 BART Extension with TOJD Alternative

Impact BART Extension + TOJD UTIL-1: Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board

Construction

Groundwater encountered during BART Extension with TOJD Alternative construction would be pumped from the excavation zone and tested for contaminants. Uncontaminated groundwater would be discharged into the storm or sanitary sewer system. Contaminated groundwater would receive onsite treatment and/or disposal at a permitted offsite facility in accordance with applicable laws and regulations. Therefore, there would be no exceedance of RWQCB treatment requirements. This impact would be *less than significant*. No mitigation is required.

Operation

Operation of the BART Extension with TOJD Alternative would result in wastewater generation at the BART stations and Newhall Maintenance Facility from lavatories, janitorial uses, train washing, and other sources. The BART Extension with TOJD Alternative would not generate or release industrial wastewater that would conflict with RWQCB treatment requirements. Therefore, there would be no exceedance of RWQCB treatment requirements. This impact would be *less than significant*. No mitigation is required.

In addition to the wastewater treatment discussed above, wastewater generated by the TOJDs would originate from residential and commercial sources, which would not be expected to increase pollutant loads that would require special treatment. Therefore, the BART Extension with TOJD Alternative would not exceed RWQCB wastewater treatment requirements. This impact would be *less than significant*. No mitigation is required.

Impact BART Extension + TOJD UTIL-2: Have insufficient water supplies to serve the BART Extension with TOJD from existing entitlements and resources, therefore requiring new or expanded entitlements

Construction

Water trucks would be used for dust control during construction of the BART Extension with TOJD Alternative. Water would also be required to operate the tunnel boring machines. Depending on the availability of recycled water near the individual construction sites at the time of construction, use of recycled water is a possibility for dust control. This water demand would be temporary and incremental, representing a *less-than-significant* impact. No mitigation is required.

Operation

San Jose

Water supplied to the San Jose BART facilities plus TOJD would be provided by SJWC. SJWC prepared a WSA, which was approved on January 27, 2016. The WSA analyzed water demand associated with the BART stations, venting structures, Newhall Maintenance Facility, and TOJD located within the City of San Jose.

According to the SJWC WSA, the BART Extension with TOJD Alternative's water demands in San Jose would be approximately 370 AF per year. However, existing development, which is being replaced, uses an average of 35 AF per year. Therefore, the estimated net system increase in water demand for the BART Extension with TOJD Alternative is 335 AF per year, which represents a 0.27 percent increase from SJWC's 2010 potable water demand.[8] SJWC concluded that sufficient water supply exists to serve the BART Extension with TOJD Alternative in San Jose. A *less-than-significant* impact would occur. No mitigation is required.

Santa Clara

Water supplied to the BART Extension plus TOJD Alternative in Santa Clara would be provided by SCWSU. According to the SCWSU WSA, the BART Extension with TOJD Alternative's water demands in Santa Clara would be approximately 116.2 AF per year. However, existing development, which is being replaced, uses an average of 6.7 AF per year. Therefore, the estimated net system increase in water demand is 109.5 AF per year, which

[8] 335 AF (net increase in annual water demand resulting from BART Extension with TOJD Alternative) divided by 122,834 AF (annual water supplied by SJWC in 2010) = 0.0027

represents a 0.47 percent increase from SCWSU's 2010 potable water demand.[9] SCWSU concluded that sufficient water supply exists to serve the BART Extension with TOJD Alternative in Santa Clara. A *less-than-significant* impact would occur. No mitigation is required.

Impact BART Extension + TOJD UTIL-3: Result in a determination by the wastewater treatment provider that serves or may serve the BART Extension with TOJD that it has inadequate capacity to serve the projected demand in addition to the provider's existing commitments

Construction

Groundwater pumped from the excavation zone during construction of the BART Extension with TOJD Alternative may be discharged into the sanitary sewer system. This process would increase wastewater flows to the ~~San Jose/Santa Clara~~ RWF~~WPCP~~, which is the wastewater treatment provider. However, construction-related groundwater discharge into the sanitary sewer system would be temporary and would not permanently affect capacity at the RWF~~WPCP~~. Therefore, this impact would be *less than significant*, and no mitigation is required.

Operation

Assuming all of the water supplied to the BART Extension with TOJD Alternative is converted to wastewater, wastewater flows to the RWF~~WPCP~~ would increase by approximately 402,804 gpd,[10] or approximately 0.37 percent of the RWF's~~WPCP's~~ remaining capacity.[11] The BART Extension with TOJD Alternative would incrementally increase the amount of wastewater flowing to the RWF~~WPCP~~, but would not trigger the need for new or expanded wastewater treatment facilities. Therefore, this impact would be *less than significant*. No mitigation is required.

Impact BART Extension + TOJD UTIL-4: Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects

Construction

The RWF~~WPCP~~ may be required to treat groundwater extracted from the excavation area. However, this dewatering process represents a temporary impact that would not generate

[9] 109.5 AF (net increase in annual water demand resulting from BART Extension with TOJD Alternative) divided by 23,214 AF (annual water supplied by SCWSU in 2010) = 0.0047

[10] 299,068 gallons (estimated daily water requirements for BART Extension with TOJD Alternative in San Jose) plus 103,736 gallons (estimated daily water requirements for BART Extension with TOJD Alternative in Santa Clara) = 402,804 gallons.

[11] 402,804 gallons (estimated daily water requirements for BART Extension with TOJD Alternative) divided by 108,550,000 gallons (remaining daily RWF~~WPCP~~ capacity) = 0.0037

enough wastewater to trigger the expansion of existing wastewater treatment facilities. Therefore, this impact would be *less than significant*. No mitigation is required.

Operation

Water Treatment

As discussed above, the BART Extension with TOJD Alternative is consistent with the applicable UWMPs, and would not independently trigger the need for new or expanded water treatment facilities beyond those addressed in the UWMPs. This impact would be *less than significant*. No mitigation is required.

Water Conveyance Infrastructure

SJWC ~~and SCWSU~~ would be responsible for providing onsite water infrastructure to connect BART facilities and TOJD to the existing water supply system. In Santa Clara, it would be the applicant's responsibility to provide onsite infrastructure to connect to SCWSU mains in the public right-of-way. ~~These w~~ Water suppliers would also evaluate the need for offsite water infrastructure improvements prior to the issuance of a building permit. Water supply at the BART stations and facilities may contribute to capacity deficiencies within offsite supply networks, which represents a potential impact to utility systems. ~~; h~~However, implementation of Mitigation Measures UTIL-A and UTIL-B ~~(~~(see Section 4.15, *Utilities*), would reduce this impact to a *less-than-significant* level.

Wastewater Treatment

As discussed above, wastewater generated by BART Extension with TOJD Alternative would not exceed the RWF's ~~WPCP's~~ capacity. No new or expanded wastewater treatment facilities would be required, and this impact would be *less than significant*. No mitigation is required.

Wastewater Conveyance Infrastructure

The BART Extension with TOJD Alternative would be responsible for providing onsite sewer infrastructure, such as laterals and extensions, connecting BART facilities and TOJD to the existing sewer system. New sewer infrastructure would be designed in accordance with applicable LOS guidelines and installed during construction. Wastewater generated at the BART facilities and TOJD may contribute to capacity deficiencies within offsite sewer systems, which represents a potential impact to utility systems. ~~; h~~However, implementation of Mitigation Measures UTIL-C and UTIL-D (see Section 4.15, *Utilities*), would reduce this impact to a *less-than-significant* level.

Impact BART Extension + TOJD UTIL 5:-Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects

Analysis of stormwater impacts resulting from the BART Extension with TOJD Alternative is provided in Section 6.15, *Water Resources, Water Quality, and Floodplains*.

Impact BART Extension + TOJD UTIL-6: Be served by a landfill with sufficient permitted capacity to accommodate the BART Extension with TOJD's solid waste disposal needs

Construction

The BART Extension with TOJD Alternative's construction would generate solid waste requiring special consideration, such as material extracted during tunnel boring. Excavation of the underground station structures, system facilities and tunnel portals/corridors is expected to generate 1,450,000–1,520,000 cubic yards of material with the Twin-Bore Option and approximately 1,830,000 cubic yards with the Single-Bore Option. Soils extracted during tunnel construction would be tested for contaminants and disposed of in accordance with all applicable regulations, as determined by VTA's Contaminant Management Plan as discussed in Section 6.10, *Hazards and Hazardous Materials*.

Demolition of existing structures, buildings, pavement, and other site features would primarily occur at the four stations, two mid-tunnel ventilation structure sites, tunnel portals, and TOJD sites. The BART Extension with TOJD Alternative would be required to divert at least 75 percent of demolition debris in San Jose and 50 percent of demolition debris in Santa Clara to comply with local Construction and Demolition Diversion/Recycling programs. Remaining debris would be hauled to landfills serving the construction area, representing a one-time impact on solid waste facilities.

As discussed above under Impact BART Extension UTIL-6, construction-related debris represents a one-time impact on solid waste facilities. The Newby Island Landfill has sufficient capacity to handle the debris generated by demolition of existing structures to accommodate construction of the BART Extension with TOJD Alternative. This impact would be *less than significant*. No mitigation is required.

Operation

As discussed above under Impact BART Extension UTIL-6, the BART facilities in San Jose and Santa Clara would generate 5.9 tpd of solid waste from operation of the stations and Newhall Maintenance Facility.

The TOJDs in San Jose would create approximately 275 residential dwelling units, 290,000 square feet of retail space, and 1,478,000 square feet of office space. The *Envision San Jose 2040 General Plan EIR* assumed that multifamily residences would generate 4.44 pounds per day (ppd) of solid waste, office land uses would generate 1.24 pounds per

employee per day, and retail land uses would generate 10.53 pounds per employee per day. Based on these assumptions, the San Jose TOJD would generate approximately 13 tpd of solid waste.[12]

The Santa Clara TOJD would result in the addition of approximately 220 residential dwelling units, 30,000 square feet of retail space, and 500,000 square feet of office space. The *City of Santa Clara 2010–2035 General Plan EIR* assumed that multifamily houses would generate 5.1 ppd of solid waste, and office uses would generate 1.0 pounds per 100 square feet per day. Borrowing from San Jose's retail land use solid waste assumption of 10.53 pounds per employee per day,[13] the Santa Clara TOJD would generate approximately 3.5 tpd of solid waste. In sum, the BART Extension with TOJD Alternative would generate 22.4 tpd of solid waste, which represents 1.6 percent of Newby Island Landfill's remaining daily capacity.[14]

The BART Extension with TOJD Alternative is scheduled for operation beginning in 2026, and therefore extends beyond San Jose's and Santa Clara's current contracts with the Newby Island Landfill. These contracts were based Newby Island Landfill's original 2025 closure date. In 2014, the state granted an expansion of the Newby Island Landfill and extended the landfill's estimated closure date from 2024 to 2041. Though it is uncertain whether San Jose and Santa Clara will continue to dispose of solid waste at the Newby Island Landfill beyond 2024, this facility has sufficient capacity to accept solid waste generated by the BART Extension with TOJD Alternative. Therefore, solid waste generated by the BART Extension with TOJD Alternative would not exceed the collective capacity of regional landfills that may serve the BART Extension with TOJD beyond 2024. This impact would be *less than significant.* No mitigation is required.

Impact BART Extension + TOJD UTIL-7: Comply with federal, state, and local statutes and regulations related to solid waste

Hazardous materials, such as motor fuels, oils, solvents, and lubricants, would be routinely managed during construction and operation of the BART Extension with TOJD Alternative, particularly at the Newhall Maintenance Facility. As discussed in Section 6.10, *Hazards and Hazardous Materials*, handling of these materials would be compliant with applicable regulations regarding the disposal of hazardous materials. Therefore, this impact would be *less than significant*, and no mitigation is required.

[12] The Job Growth Projections and Employment Land Demand assume square footage per employee by land use type in San Jose (City of San Jose Department of Planning 2009). Small retail land uses would require 1 employee per 300 square feet, and mid/high rise offices require 1 employee per 125 square feet. Therefore, approximately 0.6 tpd would be generated by residential land uses, 5.1 tpd by retail uses, and 7.3 tpd from office uses.

[13] The *City of Santa Clara 2010–2035 General Plan* assumes 1 employee per 400 square feet for retail land uses.

[14] 22.4 tons (daily solid waste generated by BART Extension with TOJD Alternative) divided by 1,400 tons (daily input capacity remaining at Newby Island Landfill) = 0.016

6.13.6 CEQA Conclusion

With implementation of Mitigation Measures UTIL-A through UTIL-D, the BART Extension Alternative and BART Extension with TOJD Alternative would result in *less-than-significant* impacts regarding utilities. Mitigation Measures UTIL-A through UTIL-H would not result in secondary environmental impacts.

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6.14 Visual Quality and Aesthetics

6.14.1 Introduction

This section describes impacts under CEQA that would result from construction and operation of the CEQA Alternatives.

6.14.1.1 Regulatory Setting

There are no federal or state laws that specifically define or protect visual resources; however, state and local regulations provide protection for scenic views and other visual resources. Most local jurisdictions have provisions for design review of all commercial, industrial, or public buildings, facilities, or other major infrastructure.

State

State Scenic Highway Program

The California Department of Transportation (Caltrans) Scenic Highway Program is intended to protect and enhance the natural scenic beauty of California's highways and adjacent corridors, through special conservation treatment. The program protects against encroachment of incompatible land uses, mitigates and minimizes development activities along the alignment, prohibits billboards, and regulates grading activity, among other activities (California Department of Transportation 2012).

The alignment would not intersect any eligible or officially designated state scenic highways. The closest officially designated state scenic highway is Highway 9 from the Santa Cruz County line to the Los Gatos City limits, approximately 8 miles southwest of the alignment.

Local

San Jose

Envision San Jose 2040 General Plan

The *Envision San Jose 2040 General Plan* (SJGP) (City of San Jose 2011a) identifies several scenic resources, including broad views of Santa Clara Valley, the hills and mountains surrounding the valley, the urban skyline, and the baylands. There are two types of scenic routes: rural scenic corridors and urban throughways. Roadways designated as landscaped throughways by the City of San Jose include Interstate (I) 680, I-880, U.S. Highway 101 (U.S. 101), and State Route (SR) 87. The following policies are relevant to aesthetics and visual resources.

Environmental Leadership and Quality of Life Policies

P-IN-1.9 Design new public and private utility facilities to be safe, aesthetically pleasing, compatible with adjacent uses, and consistent with the Envision General Plan goals and policies for fiscal sustainability, environmental leadership, an innovative economy, and quality neighborhoods.

P-VN-1.7 Use new development within neighborhoods to enhance the public realm, provide for direct and convenient pedestrian access, and visually connect to the surrounding neighborhood. As opportunities arise, improve existing development to meet these objectives as well.

