CHAPTER 4.0 CUMULATIVE EFFECTS

This EIS/EIR provides an analysis of overall cumulative effects of the Build Alternatives and Design Options taken together with other past, present, and probable future projects producing related effects, as required by the State CEQA Guidelines (14 California Code of Regulations [CCR] Section 15130) and "reasonably foreseeable" future projects under NEPA implementing regulations (40 Code of Federal Regulations [CFR] 1508.7). The purpose of this analysis is twofold: first, to determine whether the overall long-term effects of all such projects would be cumulatively adverse and second, to determine whether the project itself would cause a "cumulatively considerable" (and thus adverse) incremental contribution to any such cumulatively adverse effects (see State CEQA Guidelines [CCR Sections 15064(h), 15065(c), 15130(a), 15130(b), and 15355(b)]. In other words, the required analysis first creates a broad context in which to assess the Project's incremental contribution to anticipated cumulative effects, viewed on a geographic scale well beyond the Project itself. The analysis then determines whether the Project's incremental contribution to any adverse cumulative effects from all projects is itself adverse (i.e., "cumulatively considerable"). Chapter 4.0 presents the discussion of cumulative effects according to the presentation of each issue area identified in Chapter 3.0.

4.1 REGULATORY FRAMEWORK

4.1.1 NEPA Guidance

The CEQ regulations implementing provisions of NEPA define cumulative effects as "the effect on the environment which results from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative effects can result from individually minor, but collectively adverse, actions over time (40 CFR 1508.8). They are caused by the incremental increase in total environmental effects when the evaluated project is added to other past, present, and reasonably foreseeable future actions. Cumulative effects can thus arise from causes that are totally unrelated to the project being evaluated, and the analysis of cumulative effects looks at the life cycle of the effects, not the project at issue.

4.1.2 CEQA Guidance

Cumulative effects are defined in the CEQA Guidelines (CCR Section 15355) as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental effects." A cumulative effect occurs from "the change in the environment which results from the incremental effect of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative effects can result from individually minor but collectively adverse projects taking place over a period of time" (CCR Section 15355[b]).

Consistent with the CEQA Guidelines (CCR Section 15130[a]), the discussion of cumulative effects in this EIS/EIR focuses on adverse and potentially adverse cumulative effects. The CEQA Guidelines (CCR Section 15130[b]) state that:

> The discussion of cumulative effects shall reflect the severity of the effects and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness, and should focus on the cumulative effect to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative effect.

Methodology

There are several steps involved in analyzing cumulative effects. The initial steps involve analyzing direct and indirect effects, followed by the application of those results to cumulative effects. These steps are generally outlined below:

- Establish the geographic scope for the analysis used to analyze project-level and cumulative effects.
- Characterize the thresholds of significance that are relevant to the resource issue areas.
- Identify the effects associated with the proposed action. If there are no direct or indirect effects of the project on a resource or discipline area then there cannot be any cumulative effects.
- Identify other actions affecting the resource issue areas of concern. This includes consideration of past, present, and reasonably foreseeable future related projects.
- Determine the magnitude and significance of cumulative effects. Significance determinations are related back to the background laid in the methodology section and the thresholds of significance that are relevant to each resource as presented in Chapter 3.
- Identify potential mitigation measures for potential cumulative effects on each environmental resource. Potential mitigation measures could include measures that would avoid, minimize, or mitigate cumulative effects as well as direct and indirect Project-related effects.

4.1.3 Projects Contributing To Potential Cumulative Effects and Study Area

The CEQA Guidelines identify two basic methods for establishing the cumulative environment in which the project is to be considered: the use of a list of past, present, and probable future projects (the “list approach”) or the use of adopted projections from a general plan, other regional planning document, or certified EIR for such a planning document (the “plan approach”). Either of these methodologies also fulfills the NEPA requirements for cumulative effect analysis (CEQ 1997). For this EIS/EIR, a combined list and plan approach have been utilized to generate the most reliable future projections possible for assessing potential cumulative effects.