P-VN-1.9 Cluster parking, make use of shared parking facilities, and minimize the visual impact of surface parking lots to the degree possible to promote pedestrian and bicycle activity and to improve the City's aesthetic environment.

P-VN-1.12 Design new public and private development to build upon the vital character and desirable qualities of existing neighborhoods.

P-CD-1.1 Require the highest standards of architectural and site design, and apply strong design controls for all development projects, both public and private, for the enhancement and development of community character and for the proper transition between areas with different types of land uses.

P-CD-1.8 Create an attractive street presence with pedestrian-scaled building and landscaping elements that provide an engaging, safe, and diverse walking environment. Encourage compact, urban design, including use of smaller building footprints, to promote pedestrian activity throughout the City.

P-CD-1.13 Use design review to encourage creative, high-quality, innovative, and distinctive architecture that helps to create unique, vibrant places that are both desirable urban places to live, work, and play and that lead to competitive advantages over other regions.

P-CD-1.17 Minimize the footprint and visibility of parking areas. Where parking areas are necessary, provide aesthetically pleasing and visually interesting parking garages with clearly identified pedestrian entrances and walkways. Encourage designs that encapsulate parking facilities behind active building space or screen parked vehicles from view from the public realm. Ensure that garage lighting does not impact adjacent uses, and to the extent feasible, avoid impacts of headlights on adjacent land uses.

P-CD-1.19 Encourage the location of new and relocation of existing utility structures into underground vaults or within structures to minimize their visibility and reduce their potential to detract from pedestrian activity. When above-ground or out-side placement is necessary, screen utilities with art or landscaping.

P-CD-1.20 Determine appropriate on-site locations and facilities for signage at the development review stage to attractively and effectively integrate signage, including pedestrian-oriented signage, into the overall site and building design.

P-CD-1.23 Further the Community Forest Goals and Policies in this Plan by requiring new development to plant and maintain trees at appropriate locations on private property and along public street frontages. Use trees to help soften the appearance of the built environment, help provide transitions between land uses, and shade pedestrian and bicycle areas.

P-CD-1.28 To maintain and protect the integrity, character, and aesthetic environment of the streetscape in industrial, commercial, and residential neighborhoods, new billboards should be permitted only through a discretionary review process and only where they do not create visual clutter and blight. The relocation of existing billboards from impacted areas to locations where they would have a less visually blighting effect should be encouraged.

P-CD-4.9 For development subject to design review, ensure the design of new or remodeled structures is consistent or complementary with the surrounding neighborhood fabric (including but not limited to prevalent building scale, building materials, and orientation of structures to the street).

P-CD-6.5 Promote iconic architecture and encourage and incorporate innovative, varied, and dynamic design features (e.g., appearance, function, sustainability aspects) into sites, buildings, art, streetscapes, landscapes, and signage to make Downtown visually exciting and to attract residents and visitors.

P-CD-6.8 Recognize Downtown as the hub of the County's transportation system and design buildings and public spaces to connect and maximize use of all types of transit. Design Downtown pedestrian and transit facilities to the highest quality standards to enhance the aesthetic environment and to promote walking, bicycling, and transit use. Design buildings to enhance the pedestrian environment by creating visual interest, fostering active uses, and avoiding prominence of vehicular parking at the street level.

P-CD-10.2 Require that new public and private development adjacent to Gateways, freeways (including U.S. 101, I-880, I-680, I-280, SR 17, SR 85, SR 237, and SR 87), and Grand Boulevards consist of high-quality architecture, use high-quality materials, and contribute to a positive image of San José.

P-CD-10.3 Require that development visible from freeways (including U.S. 101, I-880, I-680, I-280, SR 17, SR 85, SR 237, and SR 87) be designed to preserve and enhance attractive natural and man-made vistas.

Five Wounds Urban Village Plan Policies

A-P-1 The design of new development in the Five Wounds Village should be of a high standard and should contribute to the positive image and vitality of the corridor.

A-P-2 New development within the Five Wounds Village is encouraged to be built in a Mediterranean or other similar architectural styles that reflect the ethnic heritage of the area.

A-P-3: To create a visually rich and interesting built environment, articulation of building façades and variations in building planes and roof lines are encouraged in new development. New buildings should avoid a monolithic appearance.

A-P-5 New development should include decorative elements on building facades and entryways, and are encouraged to integrate unique, artisan and artist designed elements into façades and public spaces.

A-P-9 Encourage use of mosaic tiling that reflects the local cultures of the surrounding neighborhoods on building façades and selected areas of the Town Square and promenades

A-P-11 Apply architectural details to any above ground BART parking structure so it does not appear to be a parking garage. Also encourage active uses to wrap a parking structure.

SF-P-1 Orient entrances of ground floor residential units toward streets, plazas, trails, and promenades.

SF-P-2 Maximize a building's active spaces by orienting entrances of ground floor commercial spaces toward streets, plazas, and promenades.

SF-P-3 Large blank walls are discouraged along public streets, the Five Wounds Trail, and adjacent to public spaces such as plazas. Where solid walls adjacent to sidewalks are necessary, the walls should include architectural elements, landscaping and/or murals to add visual interest and soften the visual impact.

SF-P-4 High visibility from the sidewalk into the interior of retail shops is encouraged through use of transparent openings and windows in building facades.

SF-P-5 The installation of awnings and canopies is encouraged in retail areas to create shelter and shade for pedestrians. Bulky awnings that obscure views of building facades are discouraged.

SF-P-6 The use of tinted and reflective windows on first floor storefronts is discouraged.

G-P-1 When new development is proposed along North 28th Street near the corner of East Julian Street and near the corner of Santa Clara Street work with the property owners to incorporate Gateway elements into their project.

G-P-2 Gateways should visually identify the primary entrance points to the Five Wounds Urban Village and the planned Alum Rock BART Station and Town Square.

SP-1 Develop streetscape amenities throughout the Five Wounds Urban Village, with a focus on and around the planned town square that contributes to a positive image of the area, supports businesses, and creates an attractive and engaging pedestrian environment.

S-P-4 As a part of the BART station project, work with the Valley Transportation Authority (VTA) to identify opportunities to develop identified streetscape amenities within the BART Station Area and plaza.

PA-P-1 Continue to collect the one percent for art from public projects on City-owned property and allocate money collected within or proximate to the Five Wounds Urban Village to public arts projects within this Village.

PA-P-2 Integrate public art and artist-designed streetscape elements, such as street furniture, bicycle racks, tree wells, and pavement treatments, into the streetscape and public right-of-way along the streets within the Urban Village.

PA-P-3 Encourage the integration of unique and artist designed elements into private development. Examples of such elements could include façade treatments, building lighting, awnings, roof accents, pavement treatments etc.

UP-P-2 In the development of a large urban plaza at the future Alum Rock BART Station, consider and incorporate, where feasible, the concepts and design recommendations of the Five Wounds/Brookwood Terrace BART Station Area Community Concept Plan.

UP-P-3 In the development of a large urban plaza at the future Alum Rock BART Station, incorporate, small landscaped areas within larger hardscape areas, and plant shade trees in locations that do not obscure views into the plaza.

BH-P-1 New development within the Five Wounds Urban Village shall be consistent with the maximum height limits as shown in the Five Wounds Village Height Diagram.

Santa Clara

City of Santa Clara 2010–2035 General Plan

The *Santa Clara 2010–2035 General Plan* (SCGP) (City of Santa Clara 2010) emphasizes landscape and streetscape development improvements for several focus areas. The El Camino

Real Corridor is included as one of these focus areas. Accordingly, the City has policies and goals in place to increase the visual character and overall appeal of the City. The SCGP contains the following relevant policies related to visual resources and aesthetics.

General and Mixed Use Land Use Policies

5.3.1-P1 Preserve the unique character and identity of neighborhoods through community-initiated neighborhood planning and design elements incorporated in new development.

5.3.1-P3 Support high quality design consistent with adopted design guidelines and the City's architectural review process

5.3.1-P10 Provide opportunities for increased landscaping and trees in the community, including requirements for new development to provide street trees and a minimum 2:1 on- or off–site replacement for trees removed as part of the proposal.

5.3.1-P24 Coordinate sign programs for commercial uses to promote continuity, improve streetscape design and reduce visual clutter.

5.3.1-P25 Provide gateway signage at key entries into the City of Santa Clara, if feasible.

5.3.1-P27 Encourage screening of above-ground utility equipment to minimize visual impacts.

5.3.1-P28 Encourage undergrounding of new utility lines and utility equipment throughout the City.

5.3.1-P29 Encourage design of new development to be compatible with, and sensitive to, nearby existing and planned development, consistent with other applicable General Plan policies.

5.3.4-P1 Transform underutilized commercial centers into new mixed-use destinations, consistent with applicable land use classifications.

5.3.4-P12 Prioritize pedestrian-oriented streetscape and building design in mixed-use development, including features such as wider sidewalks, street furniture, specialty planters, signage, public art, street trees, special paving materials, decorative awnings, enhanced entrances, colors, variety of materials and textures and distinctive building massing and articulation.

5.3.4-P13 Encourage pedestrian linkages in mixed-use areas through measures such as enhanced lighting, curb bulb-outs, mid-block pedestrian crossings, pedestrian "refuge" areas in planted medians and pedestrian-oriented building frontages.

5.3.4-P15 Maximize opportunities to connect streets, bicycle facilities and pedestrian pathways to improve accessibility between mixed-use development and surrounding neighborhoods, parks, open spaces, transit and public amenities. Provide clear signage, high visibility, adequate lighting and special paving to enhance pedestrian and bicycle facilities.

Diridon Station Area Plan

The *Diridon Station Area Plan* designates the station area into three zones. The Diridon Station and transit-oriented joint development (TOJD) components for both the South and North Options are in the Central Zone: the Commerce and Entertainment zone. The primary urban design and place-making objectives for the central zone include the following.

- Linear "airport style" station layout with discrete commuter and high-speed rail terminals, visually distinct on the outside but linked internally to create a single passenger-friendly internal circulation system.
- Iconic world-class work of architecture for the new terminal building in the grand tradition of railway engineering which could be highly visible from multiple approaches to the station.
- A new primary civic plaza, a view corridor showcasing the terminal structure and an urban gathering place for San Jose. Illustrative example concepts for the size, shape and location of this plaza are described in more detail in Section 2.4 [of the *Diridon Station Area Plan*].

Santa Clara Station Area Plan

2-P-17 Maintain existing character of established neighborhoods in and around the Planning Area by ensuring that infill development is in keeping with scale, bulk, and density of existing neighborhood. Promote zones of scale transition as shown in the Land Use Structure Map.

4-P-6 Use mixed use districts to showcase innovative design that embraces urbanity and integrates public transit.

4-P-7 Accentuate major gateways in the Planning Area, particularly around the Station, at the intersection of Brokaw Road and Coleman Avenue, and at El Camino Real and Benton Street. Take special care with façade treatments at these high visibility locations.

4-P-8 Define standards for building reflectivity to maximize daylight on sidewalks and streets, and minimize glare.

4-P-19 Visually highlight crosswalks through a change in paving material or striping, signage, and/ or signalization. Provide greater pedestrian safety by utilizing street medians for pedestrian refuge across wide streets.

4-P-20 Develop a wayfinding and signage scheme along the primary streets in the Planning Area. Use public art and street elements such as banners and street furniture to reinforce the station's identity and geographic presence. Important wayfinding streets include Brokaw Road south of Coleman Avenue, Center Street,

4- P-24 Ensure developments immediately adjacent to open spaces and plazas create an integrated and memorable relationship of architecture and open space with retail uses.

- Employ similar or complementary materials and landscaping schemes along Center Street and Benton Street between El Camino Real and Lafayette Street;
- Align entries, crosswalks, and pedestrian pathways where possible to maintain a clear connection between buildings and public space; and
- Use consistent lighting, signage, and architectural styles or forms to establish a physical and visual continuity of spaces.

4-P-56 Provide views of the mountains and Downtown San José, along public streets, as illustrated in Figure 4-9 [of the Santa Clara Station Area Plan]. Encourage view/public access easements where the ground-level right-of-way width or open space areas are sufficient to maintain views of a significant portion—if not all—of the designated landmarks or vistas.

4-P-57 Maintain view corridors to the historic train depot, as suggested in Figure 4-9 [of the Santa Clara Station Area Plan], using building massing, setbacks, and sensitive streetscape design.

4-P-58 Ensure that landscape and streetscape design in view corridors are sensitively integrated onto the view corridor.

4-P-59 Provide visual access from public streets to the Station, public plazas, and publicly accessible open spaces and pedestrian corridors.

El Camino Real Focus Area

5.4.1-P7 Residential development should include front doors, windows, stoops, porches, and bay windows or balconies along street frontages.

5.4.1-P11 Encourage public art, special signage, banners and landscaping throughout the Focus Area, including features that would connect the corridor with Downtown.

5.4.1-P13 Facilitate the implementation of streetscape improvements consistent with those illustrations in Figure 5.4-2 of the General Plan.

5.4.1-P16 Work with Valley Transportation Authority and Caltrans toward a roadway design for El Camino Real that includes narrower and/or reduced travel lanes, enhanced pedestrian facilities, wider sidewalks, street trees, planted medians, and enhanced signage and lighting, as well as transit and bicycle lanes without increasing overall right-of-way requirements.

5.5.2-P6 Adjust new building height, scale and massing along the site perimeter abutting planned lower intensity uses.

5.5.2-P7 For buildings of three stories or greater, increase the setback of upper stories where they abut lower intensity residential uses.

5.5.2-P8 Encourage enhanced streetscape design and reduced building mass for non-residential uses located across the street from lower-intensity residential neighborhoods.

5.5.2-P10 Encourage below-grade parking to accommodate parking demand in order to reduce overall building height and massing in transition areas.

5.8.7-P12 Encourage below-grade or structured parking with active uses along street frontages.

5.9.1-P14 Encourage publicly accessible open space in new development.

Santa Clara City Code

The City Code includes regulations associated with the protection of the City's visual character. The City Code also includes regulations for lighting at public parks and recreational areas, in which lighting, if provided, shall be directed away from residential areas and public streets. Furthermore, the City has policies in place to maintain an attractive community appearance and visual character. The City Code outlines development standards for each zoning designation and the architectural review that must occur prior to approval of any new construction projects.

The architectural review process is intended to serve the following purposes.

- Encourage the orderly and harmonious appearance of structures and properties.
- Maintain the public health, safety, and welfare.
- Maintain property and improvement values throughout the City.
- Encourage physical development of the City that is consistent with the General Plan and other City regulations.
- Enhance the aesthetic appearance, functional relationships, neighborhood compatibility, and excellent design quality.

6.14.2 CEQA Methods of Analysis

The visual analysis under CEQA focuses on the following components: the BART alignment, the BART station areas and TOJDs, and BART system facilities required for operation of the extension. The CEQA alternatives are evaluated against the existing visual character adjacent to and surrounding the alignment in order to evaluate their compatibility with neighboring land uses and the overall visual landscape. As discussed in Chapter 4, Section 4.16, *Visual Quality and Aesthetics*, visual simulations were developed to show height and massing of the structural elements that are proposed at each location and are used to guide the visual analysis (refer to Figures 4.16-1 through 4.16-11, and 4.16-A through 4.16-F). Figure 6.14-1 shows the locations of the key viewpoints related to the TOJDs. Figures 6.14-2 through 6.14-12, and 6.14-A through 6.14-D show the existing conditions of key viewpoints relative to visual simulations of BART Extension buildout.

6.14.3 CEQA Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, a project would have a significant impact if it would result in any of the conditions listed below.

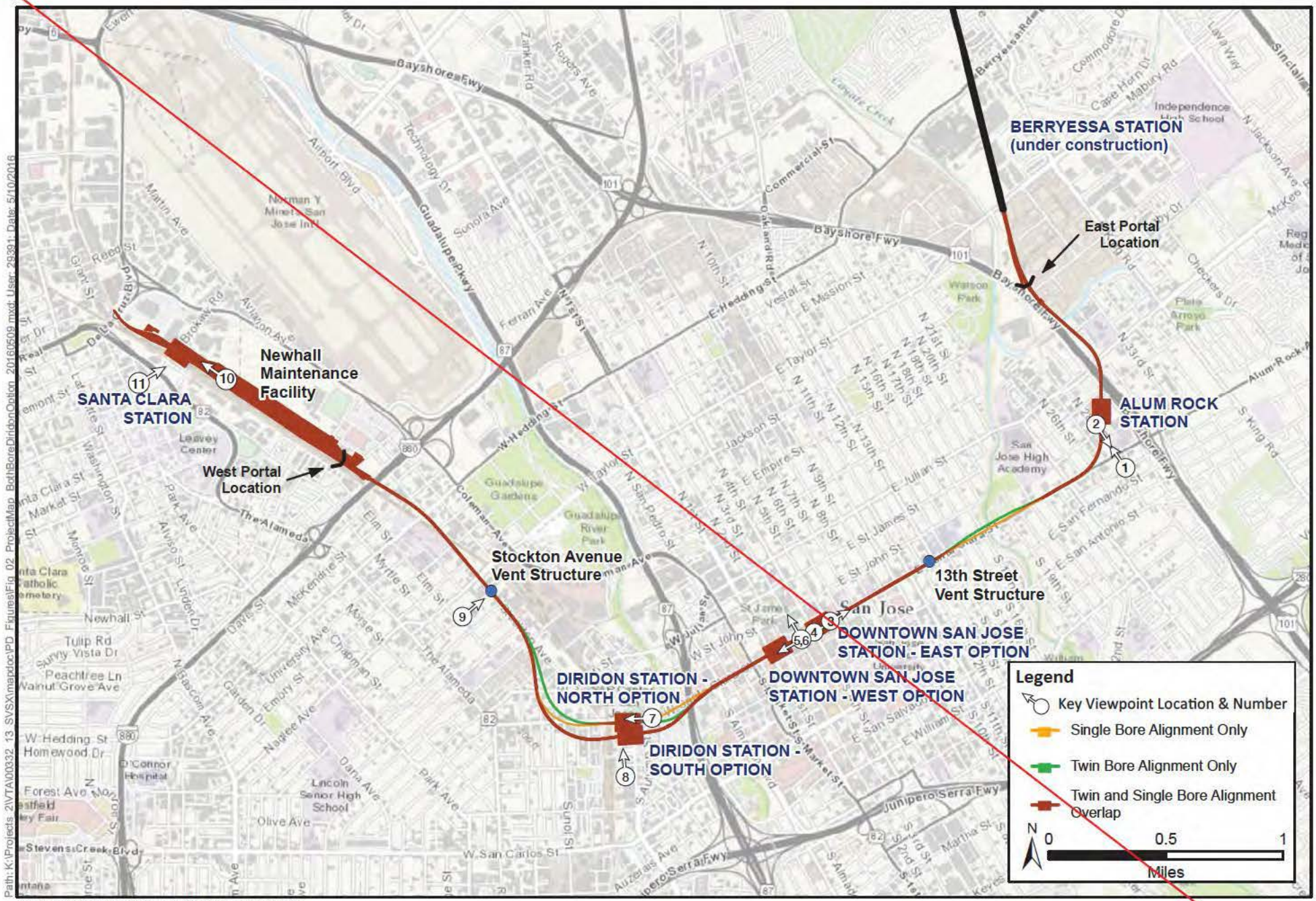
- Have a substantial adverse effect on a scenic vista.
- Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway.
- Substantially degrade the existing visual character or quality of the site and its surroundings, including scenic vistas.
- Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

6.14.4 Environmental Consequences and Mitigation Measures

This section identifies the impacts on visual quality and aesthetics under CEQA, as well as mitigation measures necessary to reduce the level of potentially significant and significant impacts to less-than-significant levels.

6.14.4.1 No Build Alternative

The No Build Alternative consists of the existing transit and roadway networks and planned and transportation programmed improvements (see Chapter 2, Section 2.2.1, *NEPA No Build Alternative*, for a list of these projects), and other land development projects planned by the Cities of San Jose and Santa Clara.



Source: Station and Track, VTA 2014; Basemap, ESRI 2015

Figure 6.14-1
Viewpoints Map for Visual Simulations
VTA's BART Silicon Valley – Phase II Extension Project

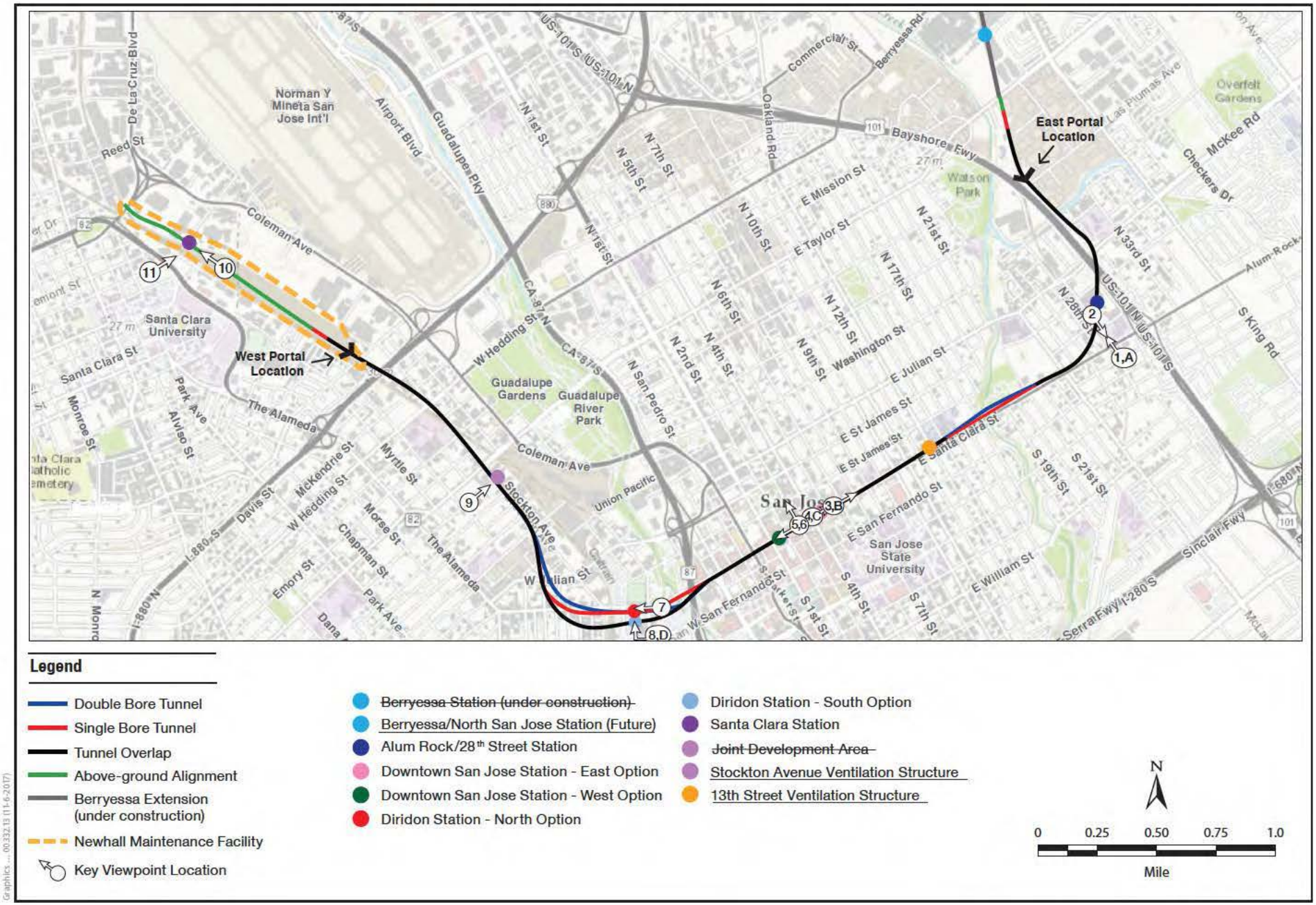


Figure 6.14-1
Viewpoints Map for Visual Simulations (Revised)
VTA's BART Silicon Valley–Phase II Extension Project

Existing view of Five Wounds Church (view to the northwest from the intersection of East Santa Clara Street and North 28th Street)

Alum Rock/28th Street Station – BART Extension with TOJD Alternative

Note: These are intended to be preliminary conceptual representations of the project. Final design, including architectural details, and landscaping will be determined in coordination with local cities.
Source: Circlepoint, 2017.

Graphics ... 00332113 (8-29-2017)

Figure 6.14-2
Key Viewpoint 1: Alum Rock/28th Street Station – Santa Clara Street/~~and~~North 28th Street (Twin Bore)
VTA's BART Silicon Valley–Phase II Extension Project

Existing view of Five Wounds Church (view to the northwest from the intersection of East Santa Clara Street and North 28th Street)

Alum Rock/28th Street Station – BART Extension with TOJD Alternative

Note: These are intended to be preliminary conceptual representations of the project. Final design, including architectural details, and landscaping will be determined in coordination with local cities.
Source: Circlepoint, 2017.

Graphics ... 0033213 01-15-2017)

Figure 6.14-A
Key Viewpoint A: Alum Rock/28th Street Station TOJD – Santa Clara Street/North 28th Street (Single Bore)
VTA's BART Silicon Valley–Phase II Extension Project

Existing view of Five Wounds Church (view to the southeast from the intersection of North 28th Street and Five Wounds Lane)

Alum Rock/28th Street Station – BART Extension with TOJD Alternative

Note: These are intended to be preliminary conceptual representations of the project. Final design, including architectural details, and landscaping will be determined in coordination with local cities.
Source: Circlepoint, 2017.

Graphics ... 00332113 (8-29-2017)

Figure 6.14-3
Key Viewpoint 2: Alum Rock/28th Street Station TOJD – North 28th Street ~~and~~/Five Wounds Lane (Twin Bore)
VTA's BART Silicon Valley–Phase II Extension Project

Existing view along Santa Clara Street (view to the northeast from the intersection of East Santa Clara Street and 5th Street)

Downtown San Jose East Station Option – BART Extension with TOJD Alternative

Note: These are intended to be preliminary conceptual representations of the project. Final design, including architectural details, and landscaping will be determined in coordination with local cities.
Source: Circlepoint, 2017.

Graphics ... 0332.13 (8-29-2017)

Figure 6.14-4
Key Viewpoint 3: Downtown San Jose ~~East~~ Station East Option – TOJD & Station Entrance ~~at –~~ Santa Clara ~~and~~ Street/~~6th~~5th Streets (Twin Bore)
VTA's BART Silicon Valley–Phase II Extension Project

Existing view along Santa Clara Street (view to the northeast from the intersection of East Santa Clara Street and 5th Street)

Downtown San Jose East Station Option – BART Extension with TOJD Alternative

Note: These are intended to be preliminary conceptual representations of the project. Final design, including architectural details, and landscaping will be determined in coordination with local cities.
Source: Circlepoint, 2017.

Graphics ... 0332.13 (11-15-2017)

Figure 6.14-B
Key Viewpoint B: Downtown San Jose Station East Option TOJD & Station Entrance – Santa Clara Street/5th Street (Single Bore)
VTA's BART Silicon Valley–Phase II Extension Project

Existing view down East Santa Clara Street (view to the northeast near the intersection of East Santa Clara Street and 4th Street)

San Jose East Station Option – BART Extension with TOJD Alternative

Note: These are intended to be preliminary conceptual representations of the project. Final design, including architectural details, and landscaping will be determined in coordination with local cities.
Source: Circlepoint, 2017.

Graphics ... 00332113 (8-29-2017)

Figure 6.14-5
Key Viewpoint 4: Downtown San Jose ~~East~~ Station East Option – TOJD & Station Entrance ~~at~~ – Santa Clara ~~and~~ Street/4th Street~~s~~ (Twin Bore)
VTA's BART Silicon Valley–Phase II Extension Project

Existing view down East Santa Clara Street (view to the southwest at the intersection of East Santa Clara Street and 3rd Street

Downtown San Jose East Station Option – BART Extension with TOJD Alternative

Note: These are intended to be preliminary conceptual representations of the project. Final design, including architectural details, and landscaping will be determined in coordination with local cities.
Source: Circlepoint, 2017.

Graphics ... 00332.13 (8-29-2017)

Figure 6.14-6
Key Viewpoint 5: Downtown San Jose ~~East~~ Station East Option – TOJD ~~at~~ – Santa Clara ~~and~~Street/3rd Streets (Twin Bore)
VTA's BART Silicon Valley–Phase II Extension Project

Existing view down 3rd Street (view to the northwest at the intersection of East Santa Clara Street and 3rd Street)

Downtown San Jose West Station Option – BART Extension with TOJD Alternative

Note: These are intended to be preliminary conceptual representations of the project. Final design, including architectural details, and landscaping will be determined in coordination with local cities.
Source: Circlepoint, 2017.

Graphics ... 00332113 (8-29-2017)

Figure 6.14-7
Key Viewpoint 6: Downtown San Jose ~~West~~ Station West Option – TOJD & Station Entrance ~~at~~ – Santa Clara ~~and~~Street/3rd Streets (Twin Bore)
VTA's BART Silicon Valley–Phase II Extension Project

Existing view down West Santa Clara Street (view to the west from the intersection of Autumn Street and West Santa Clara Street)

Diridon Station North and South Option – BART Extension with TOJD Alternative

Note: These are intended to be preliminary conceptual representations of the project. Final design, including architectural details, and landscaping will be determined in coordination with local cities.
Source: Circlepoint, 2017.