The RPRP is composed of several components, including new track infrastructure and new stations and layover facilities. To facilitate consideration of these proposed improvements and the corresponding potential direct and indirect effects to adjacent land use, planned and

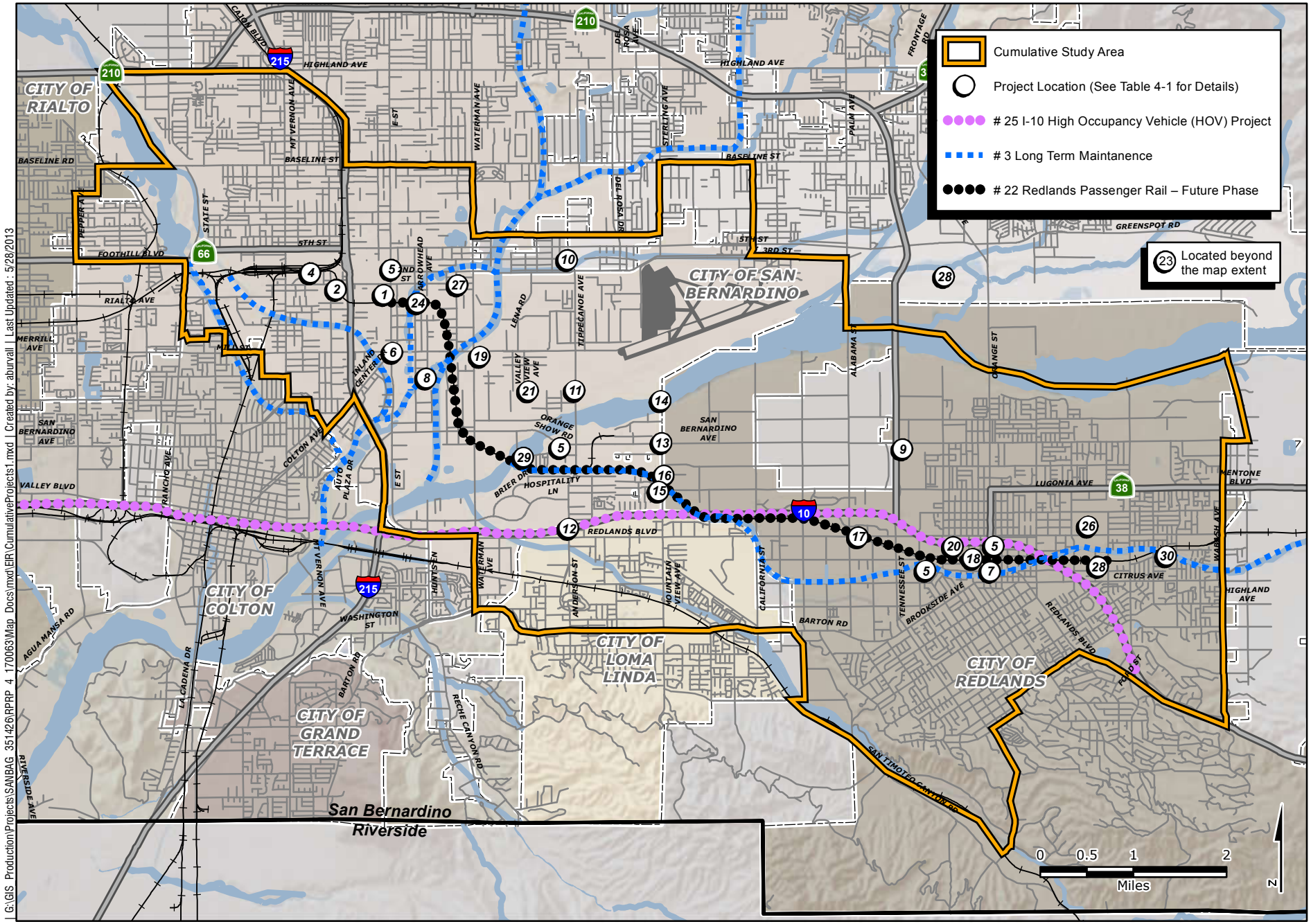
approved development projects in the general vicinity of the cumulative study area are included in the list of projects considered. To facilitate consideration of track-related improvements, including proposed bridge replacements along the railroad corridor, the cumulative analysis also considers known (or planned) infrastructure projects in greater southwestern San Bernardino County, the East Valley Corridor, and larger statewide planning efforts that could substantially influence cumulative operational conditions along the Redlands Corridor (e.g., HST Project).