Graphics ... 00332113 (8-29-2017)

Figure 6.14-8
Key Viewpoint 7: Diridon Station North and South Options TOJD ~~along~~ Santa Clara Street/Autumn Street (Twin Bore)
VTA's BART Silicon Valley–Phase II Extension Project

Existing view of the Diridon Caltrain Station (view to the northwest from Cahill Street)

Diridon Station North Option – BART Extension with TOJD Alternative

Note: These are intended to be preliminary conceptual representations of the project. Final design, including architectural details, and landscaping will be determined in coordination with local cities.
Source: Circlepoint, 2017.

Graphics ... 00332113 (8-30-2017)

Figure 6.14-~~9b~~9a
Key Viewpoint 8: Diridon Station North Option TOJD ~~on~~ Cahill Street Looking Northwest (Twin Bore)
VTA's BART Silicon Valley–Phase II Extension Project

Existing view down East Santa Clara Street (view to the northeast near the intersection of East Santa Clara Street and 4th Street)

Downtown San Jose East Station Option- BART Extension Alternative

Note: These are intended to be preliminary conceptual representations of the project. Final design, including architectural details, and landscaping will be determined in coordination with local cities.
Source: Circlepoint, 2017.

Graphics ... 00332113 01-15-2017

Figure 6.14-C
Key Viewpoint C: Downtown San Jose Station East Option TOJD & Station Entrance – Santa Clara Street/4th Street (Single Bore)
VTA's BART Silicon Valley–Phase II Extension Project

Existing view of the Diridon Caltrain Station (view to the northwest from Cahill Street)

Diridon Station South Option – BART Extension with TOJD Alternative

Note: These are intended to be preliminary conceptual representations of the project. Final design, including architectural details, and landscaping will be determined in coordination with local cities.
Source: Circlepoint, 2017.

Graphics ... 00332113 01-15-2017

Figure 6.14-D
Key Viewpoint D: Diridon Station South Option TOJD & Station Entrance – Cahill Street Looking Northwest (Single Bore)
VTA's BART Silicon Valley–Phase II Extension Project

Existing view of the Diridon Caltrain Station (view to the northwest from Cahill Street)

Diridon Station South Option – BART Extension with TOJD Alternative

Note: These are intended to be preliminary conceptual representations of the project. Final design, including architectural details, and landscaping will be determined in coordination with local cities.
Source: Circlepoint, 2017.

Graphics ... 0033213 (8-30-2017)

Figure 6.14-9b~~9a~~
Key Viewpoint 8: Diridon Station South Option TOJD & Station Entrance ~~on~~ Cahill Street Looking Northwest (Twin Bore)
VTA's BART Silicon Valley–Phase II Extension Project

Existing view from Villa Avenue (view to the northeast toward the intersection of Villa Avenue and Stockton Avenue)

Stockton Avenue TOJD – BART Extension with TOJD Alternative

Note: These are intended to be preliminary conceptual representations of the project. Final design, including architectural details, and landscaping will be determined in coordination with local cities.
Source: Circlepoint, 2017.

Graphics ... 0033213 (8-29-2017)

Figure 6.14-10
Key Viewpoint 9: Stockton Avenue TOJD – From Villa Avenue (Single and Twin Bore)
VTA's BART Silicon Valley–Phase II Extension Project

Existing view of the Santa Clara Caltrain Station and Platform (view to the northwest from the Santa Clara Caltrain Station platform

Santa Clara Station – BART Extension with TOJD Alternative

Note: These are intended to be preliminary conceptual representations of the project. Final design, including architectural details, and landscaping will be determined in coordination with local cities.
Source: Circlepoint, 2017.

Graphics ... 00332.13 (8-29-2017)

Figure 6.14-11
Key Viewpoint 10: Santa Clara Station TOJD – From ~~the~~ Existing Station Platform (Single and Twin Bore)
VTA's BART Silicon Valley–Phase II Extension Project

Existing view of the Santa Clara Caltrain Station (view to then northeast from El Camino Real)

Santa Clara Station – BART Extension with TOJD Alternative

Note: These are intended to be preliminary conceptual representations of the project. Final design, including architectural details, and landscaping will be determined in coordination with local cities.
Source: Circlepoint, 2017.

Graphics ... 00332.13 (8-29-2017)

Figure 6.14-12
Key Viewpoint 11: Santa Clara Station TOJD – From El Camino Real (Single and Twin Bore)
VTA's BART Silicon Valley–Phase II Extension Project

The No Build Alternative projects could result in effects on visual quality and aesthetics typically associated with transit, highway, bicycle, and pedestrian facilities, and roadway projects as well as land development projects. All individual projects planned under the No Build Alternative would undergo separate environmental review to identify effects on visual quality and aesthetics. Review would include an analysis of impacts and identification of mitigation measures to reduce potential impacts.

It is reasonably foreseeable that the construction staging sites vacated after the construction of the BART Extension would be developed in accordance with the local general plans and area plans. Therefore, impacts due to construction and operation of these developments for visual resources, light, and glare would be similar to the TOJD. Projects planned under the No Build Alternative would, however, undergo separate environmental review to determine whether the projects would result in adverse visual impacts. Review would include an analysis of impacts and identification of mitigation measures to mitigate potential project impacts.

6.14.4.2 BART Extension Alternative

Impact BART Extension AES-1: Have a substantial adverse effect on a scenic vista

Construction

The alignment and surrounding area are characterized by flat topography and do not contain any ridgelines or other topographic forms that are considered a scenic vista by the SJGP or SCGP. Additionally, views of the hillsides bordering San Jose and Santa Clara are not consistently visible from within the alignment. Existing buildings, trees, and infrastructure (e.g., utility lines, elevated roadways) obscure these views.

Construction of the BART Extension would involve the use of heavy equipment, stockpiling of soils and materials, and other visual signs of construction. The presence of construction equipment and materials would be typical of large construction projects. There are no scenic vistas within or near the study area. Therefore, the presence of construction equipment would have *no impact* on a scenic vista, and no mitigation would be required.

Operation

No scenic vistas exist in the study area. Given the urbanized nature of the areas surrounding the stations, as well as the entirety of the alignment, there are no high-quality views from anywhere along the alignment. Therefore, there would be *no impact* on scenic vistas, and no mitigation would be required.

Impact BART Extension AES-2: Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway

Construction

The BART Extension would require removal of trees outside of the state scenic highway. Trees may be removed or trimmed at construction staging sites to allow for maximum area for construction laydown. Trees would be removed as needed to accommodate station boxes, entrance portals, ventilation facilities, and system facilities. Replacement trees would be planted in accordance with Mitigation Measure AES-CNST-A in Chapter 5, Section 5.5.17, *Visual Quality and Aesthetics,* and would be placed in the same viewshed where feasible. The replacement trees would be young trees that would take a few years to mature to full size. The replacement of trees would ensure that visual impacts due to loss of trees would be *less than significant* after implementation of mitigation.

Operation

There are no state-designated scenic highways in the vicinity of the alignment. The only officially designated state scenic highway within Santa Clara County is Highway 9, which is over 7 miles southwest of the BART Extension. Both San Jose and Santa Clara have several unique cultural resources stemming from each city's long history. As a result, several buildings are protected cultural resources and may also serve as key points of interest and scenic resources within a community. Refer to Chapter 4, Section 4.5, *Cultural Resources*, for a list of historically and architecturally significant buildings in the area. However, construction of the BART Extension would not substantially impair these buildings such that they are no longer considered historic. Therefore, implementation of the BART Extension would have a *less-than-significant impact* on any scenic resources, and no mitigation would be required.

Operation of the BART Extension would not require any tree removal.

Impact BART Extension AES-3: Substantially degrade the existing visual character or quality of the site and its surroundings, including scenic vistas

Construction

Construction of the BART Extension would involve the use of heavy equipment, stockpiling of soils and materials, and other visual signs of construction. In general, construction impacts that have the potential to degrade visual quality include the visual presence of construction equipment and material (including noise barriers and the TBM slurry plant), and light and glare impacts from any nighttime construction work. Such effects would be somewhat more pronounced in residential areas or areas seen by substantial numbers of passing motorists, pedestrians, and bicyclists. Several construction staging areas (CSAs) have been identified along the alignment, as described in Chapter 5, *NEPA Alternatives Analysis of Construction*. Five of the CSAs would be within or adjacent to residential neighborhoods that would be the

most sensitive to changes in visual setting and light and glare impacts. These CSAs include the Alum Rock/28th Street Station site, 13th Street ventilation facility site, Downtown San Jose Station East Option site, Stockton Avenue ventilation facility site, and Newhall Maintenance Facility. The underground stations would be constructed as cut and cover and, therefore, construction sites would be visible from adjoining areas.

Short-term visual changes as a result of construction activities are common in urban and suburban areas. To minimize the visual elements of construction, screening techniques would be implemented by the contractor at the construction sites as appropriate. Construction areas would be maintained in an orderly manner, including proper containment and disposal of litter and debris to prevent dispersal onto adjacent properties and roadways. Construction crews working at night would direct any artificial lighting onto the work area to minimize the spillover of light or glare onto adjacent areas.

The incorporation of visual screening and other techniques designed to reduce visual effects as described above would minimize the degradation of visual character within the alignment affiliated with construction activities. Although construction activities would last for approximately 8 years, they would be phased throughout the alignment. Therefore, construction activities would not substantially degrade the existing visual character or quality of the site and its surroundings, a *less-than-significant impact* would result, and no mitigation would be required.

Operation

Alignment

The majority of the BART Extension would be constructed and operated underground. Aboveground elements that would be visible from adjoining areas would be limited and are described below.

In east San Jose, only a small portion of the alignment would be at grade from Mabury Road to Las Plumas Avenue, along with the associated aboveground structure at the tunnel portal. This area is currently occupied by an open, flat dirt lot and old railroad tracks. The visual landscape immediately adjacent to the segment of at-grade tracks is predominantly industrial, with large open storage areas, one- and two-story warehouse-style buildings, parking vehicles and trailers, and several overhead power lines. U.S. 101 travels along the southwest side of the alignment. Few viewer groups exist in this location, and viewer sensitivity is low given the industrial nature of the area. BART trains would be visible as they pass; however, given the proximity of the U.S. 101 corridor, the introduction of BART trains would not change the visual landscape. Therefore, the BART Extension would not substantially degrade the visual quality in this location.

The alignment would again travel aboveground from the West Tunnel Portal near Newhall Street to the Santa Clara Station. The visual character of the at-grade portion in Santa Clara is dominated by modern-style multistory condos to the south, as well as large-scale modern offices and commercial strip mall–style buildings. On the northeast side of the alignment, the

visual character is defined mostly by overhead power lines and one- and two-story industrial and commercial buildings. Given that the at-grade portion is within the existing Caltrain corridor, which is already in transportation use, the BART Extension would be consistent with the visual landscape. Furthermore, the most sensitive users would be the residents along the southwest side; these residents live in the vicinity of an existing operational Caltrain corridor and, therefore, the impacts related to degradation of visual quality would be *less than significant*, and no mitigation would be required.

Station Locations

VTA has taken measures to ensure public involvement throughout the design process for the BART Extension, as described in Chapter 4, Section 4.11, *Land Use*. Such community input has helped to guide the development of station locations and plans.

Alum Rock/28th Street Station

Aboveground structures at the Alum Rock/28th Street Station site would include station entrance portals, a parking structure, and system facilities. The most visually prominent new feature would be the parking structure, which would be up to seven levels. Additionally, there would be roadway improvements to North 28th Street, including a pedestrian/bicycle/transit gateway into the station area with amenities such as signage, street trees, sidewalks, bicycle facilities, and pedestrian-scaled lighting. Station entrances and signage for the Alum Rock/28th Street Station Twin-Bore Scenario would be slightly visible from Santa Clara Street at 28th Street (Figure 6.14-2). Signage for the Alum Rock/28th Street Station Single-Bore Scenario may be slightly visible from Santa Clara Street at 28th Street, but the Single-Bore Scenario would not require aboveground station facilities outside of the multi-level parking structure (Figure 6.14-A).

The existing visual character surrounding the Alum Rock/28th Street campus is defined by commercial and large industrial low-rise buildings, surface parking lots, and historic Five Wounds ~~National~~ Portuguese National Church and School (Five Wounds Church).

As shown in Figure 4.16-2, the parking structure and station portal entrances would be designed to be set back from the Five Wounds Church. -Although larger in scale and mass, the parking structure would be set back from Five Wounds Church such that it would not obstruct any views of the church. System facilities would be visually screened from public view. As a result, no substantial degradation of visual quality would occur with implementation of the BART Extension at the Alum Rock/28th Street Station. The impact would be *less than significant*, and no mitigation would be required.

Downtown San Jose East Station Option

Aboveground components of the Downtown San Jose Station East Option include street-level portal station entrances, emergency exhaust generators, and emergency ventilation structures. For the Twin-Bore Option, several station portal entrance location options in sidewalks along Santa Clara Street between 2nd and 7th Streets are being evaluated.

For the Single-Bore Option, one entrance would be located at the southeast corner of Santa Clara Street and 4th Street and would include an underground concourse; a second entrance would be located at the southeast corner of 6th Street and Santa Clara Street. Other BART facilities, including fresh air intakes, emergency exhaust generators, tunnel ventilation shafts, elevators, TPSS, and emergency exits, may also be located aboveground in this area. ~~The visible aboveground features at this location would include station entrance portals and system facilities. Several portal entrance options in the sidewalks along Santa Clara Street between 2nd and 7th Streets are being evaluated. Other aboveground features include and emergency exhaust generator, which would be enclosed in a small structure at the southeast corner of Santa Clara Street and 6th Street. One emergency ventilation facility would be located at each end of the station and enclosed in a structure approximately 12 feet high.~~

The existing visual setting in this area includes views of large institutional and commercial buildings and a tree-lined streetscape. The buildings are a mix of old brick buildings and more modern concrete and glass buildings. The newer buildings are taller.

The system facilities and BART station entrance portals would be designed to be visually consistent with the colors and materials of the existing buildings in the area. The mass and scale of these buildings would be much smaller. Streetscape improvements would be incorporated along Santa Clara Street between 7th and 1st Streets, and would be guided by San Jose's Master Downtown Streetscape Plan (City of San Jose 2003). Therefore, no substantial degradation of visual quality would occur; any impacts would be *less than significant*, and no mitigation would be required.

Downtown San Jose West Station Option

The visible aboveground features for this station option would be similar to the Downtown San Jose East Station option described above. For the Twin-Bore Option, several station entrance location options within sidewalks along Santa Clara Street and cross streets between Market and 3rd Streets are being evaluated. For the Single-Bore Option, one entrance would be located north of Santa Clara Street between 2nd and 1st Streets, and a second entrance would be located north of Santa Clara Street between 1st and Market Streets. Other BART facilities, including fresh air intakes, emergency exhaust generators, tunnel ventilation shafts, elevators, TPSS, and emergency exits, may also be located aboveground in this area.