Different portions of the Build Alternatives and Design Options would affect different geographical areas within the Study Area. In some instances, these effects could combine with other projects adjacent to and outside the Study Area. For this reason, the cumulative analysis considers a broader geographic context as delineated by the Cumulative Study Area as defined in Section 3.1, Introduction to Environmental Analysis. The Cumulative Study Area, as illustrated in Figure 4-1, is based on the Traffic Analysis Zones (TAZs) considered in the traffic impact analysis and was considered the most suitable geographic unit based on the Project's context (e.g., new transit infrastructure). The general geographic area associated with different environmental effects of RPRP defines the boundaries of the Cumulative Study Area used for compiling the list of projects considered in the cumulative effect analysis.

The list of past, present, and probable future projects used for this cumulative analysis is restricted to major development and infrastructure projects in southwestern San Bernardino County. For the purposes of this discussion, the projects that may have a cumulative effect on the resources in the Cumulative Study Area will often be referred to as the "cumulative projects." These projects are identified in Figure 4-1 and Table 4-1 (note that the map numbers identified for each related project in Table 4-1 correspond with the numbers that appear on the map in Figure 4-1). The analysis of cumulative environmental effects associated with the Build Alternatives and Design Options addresses the potential incremental contributions of the RPRP in combination with these related projects. The list of projects in Table 4-1 is not intended to be an all-inclusive list of projects in the region, but rather an identification of larger projects approved or planned in southwestern San Bernardino County that may affect the same resources or geographic area as the RPRP.

4.2 AFFECTED ENVIRONMENT

The cumulative context includes the geographic area, timeframe, and/or type of projects that would contribute to the potential cumulative effect. This context differs for each discipline. Each discipline identifies a relevant geographic area for evaluation of cumulative effects. The geographic range considered for the cumulative analysis can vary based on the resource area. For example, the geographic range over which hydrological or water quality effects (e.g., watershed scale) would occur would not necessarily be the same as the geographic range considered for transportation-related effects (e.g., TAZs). In instances, where the cumulative analysis extends beyond the limits of the cumulative study area, for example to consider effects at a watershed scale, this fact is noted. Table 4-2 presents the general geographic areas associated with the different resources addressed in this EIS/EIR cumulative analysis. As depicted in Figure 4-1, the Cumulative Study Area captures a majority of these projects identified in Table 4-1.



G:\GIS Production\Projects\SANBAG 351426\RPRP 4 170063\Map Docs\mxd\EIR\CumulativeProjects1.mxd | Created by: aburvall | Last Updated : 5/28/2013

HDR
ONE COMPANY | *Many Solutions*℠

Cumulative Projects Map

Figure 4-1

FTA/SANBAG | Redlands Passenger Rail Project | EIS/EIR

Table 4-1. Cumulative Projects

	Project Title	Project Description	Location	Related Effects	Schedule
1	Local Omnitrans Bus Service	Existing bus services include 12 local bus routes (1, 2, ¾, 5, 7, 8, 9, 10, 11, 14, 15, and 215).	Throughout San Bernardino.	• Air quality • Noise • Roadway traffic	Existing service (see Section 3.3 for additional detail)
2	Downtown San Bernardino Passenger Rail Project SCAG RTP Project #20061012	Extension of Metrolink regional passenger rail service from San Bernardino Santa Fe Depot to new Metrolink stations.	From existing San Bernardino Santa Fe Depot to intersection of Rialto Avenue and E Street in the City of San Bernardino.	• Air quality • Noise • Roadway traffic • Acquisitions	Construction: late 2013 to 2015, operational 2015
3	Long-Term Maintenance of Flood Control and Transportation Facilities Located throughout San Bernardino County	The project includes maintenance of various flood control channels, basins, earthen streams and dams, bridges, and road culvert crossings throughout San Bernardino County. The purpose of the project is flood protection and road safety.	Drainage facilities (March 2010) throughout Zone 2, which includes the City of San Bernardino, and Zone 3 for the City of Redlands,	• Vegetation • Special status species • Wetlands and Waters of the U.S./State • Noise	Notice of Preparation issued in October 2010; Draft EIR release in 2014
4	California High-Speed Train (HST) Project, City of San Bernardino Station option of the Los Angeles to San Diego (via the Inland Empire) SCAG RTP Project #7120010	The City of San Bernardino option of the HST project would operate adjacent to the existing San Bernardino Metrolink line and could include a station(s) adjacent to the rail stations proposed as part of the Preferred Project. Additionally the HST Project would include a new alignment through the southeastern portion of San Bernardino and within the Cumulative Study Area.	Various locations within the Inland Empire, including through San Bernardino.	• Air quality • Noise • Traffic • Cultural Resources (historic structures)	Portions to start construction after 2015 RTP anticipates completion by 2035
5	Transit-Oriented Development – Land Use Updates for the Cities of San Bernardino and Redlands	Increase in land use densities and development to advance forms of transit-oriented development within 0.5 mile of proposed stations in the Redlands corridor.	Cities of San Bernardino, Loma Linda, and Redlands adjacent to the Redlands railroad corridor.	• Air quality • Drainage/ • Utilities Conflicts • Land use compatibility • Traffic • Infrastructure capacity • Noise • Recreation	Planned; timing unknown