From 3rd Street heading west along Santa Clara Street, the streetscape is dominated by street trees and predominantly one- to three-story historic-style commercial buildings. The mass and scale of buildings increases substantially around 1st Street and Market Street.

The system facilities and station entrance portals would be designed to be visually consistent with the mass and scale of the existing buildings in the area. They would also be neutral in color so as to not contrast with the color scheme of the existing commercial corridor. Streetscape improvements would be incorporated along Santa Clara Street between 7th and 1st Streets, and would be guided by San Jose's Master Downtown Streetscape Plan.

Therefore, no substantial degradation of visual quality would occur; any impacts would be *less than significant*, and no mitigation would be required.

Diridon Station South and North Options

Aboveground features associated with the Diridon Station South and North Options would include station entrance portals, an emergency exhaust generator and other system facilities, which would be located in the existing parking lot onsite and surrounded by an approximately 9-foot-high concrete masonry unit (CMU) wall. No parking is proposed at this station.

The existing visual setting around the Diridon Station is dominated by the historic Diridon Station and parking lots and the SAP Center building. The adjoining streets are tree lined, with small buildings.

This area is already dominated by transportation uses including the existing Diridon Caltrain Station and bus transit center. Addition of BART station portals and system facilities would be consistent with both the existing transportation uses and visual environment. The station portal adjacent to the Diridon Caltrain Station would not affect its historic or visual integrity and would not obstruct any views of the Diridon Caltrain Station. The station entrance portals and system facilities would be designed for consistency in mass and scale with the existing visual landscape, as shown in Figure 4.16-9a, 4.16-E, and 4.16-9b. As such, impacts related to visual quality would be *less than significant* for both station options, and no mitigation would be required.

Santa Clara Station

Santa Clara Station would be an aboveground station, including an up to five-story parking structure north of Brokaw Road and east of the Caltrain tracks. Systems facilities would be surrounded by an approximately 12-foot-high CMU wall.

The parking garage site was previously occupied by a FedEx shipping and receiving facility and is currently ~~vacant~~leased to a ~~nother~~research and development tenant; retail uses are located immediately adjacent to the northwest. The area surrounding the parking garage is mostly industrial. The existing Caltrain tracks and Santa Clara Caltrain Station are south of the parking garage site. The parking structure would therefore be constructed in a primarily industrial area.

The BART station would be close to the existing Santa Clara Caltrain station. The Santa Clara Police offices are southwest of the BART station. The BART station would include a platform and canopy. The station would be similar to the existing Santa Clara Caltrain Station in terms of massing and scale. The visual quality in the area is likely to improve due to intensification of transit uses. As such, impacts related to visual quality would be *less than significant*, and no mitigation would be required.

Newhall Maintenance Facility

The Newhall Maintenance Facility would be constructed on the former Union Pacific Railroad (UPRR) Newhall Yard. The facility would include maintenance and engineering offices and a yard control tower (up to three stories in height). To provide for these functions, several buildings and numerous transfer and storage tracks would be constructed onsite.

The visual character along the southwest side of the Newhall Maintenance Facility site is dominated by modern-style multistory condos. On the northeast side of the facility site, the visual character is defined mostly by overhead power lines and one- and two-story industrial and commercial buildings.

The Newhall Maintenance Facility would be within the existing UPRR Newhall Yard and thus would blend with the existing visual character of the area. Additionally, the most sensitive viewers in the area are residents in condos near the Newhall Maintenance Facility along the southwest side of the alignment; however, they are separated from the Newhall Maintenance Facility site by a large concrete retaining wall and active railroad tracks and currently have views of the former UPRR Newhall Yard. Therefore, impacts related to visual quality would be *less than significant*, and no mitigation would be required.

System Facilities/Ventilation Facilities

BART supporting facilities include electrical facilities, traction power substations, high-voltage substations and switching stations, auxiliary power substations, gap breaker stations, train control equipment, ventilation facilities for the tunnels and underground stations, and pump stations. As previously described for system facilities associated with new BART station locations, they would be contained within system facility sites and visually screened from public view.

Two mid-tunnel ventilation facilities are also proposed: one at the northwest corner of Santa Clara Street and 13th Street and another east of Stockton Avenue south of Taylor Street. Each would be aboveground structures housing the equipment required to ventilate the BART tunnel. The area required to accommodate each ventilation facility would be approximately 110 by 200 feet in size and 12 feet high. Land uses surrounding the site of the 13th Street ventilation facility are primarily commercial. Commercial and industrial land uses surround the Stockton Avenue ventilation facility site. Residential uses are located in areas near both of these facilities; however, both sites would be surrounded by an approximately 9-foot-high CMU wall and would be designed to visually blend with the surrounding commercial buildings. Therefore, the impact would be *less than significant*, and no mitigation is required.

Impact BART Extension AES-4: Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area

Construction

Light and glare impacts could result from nighttime construction work. Such effects would be somewhat more pronounced in residential areas or areas seen by substantial numbers of passing motorists, pedestrians, and bicyclists.

To minimize light and glare impacts, construction crews working at night would direct any artificial lighting onto the work area to minimize the spillover of light or glare onto adjacent areas. With the incorporation of light and glare screening techniques designed to reduce visual effects, no new substantial sources of light or glare would be created during construction, the impact would be *less than significant*, and no mitigation would be required.

Operation

BART-related features, such as new station entrance portals, parking structures, and system facilities, would create new sources of light and glare. Most of these structures would be made of concrete and, therefore, would not produce glare. Use of reflective surfaces, such as windows and glass, would be minimized to prevent glare. Station entrance portals would include pedestrian-scaled lighting, and the new parking structures would include lighting.

There are many sources of existing light and glare along the alignment. The residential, industrial, and commercial uses in the vicinity currently generate light and glare from streetlights and exterior lighting for residential and commercial uses. Existing transportation facilities, such as light rail stations, include lighting.

Lighting at new station entrance portals would be designed to focus on the BART Extension and minimize spillover of light and glare into adjacent areas. The station portals would be in mostly commercial and institutional areas; therefore, the potential for spillover impacts is minimal. System facilities would include minimal lighting and would be visually screened when within public view. Therefore, the impact would be *less than significan*t, and no mitigation would be required.

6.14.4.3 BART Extension with TOJD Alternative

Impact BART Extension + TOJD AES-1: Have a substantial adverse effect on a scenic vista

Construction

Impacts of the BART Extension with TOJD Alternative would be similar to those described under the BART Extension Alternative. There are no scenic vistas in the vicinity. *No impacts* would occur, and no mitigation would be required.

Operation

Impacts of the BART Extension with TOJD Alternative would be similar to those described under the BART Extension Alternative. Given the urbanized nature of the areas surrounding the TOJDs, there are no high-quality views that would be obstructed by the TOJDs. Therefore, there would be *no impact* on scenic vistas, and no mitigation would be required.

Impact BART Extension + TOJD AES-2: Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway

Construction and Operation

Construction and operation impacts of the BART Extension with TOJD would be similar to those discussed under the BART Extension Alternative. No additional trees would be removed for the TOJD beyond those removed under the BART Extension Alternative. With implementation of Mitigation Measure AES-CNST-A, impacts would be *less than significant.*

Impact BART Extension + TOJD AES-3: Substantially degrade the existing visual character or quality of the site and its surroundings, including scenic vistas

Construction

Construction impacts of the BART Extension with TOJD Alternative would be similar to those discussed under BART Extension Alternative. Construction TOJD sites would be adequately screened. Impacts would be *less than significant*, and no mitigation would be required.

Operation

Station Locations/TOJDs

Alum Rock/28th Street Station and TOJD

The Alum Rock/28th Street Station and TOJD would include aboveground structures, including station entrances, a parking structure, system facilities, and TOJD buildings. The most visually prominent new features onsite would be the parking structure and the TOJD. The parking structure would be up to seven levels, and the TOJD would be four to nine stories and over 500,000 square feet in size.

The visual character surrounding the Alum Rock/28th Street campus is defined by commercial and large industrial low-rise buildings, surface parking lots, and the visually prominent historic Five Wounds Church.

Both the parking structure and TOJD would be taller but larger in mass than the surrounding industrial warehouses. As shown in Figures 6.14-2, 6.16-A, and 6.14-3, the parking structure and TOJD would be set back from the church, and no views to the church would be affected.

Given the location of the Alum Rock/28th Street Station and TOJD to be behind the Five Wounds Church along 28th Street, views of the primary façade of the church that faces Alum Rock Avenue would remain unchanged. Design of the TOJD would be in accordance with the Five Wounds Urban Village Plan (including a 60- to 120-foot height maximum, depending on the TOJD configuration), which envisions this area to transition from industrial to other uses. The TOJD would help to improve the visual quality of the area by providing a community-oriented and pedestrian-friendly streetscape in a currently industrial area.

System facilities would be visually screened from public view. As a result, no substantial degradation of visual quality would occur with implementation of the BART Extension with TOJD Alternative. The impact would be *less than significant*, and no mitigation would be required.

Santa Clara Street/13th Street TOJD

TOJD would consist of a maximum of 13,000 square feet of ground-level retail along the street frontage facing Santa Clara Street. A large parking lot currently covers most of the site.

The TOJD would be consistent with the mass and scale of the surrounding one- and two-story commercial land uses and would improve the visual quality of the area by developing the existing site from an empty paved parking lot to a new retail development. Therefore, the impact related to visual quality would be *less than significant*, and no mitigation would be required.

Downtown San Jose Station East Option TOJD

The visible aboveground features at this location would include three TOJDs, station entrance portals, and system facilities (refer to Figures 6.14-4 through 6.14-6, 6.14-B, and 6.14-C). The three TOJD sites would be adjacent to the Downtown San Jose Station East Option between 7th Street and 3rd Street. Each of the three TOJDs would be up to three stories high, contain a mix of office and retail space, and range between 45,000 and 340,000 square feet in size.

The visual landscape in this area includes views of large institutional and commercial buildings and a tree-lined streetscape. After 4th Street heading west, the density of buildings increases and the styles transition to old town historic brick façades.

The TOJDs, system facilities, and BART station entrance portals would be designed to be visually consistent with the mass and scale of the existing buildings in the area. They would also be neutral in color so as to not contrast with the color scheme of the existing commercial corridor. Streetscape improvements would be incorporated along Santa Clara Street between 7th and 1st Streets, and would be guided by San Jose's Master Downtown Streetscape Plan. Therefore, no substantial degradation of visual quality would occur; any impacts would be *less than significant*, and no mitigation would be required.

Downtown San Jose Station West Option TOJD

The visible aboveground features at this location would include one TOJD, station entrance portals, and system facilities (refer to Figure 6.14-7). The TOJD would be along Santa Clara Street, west of 3rd Street. The TOJD would be up to three stories high and consist of approximately 45,000 square feet of retail and office space.

From 3rd Street heading west along Santa Clara Street, the streetscape is dominated by street trees and predominantly one- to three-story historic-style commercial buildings. The mass and scale of buildings increases substantially around 1st Street and Market Street, and the density of buildings decreases.

The TOJD, system facilities, and station entrance portals would be designed to be visually consistent with the mass and scale of the existing buildings in the area. They would also be neutral in color so as to not contrast with the color scheme of the existing commercial corridor. Streetscape improvements would be incorporated along Santa Clara Street between 7th and 1st Streets, and would be guided by San Jose's Master Downtown Streetscape Plan. Therefore, no substantial degradation of visual quality would occur; any impacts would be *less than significant*, and no mitigation would be required.

Diridon Station (South and North Option) TOJD

TOJD at both the Diridon Station South and North Options would have the same footprint and would be located in the existing parking lots onsite. TOJD at Diridon would be up to eight stories high (refer to Figures 6.14-8, 6.14-9a, 6.14-9~~/~~b, and 6.14-D). The SAP Center is a large building in scale and mass across the street, although not as tall as the TOJD. The Diridon Station Area Plan envisions this area to become concentrated with transit uses and transit-oriented development. Therefore, the TOJD would be consistent with the plans and the community's vision for this area. The TOJD would not affect the historic or visual integrity of the historic Diridon Caltrain Station. Therefore, no substantial degradation of visual quality would occur; any impacts would be *less than significant*, and no mitigation would be required.

Stockton Avenue TOJD

TOJD would be co-located on the east side of Stockton Avenue south of Taylor Street with the Stockton Avenue ventilation facility at the rear of the site (refer to Figure 6.14-10). The TOJD would consist of a maximum of 15,000 square feet of ground-level retail. This area is currently occupied by industrial uses and is primarily covered with surface parking lots. The TOJD would likely improve the visual quality of the site by providing a new building with retail uses. As such, impacts related to visual quality would be *less than significant*, and no mitigation would be required.

Santa Clara Station TOJD

The TOJD would be co-located with the parking structure north of Brokaw Road and east of the Caltrain tracks. The TOJD buildings would be up to 11 stories high. Although the

building would be the tallest building in the station complex, it would not degrade the visual or historic integrity of the Santa Clara Caltrain Station, which is across the existing railroad tracks to the south ~~(refer to Figures 6.14-11 and 6.14-12 6.14-12)~~. Figure 6.14-11 shows the views of the TOJD and parking structure when looking northwest from the Santa Clara Caltrain Station platform. This TOJD would also be visible from the Santa Clara Caltrain Station looking northeast from El Camino Real (Figure 6.14-12). It would be the only new structure visible from this viewpoint because of its height. Also, replacement of industrial warehouse–type uses with a multi-use retail, residential, and commercial building would afford greater opportunities to build aesthetically pleasing buildings. Impacts related to visual quality would be *less than significant*, and no mitigation would be required.

Newhall Maintenance Facility

Impacts related to the Newhall Maintenance Facility under the BART Extension with TOJD Alternative would be similar to those discussed under BART Extension Alternative. No TOJD is proposed at this location. Impacts would be *less than significant*, and no mitigation would be required.

Impact BART Extension + TOJD AES-4: Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area

Construction

Construction light and glare impacts under the BART Extension with TOJD Alternative would be similar to those discussed under BART Extension Alternative and would be less than significant. The TOJD construction light and glare would be temporary and typical of other building construction in urbanized locations, and impacts would be *less than significant*. No mitigation would be required.

Operation

The TOJDs would create new sources of light and glare. Several of the TOJDs would be taller than the surrounding built environment, particularly at the Alum Rock/28th Street, Diridon, and Santa Clara Station areas where TOJD would range between 4 and 11 stories high and include reflective surfaces, such as windows, that could create glare.

The TOJDs would be in urban areas where existing ambient nighttime lighting is high. The residential, industrial, and commercial uses in the vicinity of the TOJD sites currently generate light and glare from streetlights and exterior lighting for residential and commercial uses. The introduction of light and glare from the TOJDs, in combination with the station areas and parking structures, would be greater than existing conditions and would be considered a potentially significant impact. Mitigation measure AES-A described below is anticipated to reduce impacts associated with light and glare to a *less-than-significant* level.

Mitigation Measure AES-A: Minimize ~~l~~Light and ~~g~~Glare

For the TOJDs, the contractor will install low-profile, low-intensity outdoor lighting directed downward to minimize light and glare where feasible. The contractor will also i~~I~~nstall shielded fixtures for street and pedestrian lighting to minimize glare.

6.14.5 CEQA Conclusion

The BART Extension Alternative and BART Extension with TOJD Alternative would be designed in accordance with the relevant design guidelines of the local area. Furthermore, streetscape improvements would be implemented in accordance with the local City landscape plans.

The introduction of light and glare by the TOJDs would be substantially greater than under existing conditions, and would be considered a potentially significant impact. Mitigation would be implemented to reduce the impact to a less-than-significant level. Mitigation Measure AES-1 would not result in secondary environmental impacts.

The BART Extension Alternative and BART Extension with TOJD Alternative would have a *less-than-significant impact* on visual quality under CEQA.

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6.15 Water Resources, Water Quality, and Floodplains

6.15.1 Introduction

This section discusses existing conditions and the regulatory setting regarding water resources, water quality, and floodplains. It also describes impacts under CEQA that would result from construction and operation of the CEQA Alternatives.

Existing conditions, including climate, topography, surface water hydrology, drainage patterns, and flooding, are discussed in Section 4.17, *Water Resources, Water Quality, and Floodplains*. Water quality, water quality objectives, and beneficial uses for both surface water and groundwater are also discussed in Section 4.17.

6.15.2 Regulatory Setting

The following state and local regulations are relevant to hydrology and water quality and apply to implementation of the BART Extension Alternative and BART Extension with TOJD Alternative unless otherwise specified.

The primary state laws regulating water quality are the California Water Code's Porter-Cologne Water Quality Control Act (Porter-Cologne Act) and the San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan) (San Francisco Bay Regional Water Quality Control Board 2015).

6.15.2.1 State Laws and Local Requirements

Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. It requires a Report of Waste Discharge for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses of surface and/or groundwater of the state. The act, which predates the Clean Water Act (CWA), regulates discharges to waters of the state. The term *waters of the state* includes more than waters of the United States (e.g., groundwater and surface waters that are not considered waters of the United States). Additionally, the act prohibits discharges of *waste*, which is defined more broadly than the CWA definition of *pollutant*. Discharges under the Porter-Cologne Act are permitted by waste discharge requirements, which may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (State Water Board) and Regional Water Quality Control Boards (Regional Water Boards) are responsible for establishing the water quality standards (i.e., objectives and beneficial uses) required by the CWA and regulating

discharges to ensure compliance with the water quality standards. Details regarding water quality standards in a project area are contained in the applicable Regional Water Board Basin Plan. In California, Regional Water Boards designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect such uses. Consequently, the water quality standards developed for particular water segments are based on the designated use and vary depending on such use. In addition, the State Water Board identifies waters that have failed to meet standards for specific pollutants, which are then state listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point-source or nonpoint-source controls (National Pollutant Discharge Elimination System [NPDES] permits or waste discharge requirements), the CWA requires the establishment of total maximum daily loads, which specify allowable pollutant loads from all sources (point, nonpoint, and natural) for a given watershed.

6.15.2.2 Local

VTA Stormwater and Landscaping Design Criteria Manual

Design features to address water quality impacts would follow the requirements in the small Municipal Separate Storm Sewer System (MS4) permit. The criteria and standards are similar to those of the Santa Clara Valley Urban Runoff Pollution Prevention Program guidelines. Post-construction stormwater treatment would preferentially utilize site design measures, source-control best management practices (BMPs), and Low-Impact Development (LID) treatment features. Generally, the LID measures would include vegetative improvements, which must comply with VTA's Sustainable Landscaping Policy.

VTA's *Stormwater and Landscaping Design Criteria Manual* (effective June 30, 2015) was developed to assist engineers with incorporating post-construction stormwater treatment into VTA project designs. VTA's *Stormwater and Landscaping Design Criteria Manual* would apply to areas managed by VTA such as the station campuses. However, both VTA and BART would be required to use BMPs and stormwater treatment measures to reduce, infiltrate, and treat runoff because the BART Extension would replace or create more than 5,000 square feet of impervious surfaces.

City of San Jose General Plan

The City of San Jose General Plan guides development and land use within the city. Several policies and measures of the general plan apply directly to hydrology and water quality. Several goals and policies within the Measurable Environmental Sustainability Measure (Water Quality Measure), the Green Building Policy Leadership Measure, the Environmental Resources Element, and the Environmental Considerations/Hazards Element of the City of San Jose General Plan are relevant to the BART Extension and related to water quality, the protection of water resources, groundwater quality and supply, stormwater, and flooding.

City of Santa Clara General Plan

The City of Santa Clara General Plan guides development and land use within the city. Several policies and measures of the general plan apply directly to hydrology and water quality. All policies within the Water Goals and Policies Element (5.10.4) of the general plan are relevant to the BART Extension. Goals and policies within this element are related to water supply, water recycling, and other related policies. Additional policies within the Safety Element, the Prerequisite Policies Element, and the Land Use Element of the general plan are relevant to the BART Extension. These are related to flooding, erosion and sediment control, stormwater and water management, drainage capacity, water and groundwater quality, grading, runoff and nonpoint-source pollution, and streamflow.

Floodplain Management

The Santa Clara Valley Water District (SCVWD) is the public agency responsible for flood protection in Santa Clara County. SCVWD manages two groundwater subbasins, the Santa Clara and Llagas subbasins. Other agencies that have discretionary authority over the BART Extension or aspects of the BART Extension related to flood control are considered responsible agencies and include, but are not limited to, the following.

- Departments of Public Works for the Cities of San Jose and Santa Clara
- U.S. Army Corps of Engineers
- BART

The BART Extension would take place within the jurisdiction of the Cities of San Jose and Santa Clara and be subject to local ordinances for flood control and drainage as applicable. The City of San Jose has several municipal codes related to flooding and floodplain management (Municipal Codes 17.08.070 through 17.08.800). The City of San Jose also has standards for construction within flood zones. These standards conform the flood hazard ordinance to national flood insurance program regulations.

City of San Jose Stormwater Permit and Regulations

The City of San Jose is under the jurisdiction of the San Francisco Bay Regional Water Board, which is responsible for issuing an NPDES Municipal Regional Permit (MRP) to prevent stormwater pollution. To meet MRP permit regulations, the Santa Clara Valley Urban Runoff Pollution Prevention Program shares resources and collaborates on projects of mutual benefit. The MRP permit governs a variety of activities in the City of San Jose (e.g., industrial and commercial businesses, new and redevelopment projects, construction sites, storm drain operation and maintenance, creek monitoring, pesticide applications, illegal dumping of water and pollutants in the city's storm drain). Under the permit, San Jose has a Stormwater Management Plan that outlines activities for protecting creeks and rivers from polluted stormwater runoff.

City of San Jose Grading and Erosion Control Program

To ensure that private property is graded so that it will drain properly, not affect adjacent properties, and not create erosion problems, the City has developed a Grading and Erosion Control Program. Improper grading can result in localized flooding, landslides, and differential settlement that affect not only the graded property but also adjacent properties. To ensure that grading operations do not affect local creeks and storm drainage systems during the winter months, any grading occurring between October 15 and April 15 will require an approved Erosion Control Plan. The City of San Jose also has municipal codes related to grading and drainage (Municipal Code 15.11.1020, Grading Design Plan).

6.15.3 CEQA Methods of Analysis

All BART Extension elements were analyzed by comparing baseline conditions to conditions during construction and/or operation of the BART Extension Alternative and BART Extension with TOJD Alternative. The analysis focused on issues related to surface hydrology, flood hazards, groundwater supply, and surface and groundwater quality. The key construction-related impacts were identified and evaluated qualitatively by considering the physical characteristics of the alignment and the magnitude, intensity, location, and duration of activities.

Surface Water Hydrology. The surface water hydrology impact analysis considered potential changes in the physical characteristics of water bodies, impervious surfaces, and drainage patterns throughout the alignment as a result of BART Extension implementation.

Groundwater Hydrology: Impacts on groundwater supply and recharge were assessed by comparing existing groundwater use as well as recharge capabilities with BART Extension conditions. Recharge is determined by the ability of water to infiltrate into the soil.

Water Quality: Impacts of the BART Extension on surface water and groundwater quality were analyzed by comparing existing water quality conditions with BART Extension conditions. Potential BART Extension-related sources of water contaminants generated by industrial and BART Extension operations (e.g., vehicle use, building maintenance, pesticide use, trash collection, storage or inadvertent release of hazardous materials during construction) may be considered in this analysis. The potential for water quality objectives to be exceeded and beneficial uses to be compromised was also considered.

Flooding: The impact analysis for current flood risk was conducted by using Federal Emergency Management Agency (FEMA) data and historical flood information to determine the existing flood zone and whether the alignment overlaps designated 100-year floodplains; impacts on the drainage system; and the potential for being a flood risk.

6.15.4 CEQA Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, a project would have a significant effect if it would result in any of the conditions listed below.

- Violate any water quality standards or waste discharge requirements.

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted).
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite.
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Otherwise substantially degrade water quality.
- Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures that would impede or redirect floodflows.
- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Contribute to inundation by seiche, tsunami, or mudflow.

6.15.5 Environmental Consequences

This section identifies impacts on water resources, water quality, and floodplains under CEQA and mitigation measures necessary to reduce the level of potentially significant impacts.

6.15.5.1 No Build Alternative

The No Build Alternative consists of the existing transit and roadway networks and planned and programmed transportation improvements (see Chapter 2, Section 2.2.1, *NEPA No Build Alternative*, for a list of these projects), and other land development projects planned by the Cities of San Jose and Santa Clara. The No Build Alternative projects could result in effects on water resources, water quality, and floodplains typically associated with transit, highway, bicycle, and pedestrian facilities, and roadway projects. Structures associated with the projects would be designed in accordance with current floodplain management requirements, as administered by SCVWD and related city municipal codes. Additionally, hydrologic and hydraulic studies would be performed to identify the appropriate design measures for stormwater management at the stations. All individual projects planned under the No Build Alternative would undergo separate environmental review to identify effects on water

resources, water quality and floodplains. Review would include an analysis of impacts and identification of mitigation measures to reduce potential impacts.

6.15.5.2 BART Extension Alternative

Impact BART Extension WQ-1: Degrade water quality or violate water quality standards

Construction

The BART Extension would include construction of bored tunnels, underground station facilities, and aboveground facilities, such as parking structures and maintenance facilities; roadway improvements would also be included. Implementation of the BART Extension would include site clearing, new building construction and demolition, paving and repaving for parking lot and transit center expansion, cut-and-fill activities, grading and excavation, and landscaping. These land-disturbing activities and the placement of stockpiles in proximity of storm drain inlets may result in a temporary increase in sediment loads in the Lower San Francisco Bay. Sediment transport to local drainage facilities such as drainage inlets, culverts, and storm drains could also result in reduced stormflow capacity and localized ponding or flooding during storm events.

The delivery, handling, and storage of construction materials and wastes (e.g., concrete debris), as well as the use of heavy construction equipment, could result in stormwater contamination, thereby affecting water quality. In addition, construction activities may involve the use of chemicals or the operation of heavy equipment, which could result in accidental spills of hazardous materials (e.g., fuel, oil) during construction. Such spills could enter the groundwater aquifer or nearby surface water bodies from runoff or storm drains. A spill prevention and cleanup plan would be included in the Storm Water Pollution Prevention Plan (SWPPP) to address these potential impacts.

All construction activities would be subject to existing regulatory requirements. Because land disturbance associated with the BART Extension would affect more than 1 acre, coverage under a Construction General Permit would be required. The Construction General Permit contains standards to ensure that water quality is not degraded. As part of compliance with the Construction General Permit, standard erosion control measures and other BMPs would be identified in a SWPPP. These measures would be implemented during construction to reduce contamination and sedimentation in waterways.

Construction activities could result in short-term surface and groundwater impacts, such as sediment loads that exceed water quality objectives or chemical spills into storm drains or groundwater aquifers, if proper minimization measures are not implemented. However, the BART Extension would develop and implement a SWPPP specific to the BART Extension and be in compliance with the Construction General Permit, local stormwater ordinances, and other related requirements. In addition, the BART Extension would implement Mitigation Measure BIO-CNST-D to protect riparian habitat (see Chapter 5, Section 5.5.4, *Biological*

Resources and Wetlands). Under this measure, VTA will design the BART Extension to avoid temporary and permanent adverse effects on riparian habitat, wetlands, and waters of the United States to the maximum extent practicable. Therefore, potential water quality impacts from construction activities would be *less than significant*, and no further mitigation is required.

Operation

Under the BART Extension, four transit stations, parking lot structures, kiss-and-ride (i.e., passenger drop-off) facilities, and a Newhall Maintenance Facility, including train washing, would be constructed; landscaping would also be included. The operation of new facilities could increase existing pollutants in storm drains and introduce new pollutants. Operation and maintenance (O&M) activities under the BART Extension would be similar to existing O&M activities (e.g., landscape maintenance, building maintenance, storage of materials and substances, vehicle use) with the addition of new transit stations and maintenance at two new ventilation facilities and along associated transit tracks. Good housekeeping practices, such as regular litter and trash collection and sweeping, would continue to be implemented on site. In addition, BMPs would be implemented as required under the Industrial General Storm Water Permit to maintain stormwater quality from O&M activities at the Newhall Maintenance Facility.

The estimated disturbed soil area (DSA) for the BART Extension is approximately 130.18 acres with the Downtown San Jose Station East Option and 128.11 acres with the Downtown San Jose Station West Option. The total amount of added impervious area (AIA) would be approximately 46.16 acres with the Downtown San Jose Station East Option and 46.09 acres with the Downtown San Jose Station West Option because of the construction staging areas and new stations that would be part of the BART Extension. Table 6.15-1 provides a summary of changes to impervious and pervious areas by watershed. The increase in impervious areas would most likely result in higher volumes and velocities for stormwater flows to downstream receiving water bodies. The AIA created by the BART Extension may also result in minimal increases in low-flow and peak-flow velocities. New drainage systems would most likely be required to capture drainage from the BART Extension (WRECO 2017~~6~~a).

The BART Extension would be designed in accordance with the Phase II MS4 Permit, Section F.5.g, for post-construction stormwater management. BART would operate the system in accordance with the Phase II MS4 Permit for the guideway and systems and other facilities that they are operating. VTA would apply the MS4 Permit for the station campuses and other facilities where BART is not the operator.

VTA developed a *Stormwater and Landscaping Design Criteria Manual* (effective June 30, 2015) to assist VTA engineers with incorporating the post-construction stormwater requirements in the small MS4 permit into VTA-operated facilities. Under the VTA's *Stormwater and Landscaping Design Criteria Manual*, VTA would implement BMPs and post-construction stormwater treatment measures into VTA-managed facilities because the

BART Extension would replace or create more than 5,000 square feet of impervious surfaces. The criteria and standards are similar to those of the Santa Clara Valley Urban Runoff Pollution Prevention Program guidelines. Stormwater treatment designs would preferentially utilize site design measures, source-control BMPs, and LID treatment features. Generally, the LID measures would include vegetative improvements, which must comply with VTA's Sustainable Landscaping Policy.

Under the Phase II MS4 Permit, BART and VTA would be required to implement BMPs and post-construction stormwater treatment measures, because it would replace or create more than 5,000 square feet of impervious surfaces. Stormwater management measures for the BART Extension would utilize LID techniques to reduce pollutant discharges and impacts on water quality and beneficial uses. In addition, the BART Extension would be designed in accordance with the post-construction stormwater treatment measures. Source controls and LID measures would be implemented, as well as vegetative treatment features such as bioretention basins for "biotreatment" of runoff.

VTA's *Stormwater and Landscaping Design Criteria Manual* would apply to VTA-managed facilities and presents methods to help evaluate, during the planning phase, whether sufficient land area has been allocated for stormwater treatment. As such, the size of the needed biotreatment area was determined by assuming a surface area equal to 4 percent of the contributing impervious area, known as the *simplified sizing method*. The simplified method for sizing bioretention areas and flow-through planters, known as the *4 percent method*, is based on a runoff inflow of 0.2 inch per hour, with an infiltration rate through biotreatment soil of 5 inches per hour. The 4 percent method requires the treatment measure to be 4 percent of the impervious area that drains to it.

The estimated biotreatment surface area for the different BART Extension features is provided in Table 6.15-2. The total biotreatment surface area required for the BART Extension would be approximately 107,000 square feet, which includes impervious areas for the BART Extension and related service roads and would vary depending on the station options chosen.

Table 6.15-1: Added Impervious Area by Watershed

Watershed	BART Extension Feature	Feature Type	Total Impervious Area per Feature (acres)	Net Added Impervious Area (acres)	DSA[b]
Coyote Creek	Mabury Road and US 101 CSA	CSA[a]			25.25
Lower Silver Creek	Alum Rock/28th Street Station	Station	9.25	2.54	17.68
	Alum Rock/28th Street Station CSA	CSA			3.31
Guadalupe River	Downtown San Jose Station East Option	Station	0.77	0.10	10.42
	Downtown San Jose Station West Option	Station	0.40	0.03	8.35
	Newhall Maintenance Facility		43.86[a]	41.86	46.93
	Santa Clara Station	Station	3.59	0.46	13.04
Los Gatos Creek	Diridon Station South Option	Station	3.47	Negligible	10.67
	Diridon Station North Option	Station	3.14	Negligible	10.49

[a] Assumed entire construction staging area (CSA) is impervious.
[b] DSA is the entire CSA; it was not divided into station and transit-oriented joint development (TOJD).

Table 6.15-2: Estimated Biotreatment Area

BART Extension Option	Total Impervious Area (acres)	Simplified Sizing Method Treatment Area (square feet)
Alum Rock/28th Street Station	9.25	16,117
Downtown San Jose Station East Option	0.87	1,516
Downtown San Jose Station West Option	0.43	749
Diridon Station South Option	3.47	6,046
Diridon Station North Option	3.14	5,486
Newhall Maintenance Facility	43.86	76,422
Santa Clara Station	4.05	7,057

Source: WRECO 2017~~6~~a.

LID techniques would be used in the design to reduce the impact on water quality and beneficial uses. Examples of these post-construction stormwater treatment measures include self-treating areas and self-retaining areas, as well as an increased pervious pavement areas. These are some of the options mentioned in the Phase II MS4 Permit. There are other ways to reduce stormwater flooding and improve water quality, as elaborated in the manual, that might be considered in the design phase. Some of these include capturing surface flow with bioretention basins and rain gardens or using tree wells or and other media filters if vegetative treatment is infeasible. These treatment measures would be incorporated into the aesthetics of the landscape. The measures would include an overflow to convey more intense, less frequent rainfall events safely.

Potential surface water quality impacts from operation would be *less than significant*.

Mitigation Measure WQ-A: Design and Implement Stormwater Control Measures

The BART Extension will be designed in accordance with the Phase II MS4 Permit, Section F.5.g, for post-construction stormwater management. Post-construction stormwater controls shall be implemented to reduce total runoff rates and associated pollutant discharges. VTA managed facilities will follow the VTA's *Stormwater and Landscaping Design Criteria Manual*. After designs are finalized, a Stormwater Management Report, including detailed hydrologic and hydraulic calculations, analysis, and conclusions, shall be prepared to document the final design for stormwater management and the storm drain system and for obtaining the requisite approvals, and will outline all required Operation and Maintenance needs recommended by the designer for the post-construction stormwater management facilities.

Impact BART Extension WQ-2: Deplete groundwater supplies or interfere with groundwater recharge

Construction

Groundwater is anticipated to be encountered during excavation for the underground stations and tunnel structures. As a result, dewatering of the shallow groundwater zone would be required. The tunnels would be constructed below the water table, at an average depth of 40 feet below ground at the crown (i.e., top of the tunnel) for the Twin-Bore Option and an average depth of 70 feet below ground at the crown for the Single-Bore Option. However, the BART Extension would not substantially deplete groundwater supplies or substantially interfere with groundwater recharge because it would not increase groundwater demand or decrease groundwater recharge areas. The methods for dewatering could include installing a well-based dewatering system and/or pumping water from low spots at the excavation site. As a result, the potential exists for reducing the volume of water in the local aquifer table. However, dewatering would be temporary (i.e., during the construction phase) and would not result in a loss of water that would deplete groundwater supplies.

A Dewatering Plan would be required as part of the contractor's SWPPP for any dewatering of up to 10,000 gallons per day. Prior to any discharge into the sanitary sewer, storm drainage system, or downstream receiving water bodies, water quality sampling and analysis would be required. For areas of known contamination and where pumping will exceed 10,000 gallons per day, the Construction General Permit may not be used for dewatering. A separate NPDES permit for structural dewatering, as well as groundwater that has been contaminated with volatile organic compounds, and/or a project-specific waste discharge requirements permit would be needed to address potential contamination of groundwater and provide treatment prior to discharge.

The water supply for construction activities (e.g., dust control, concrete mixing, material washing) would come from nearby hydrants, existing surface supplies at the site, water trucks, or dewatering effluent, if appropriate. As discussed in Chapter 5, Section 5.5.11,

Hazards and Hazardous Materials, Mitigation Measure HAZ-CNST-A would be implemented, ensuring that site-specific Remedial Action Plans would be prepared and implemented to reduce impacts on the environment, including impacts on groundwater that could result from the disturbance of hazardous materials in soil and ballast materials during construction.

Groundwater flow direction and pathways may be affected by the tunnel structures and underground stations, potentially causing the diversion of the normal flow of groundwater, the mounding of groundwater, or the localized rise of the water table. The water table in the area was measured at approximate depths of 14 to 18 feet below the ground surface. Tunnels for the Twin-Bore Option would be constructed below the water table at a minimum depth of 20 feet below ground at the tunnel crown, while tunnels for the Single-Bore Option would be constructed at an even greater depth. Therefore, groundwater would be able to flow above and below the tunnel structure. Dewatering would be necessary inside the retained cuts, underground stations, and tunnels; the quantity of water is anticipated to be minimal. In addition, construction in the tunnels would adhere to the SCVWD 2012 Groundwater Management Plan and protect groundwater from existing and potential contamination. Therefore, there would be no potential for reducing the volume of water in the local aquifer, and impacts on groundwater supplies from construction activities would be *less than significant*. No further mitigation is required.

Operation

Natural groundwater recharge of the Santa Clara subbasin occurs primarily through infiltration from streambeds and percolation of precipitation that falls directly on the ground surface. Because implementation of the BART Extension would result in an increase in impervious surface area of approximately 44.99 acres, there would be a decrease in groundwater recharge potential along the alignment.

Stormwater management measures that utilize LID techniques (e.g., self-treating areas, increased pervious pavement areas) are being considered for the BART Extension. Additional landscape design features that are being considered at station areas and potentially BART trackways include planting native, drought-resistant plants; using low-flow fixtures; increasing pervious surfaces with porous paving and unit pavers; capturing surface flows with bioretention basins and rain gardens; and using oil-water separators and other filters. These landscape and LID stormwater features, along with implementation of the City of San Jose Grading and Erosion Control Program, would allow for increased groundwater infiltration. Native grasses would expose native soils, and new vegetation zones would slow water, allowing it to percolate into the ground and thus provide increased benefits for groundwater recharge. Therefore, the BART Extension's impact on groundwater supplies and recharge would be *less than significant*, and no mitigation is required.

Impact BART Extension WQ-3: Alter the drainage pattern in a way that causes erosion, siltation, or flooding

Construction

BART Extension construction activities would alter existing drainage patterns and could result in local (onsite), temporary erosion and siltation. Although drainage patterns on the alignment would be altered, drainage would ultimately be improved because of the new drainage systems that would most likely be required to capture drainage as well as the stormwater management measures and LID techniques (e.g., increased pervious surfaces, bioswales, rain gardens) that are being considered for the BART Extension. These features would minimize runoff volumes and the potential for ponding and other drainage issues on site.

Preparation and implementation of the Grading and Erosion Control Program and the SWPPP would reduce the potential for substantial erosion or siltation onsite or offsite as well as flooding onsite or offsite as a result of altering existing drainage patterns. This would also reduce the potential for substantially increasing the rate or amount of runoff to a level that would result in substantial erosion, siltation, or flooding onsite or offsite. The BART Extension would be in compliance with existing NPDES permits and City of San Jose and City of Santa Clara stormwater permits and regulations. Additionally, construction of the BART Extension would not involve work within surface waters and, therefore, would not alter the course of an existing stream or river. The impact would be *less than significant*, and no mitigation is required.

Operation

Operation of the BART Extension would require soil stabilization (e.g., vegetation, other protective cover, stabilized slopes and fills) in accordance with the post-construction requirements included in the Construction General Permit and the Phase II MS4 NPDES Permit. Other applicable NPDES requirements and municipal codes would be applied when facilities are built within other agencies' fee owned right-of-way (for example, City streets and/or Caltrans jurisdiction) and when constructing facilities that would be subject to the Industrial General Permit (for example, the Newhall Maintenance Facility), which would reduce erosion and sediment transport. Because of the increase in impervious surface area relative to existing conditions, there would be an increased potential for erosion and siltation with respect to the drainage characteristics of the BART Extension. The BART Extension would not alter the course of an existing stream or river because operation of the BART Extension would occur underground. Therefore, implementation of the BART Extension would have a less-than-significant impact with regard to resulting in substantial erosion or siltation through alterations to existing drainage patterns. A new drainage system may be required to capture stormwater from the alignment. This would apply to all BART Extension locations. In addition, BMPs and LID measures would be implemented to minimize erosion, siltation, and/or flooding (WRECO 2017~~6~~a).

Because the BART Extension would ultimately reduce the risk of flooding by incorporating LID measures, such as bioretention areas, the BART Extension would not result in flooding onsite or offsite as a result altering existing drainage patterns or substantially increasing the rate or amount of runoff. Therefore, it would also prevent substantial erosion or siltation through alterations to existing drainage patterns associated with increased flood flows. In addition, the BART Extension would not alter the course of an existing stream or river. The impact would be *less than significant*, and no mitigation is required.

Impact BART Extension WQ-4: Exceed the capacity of existing or planned stormwater drainage systems or provide sources of polluted runoff

New and renovated facilities would be drained by a combination of existing, new, and modified storm drains. Although the BART Extension would increase total impervious surface area relative to existing conditions, drainage improvements and LID measures would be implemented that would ultimately reduce the volume of stormwater runoff into the storm drain system.

The final design for the stormwater management and storm drainage system would be required to meet several criteria (e.g., Phase II MS4 Permit criteria, 100-year flood criteria) to ensure sufficient storm drain capacity. Therefore, runoff due to the BART Extension would not exceed the capacity of existing or planned stormwater drainage systems. This impact would be *less than significant,* and no mitigation is required.

Impact BART Extension WQ-5: Create a flood hazard or impede floodflows

Construction activities could impede or redirect localized floodflows. However, there would be minimal fill in the floodplain. Minimization measures at the Alum Rock/28th Street Station would include balancing pre-fill and post-fill in the floodplain to minimize the amount of fill and prevent flood storage from being lost. The floodflow pattern would be maintained as much as possible by incorporating and providing a flow-through area in the station campus. Storage and detention would be proposed as necessary to make up for storage lost. The alignment is currently developed or zoned for development; therefore, the Extension would not significantly change the land use (WRECO 2017~~6~~b).

Some of the staging areas would be within the base floodplains. However, these areas would be used only temporarily during construction of the BART Extension. It is anticipated that they would not result in permanent impacts on the base floodplain; therefore, mitigation is not required.

Five of the station options (Alum Rock/28th Street Station, Downtown San Jose Station East and West Options, and Diridon Station South and North Options) would be underground and therefore would not extend into floodplain. The Santa Clara Station would be aboveground. However, the Santa Clara Station would be within flood Zone X (shaded [an area of moderate flood hazard]), and no BART Extension features would be within the 100-year floodplain. The track alignment would not encroach upon any base floodplains because it

would not be within any base floodplain areas or would be underground. There would be *no impacts* on the base floodplain.

Station entrances and access points should be 6 inches to 1 foot above the base flood elevation of 89 feet (North American Vertical Datum of 1988 [NAVD 88]). In addition, the location of electrical, communication, and other critical facilities would be above the 0.2 percent floodplain elevation. With the minimization measures mentioned above (e.g., balancing fill and storage capacity, providing a flow-through area to ensure the floodflow is maintained), mitigation measures would not be required at the Alum Rock/28th Street Station (WRECO 2017~~6~~b).

The BART Extension would ultimately reduce the risk of flooding through incorporation of pervious landscaping, bioretention areas, and stormwater infrastructure improvements. Therefore, the BART Extension would not create a flood hazard or impede floodflows, the impact would be *less than significant*, and no mitigation is required.

Impact BART Extension WQ-6: Expose people or structures to a risk of flooding

The BART Extension be designed to withstand a 10 percent annual storm event, and specific facilities shall be designed to withstand 1 percent and 0.2 percent annual storm events, as required by BART Facility Standards (Bay Area Rapid Transit 2011). Critical facilities would be set a minimum of 1 foot above the 0.2 percent water surface elevation and have an overland flood release path that would result in no more than 1 foot of ponding, which is required for critical facilities including traction power substations, gap breaker stations, train control and communications buildings, and ventilation shaft openings. The retained cut sections, retained fill sections, station entrances, and access points should have a freeboard of 6 inches to 1 foot above the base flood elevation. Where the locations of critical facilities are not above the 0.2 percent flood elevation, the facilities would be raised above the 0.2 percent floodplain level (WRECO 2017~~6~~b).

The Newhall Maintenance Facility is a critical facility and therefore would be designed in accordance with the standards and requirements for critical facilities. The facility would be within Zones D and X (shaded), areas that are not considered part of a base floodplain. Minimization measures would be implemented at the Alum Rock/28th Street Station (e.g., balancing fill and storage capacity, providing a flow-through area) to ensure that floodflow is maintained (WRECO 2017~~6~~b). Therefore, there would be no floodplain impacts as a result.

The Santa Clara Station would add approximately 4.61 acres of structures in Zone X (shaded), an area of moderate flood hazard, and approximately 0.46 acre of AIA to the floodplain. However, the BART Extension would remove the adjacent building that currently occupies approximately 3.42 acres, also within the same floodplain. The Downtown San Jose Station East and West Options and Diridon Station South and North Options would be underground. These stations, as well as the Santa Clara Station, which would be aboveground, would not be within a Special Flood Hazard Area or 100-year floodplain. Therefore, there would be no risk of exposing people or structures to flooding.

SCVWD, in cooperation with the Natural Resources Conservation Service and the Guadalupe Coyote Resource Conservation District, proposed an approximately 4.4-mile-long section of Lower Silver Creek, between its confluence with Coyote Creek and Lake Cunningham, for flood protection related to a 1 percent annual chance event. Construction of Reach 1 through Reach 3 of this six-reach flood control project was completed in 2006. A Hydrologic Engineering Centers River Analysis System model was developed by SCVWD in 2003 for the *improvement in progress* condition of Lower Silver Creek between Coyote Creek and Interstate 680. The model indicated that a 100-year discharge in Lower Silver Creek would be contained within the creek channel (Earth Tech 2003). Therefore, the area northeast of the US 101/Lower Silver Creek crossing is no longer within a floodplain. However, the area south of Lower Silver Creek remains within the base floodplain because this area is within the blended floodplain of both Lower Silver Creek and Coyote Creek and the BART Extension would comply with the San Jose floodplain ordinance. Work on Reaches 4 through 6 is ongoing and will run through December 2017. Upon completion of the work along all six reaches of Lower Silver Creek and Lake Cunningham, SCVWD and the City of San Jose will be able to demonstrate to FEMA that all homes and businesses that were subject to a 1 percent annual chance flood from Lower Silver Creek have been protected (WRECO 2017~~6~~b).

The BART Extension would ultimately reduce the risk of flooding with incorporation of pervious landscaping, bioretention areas, and stormwater infrastructure improvements. Therefore, the BART Extension would not expose people or structures within a 100-year flood hazard area to a risk of flooding. The impact would be *less than significant*. No mitigation measures are required.

6.15.5.3 BART Extension with TOJD Alternative

Impact BART Extension + TOJD WQ-1: Degrade water quality or violate water quality standards

Construction

The construction impacts of the BART Extension with TOJD Alternative would be similar to those discussed in Impact BART Extension WQ-1, above, and Mitigation Measure BIO-CNST-D (Chapter 5, Section 5.5.4, *Biological Resources and Wetlands*) would be implemented. No further mitigation is required. Potential water quality impacts from construction activities would be *less than significant*.

Operation

The BART Extension with TOJD Alternative would result in approximately 138.5 acres of DSA. Approximately 46.19 acres would be net AIA due to new buildings and parking lots associated with the BART Extension with TOJD Alternative (WRECO 2017~~6~~a). Table 6.15-3 provides a summary of changes to impervious and pervious areas by watershed and BART Extension with TOJD Alternative feature and option.

Table 6.15-3: Added Impervious Area by Watershed

Watershed	BART Extension with TOJD Alternative Features	Feature Type	Total Impervious Area per Feature (acres)	Net Added Impervious Area (acres)	DSA[c]
BART Extension					
Coyote Creek	Mabury Road and US 101 CSA	CSA[a]			25.25
Lower Silver Creek	Alum Rock/28th Street Station	Station	9.25	2.54	17.68
	Alum Rock/28th Street Station CSA	CSA			3.31
Guadalupe River	Downtown San Jose Station East Option	Station	0.77	0.10	10.42
	Downtown San Jose Station West Option	Station	0.40	0.03	8.35
	Newhall Maintenance Facility		43.86[a]	41.86	46.93
	Santa Clara Station	Station	3.59	0.46	13.04
Los Gatos Creek	Diridon Station South Option	Station	3.47	Negligible	10.67
	Diridon Station North Option	Station	3.14	Negligible	10.49
TOJD					
Lower Silver Creek	Alum Rock/28th Street Station	TOJD	5.09	0.77	
Guadalupe River	Santa Clara and 13th Street Ventilation Facility	TOJD	1.15[a]	0.11	1.15
	Downtown San Jose Station East Option	TOJD	3.17	0.11	
	Downtown San Jose Station West Option	TOJD	0.35	0.10	
	Stockton Avenue Ventilation Facility[b]	TOJD	1.73	Negligible	1.73
	Santa Clara Station	TOJD	3.53	0.11	
Los Gatos Creek	Diridon Station South Option	TOJD	2.24	Negligible	
	Diridon Station North Option	TOJD	2.24	Negligible	

[a] Assumed entire construction staging area (CSA) is impervious.
[b] Utilized largest of the three lots for analysis.
[c] DSA is the entire CSA; it was not divided into station and TOJD.

Regulatory requirements similar to those discussed under Impact BART Extension WQ-1 would be implemented. The BART Extension with TOJD Alternative would also be required to comply with the Phase II MS4 Permit as outlined in Mitigation Measure WQ-A. VTA's *Stormwater and Landscaping Design Criteria Manual* would apply to VTA-managed facilities and includes methods to help evaluate, during the planning phase, whether sufficient land area has been allocated for stormwater treatment. The estimated biotreatment surface area for the different BART Extension with TOJD Alternative features is provided in Table 6.15-4. The total biotreatment surface area required is approximately 139,000 square feet for the BART Extension with TOJD Alternative, which includes impervious areas for the

BART Extension, related service roads, and TOJD sites (WRECO 2017~~6~~a) and would vary depending on the station options chosen. Therefore, potential surface water quality impacts from BART Extension with TOJD Alternative operations would be *less than significant*.~~,~~ ~~and~~ ~~n~~No further mitigation is required.

Table 6.15-4: Estimated Biotreatment Area

BART Extension with TOJD Alternative Features and Options	Total Impervious Area (acre)	Simplified Sizing Method Treatment Area (square feet)
Alum Rock/28th Street Station	9.25	16,117
Downtown San Jose Station East Option	0.87	1,516
Downtown San Jose Station West Option	0.43	749
Diridon Station South Option	3.47	6,046
Diridon Station North Option	3.14	5,486
Newhall Maintenance Facility	43.86	76,422
Santa Clara Station	4.05	7,057
TOJD Sites		
Alum Rock/28th Street Station	5.86	10,210
Santa Clara and 13th Street Ventilation Facility	1.15	2,004
Downtown San Jose Station East Option	3.17	5,523
Downtown San Jose Station West Option	0.35	610
Diridon Station South Option	2.24	3,903
Diridon Station North Option	2.24	3,903
Stockton Avenue Ventilation Facility	1.73	3,014
Santa Clara Station	3.53	6,151

Impact BART Extension + TOJD WQ-2: Deplete groundwater supplies or interfere with groundwater recharge

Construction

Regulatory requirements, construction activities, ~~and~~ impacts on groundwater supplies and recharge, and mitigation (Mitigation Measure HAZ-CNST-A) would be similar to those discussed under Impact BART Extension WQ-2. There would be no potential for reducing the volume of water in the local aquifer table, and impacts on groundwater supplies from construction activities would be *less than significant*. No further mitigation is required.

Operation

Regulatory requirements and operational impacts on water supplies and recharge would be similar to those discussed under Impact BART Extension WQ-2. Therefore, the BART Extension with TOJD Alternative's impact on groundwater supplies and recharge would be *less than significant*, and no mitigation is required.

Impact BART Extension + TOJD WQ-3: Alter the drainage pattern in a way that causes erosion, siltation, or flooding

Construction

Regulatory requirements, construction activities, and impacts on the drainage pattern would be similar to those discussed under Impact BART Extension WQ-3. Construction of the BART Extension with TOJD Alternative would not involve work within surface waters; it would not alter the course of an existing stream or river. Therefore, impacts would be *less than significant*. No mitigation is required.

Operation

Operational impacts on groundwater supplies and recharge would be similar to those discussed under Impact BART Extension WQ-3. Impervious surfaces would increase by approximately 46.19 acres following BART Extension with TOJD Alternative development. The increase in impervious area has the potential to affect water quality permanently, thereby possibly increasing the volume and velocity of stormwater discharges. New drainage systems may be required to capture drainage from the BART Extension with TOJD Alternative. This would apply to all BART Extension with TOJD Alternative locations. In addition to the BMPs and LID measures noted under Impact BART Extension WQ-3, BMPs and LID measures would be implemented to minimize erosion, siltation, and/or flooding (WRECO 2017~~6~~a).

The regulatory requirements discussed under Impact BART Extension WQ-3 would also be implemented. The BART Extension with TOJD Alternative would not alter the drainage pattern in a way that would cause erosion, siltation, or flooding. The impact would be *less than significant*, and no mitigation is required.

Impact BART Extension + TOJD WQ-4: Exceed the capacity of existing or planned stormwater drainage systems or provide sources of polluted runoff

Construction activities and operational impacts on the capacity of existing or planned stormwater drainage systems would be similar to those discussed under Impact BART Extension WQ-4. Runoff due to the BART Extension with TOJD Alternative would not exceed the capacity of existing or planned stormwater drainage systems. This impact would be *less than significant*, and no mitigation is required.

Impact BART Extension + TOJD WQ-5: Create a flood hazard or impede floodflows

Construction activities and operational impacts related to flood hazards or impeding floodflows would be similar to those discussed under Impact BART Extension WQ-5. Runoff due to the BART Extension with TOJD Alternative would not exceed the capacity of existing or planned stormwater drainage systems. This impact would be *less than significant*, and no mitigation is required.

Impact BART Extension + TOJD WQ-6: Expose people or structures to a risk of flooding

Construction activities and operational impacts that would expose people or structures to a risk of flooding would be similar to those discussed under Impact BART Extension WQ-6. In addition to the structures noted under Impact BART Extension WQ-6, TOJD structures have the potential to be placed within a floodplain.

The Alum Rock/28th Street Station TOJD would be within the Alum Rock/28th Street Station campus, which occupies approximately 5.09 acres and is entirely within the floodplain of Coyote Creek/Lower Silver Creek. However, the BART Extension with TOJD Alternative would remove adjacent buildings that currently occupy approximately 1.07 acres, also within the same floodplain. The BART Extension with TOJD Alternative would add approximately 0.77 acre of AIA to the floodplain area. As discussed under Impact BART Extension WQ-6, upon completion of the work along all six reaches of Lower Silver Creek and Lake Cunningham, SCVWD and the City of San Jose will be able to demonstrate to FEMA that all homes and businesses that were subject to a 1 percent annual chance flood from Lower Silver Creek have been protected. However, the BART Extension with TOJD Alternative would remain within the base floodplain because this area is within the commingled floodplain of both Lower Silver Creek and Coyote Creek and would comply with the San Jose floodplain ordinance. ~~In addition, m~~Minimization measures would be implemented at the Alum Rock/28th Street Station (e.g., balancing fill and storage capacity, providing a flow-through area) to ensure that floodflow is maintained. In accordance with the San Jose floodplain ordinance within Zones AH and AO adequate drainage paths around the structures to guide floodwaters around and away from the structure would be proposed. The same minimization measures for Alum Rock/28th Street Station should be used for the Alum Rock/28th Street Station TOJD. These include minimizing fill in the floodplain, maintaining flood storage capacity, and proposing that the floor elevation of all buildings should be above the base flood elevation of 89 feet (NAVD 88) as stated in the San Jose floodplain ordinance. The area of the structures within the base floodplain would be insignificant compared with the overall floodplain area for Coyote Creek/Lower Silver Creek (approximately 28,160 acres) (WRECO 2017~~6~~b). Therefore, the BART Extension with TOJD Alternative would not significantly change the base floodplain water surface elevation at this location. Floodplain impacts as a result of the BART Extension with TOJD Alternative would be minimal at the Alum Rock/28th Street Station TOJD. No mitigation measures are required.

The Santa Clara Station (South and North Option) TOJD would be within the station campus. The TOJD would be within Zone X (shaded), an area with a moderate flood hazard, and the 0.2 percent floodplain. However, improvements to the Guadalupe River would increase the capacity of the river. Once all improvements under the Upper Guadalupe Project have been completed, SCVWD and the City of Santa Clara will be able to demonstrate to FEMA that the area has been protected (WRECO 2017~~6~~b). There would be no base floodplain impacts as a result of the BART Extension with TOJD Alternative at this location. Mitigation is not required.

The Santa Clara and 13th Streets Ventilation Facility TOJD, the Downtown San Jose Station East Option TOJD, the Downtown San Jose Station West Option TOJD, the Diridon Station South Option TOJD, the Diridon Station North Option TOJD, and the Stockton Avenue Ventilation Facility TOJD would be within Zone D, an area where flooding is undetermined but possible. Flood Zone D is not considered a base floodplain. Therefore, no structures would be placed within a base floodplain as a result of the BART Extension with TOJD Alternative at this location. The BART Extension with TOJD Alternative would not expose people or structures within a 100-year flood hazard area to a risk of flooding. The impact would be *less than significant*, and no mitigation is required.

6.15.6 CEQA Conclusion

Implementation of Mitigation Measures WQ-A and HAZ-CNST-A and adherence to City of Santa Clara and City of San Jose General Plan policies, a SWPPP, the Construction General Permit, and VTA's *Stormwater and Landscaping Design Criteria Manual* as applicable would reduce potential effects related to water quality, groundwater supply or recharge, drainage patterns, erosion, flood risk, and water resources to a *less-than-significant* level for both the BART Extension Alternative and BART Extension with TOJD Alternative.

The potential for implementation of Mitigation Measure WQ-A to result in secondary impacts is low. No impacts would occur.