Table 4-1. Cumulative Projects

Project Title		Project Description	Location	Related Effects	Schedule
6	Omnitrans sbX Bus Rapid Transit Project SCAG RTP Project #200625	The future planned sbX service/E Street Corridor Project with 16 station locations designed to provide bus rapid transit on rubber tires, with platform-level boarding, and landscaped stations.	E Street corridor right-of-way in San Bernardino.	• Air quality • Noise • Traffic • Acquisitions	Construction in 2012-2014, operational in 2014
7	Downtown General Plan & Specific Plan No. 45 Amendments	This planning project involves revisions to the 1994 Downtown Redlands Specific Plan (1994 Specific Plan), including expansion of its boundaries, modification of its goals, and establishment of a development program that will provide a pedestrian-friendly, amenity-rich, mixed-use environment in both the immediate and long-range future.	Central section of the City of Redlands.	• Air Quality • Utilities Conflicts • Cultural Resources • Traffic • Noise • Recreation • Flooding	Construction of projects within the plan area would be phased gradually over the 15-year timeframe of the planning horizon through the year 2025
8	National Orange Show Industrial Project	Construction of four industrial buildings and 752,770 square feet of building area.	Bounded by Arrowhead Avenue, Esperanza Street, and Central Avenue in San Bernardino.	• Air quality • Noise • Traffic	Timing of construction unknown
9	Redlands Crossing Center	Development of a regional shopping center of approximately 275,500 square feet of commercial retail uses on approximately 23.9 acres. Includes a Walmart store, drive-thru fast food restaurants, retail spaces, retail/gas station and parking.	MP 7.5 South of San Bernardino Avenue and east of SR 210. Southeastern intersection of Tennessee Street and San Bernardino Avenue APNs: 167-141-01, -02, -03, -04	• Air quality • Noise • Traffic • Cultural Resources • Utilities	Construction 2013-2014, operational 2015

Table 4-1. Cumulative Projects

	Project Title	Project Description	Location	Related Effects	Schedule
10	Tippecanoe Avenue Widening, Phase I SCAG RTP Project #201182	Widen from 2 to 4 lanes (0.3 miles).	MP 4.08 to 4.16 From 3rd Street to 5th Street	• Traffic (construction) • Air quality • Noise	RTP does not indicate anticipated construction or operation date
11	Tippecanoe Avenue Widening Project, Phase II RTP Project #20610	Widen from 4 to 6 lanes include median landscape (1.4 miles).	MP 4.16 Between Mill Street and Santa Ana River (SAR) Bridge	• Traffic (construction) • Air quality • Noise	RTP anticipated completion by 2012
12	Interstate 10: Tippecanoe Avenue/Anderson Street Interchange	Widening the freeway eastbound off-ramp to 2 lanes, thereby expanding Tippecanoe Avenue to 4 lanes at the intersection. Widening the Anderson Street/Redlands Boulevard intersection to include 2 through-lanes, 2 left-turn lanes and 1 right-turn lane in each direction. Adding an auxiliary lane on eastbound I-10 between Waterman Avenue and Tippecanoe Ave to facilitate weaving with freeway traffic.	MP 4.20 Tippecanoe Avenue from Lee Street, just south of Hospitality Lane, to just south of I-10.	• Air quality • Noise • Traffic	Construction expected to start by mid-2012 and completed in approximately 18-24 months
13	Mountain View Avenue Widening/Extension Project SCAG RTP Project #200609	Widen southbound from 2 to 4 lanes.	MP 5.16 From Coulston to Riverview (south of the SAR) (Project is split into 2 separate projects)	• Air Quality • Noise • Traffic	Construction 2013-2015, operational 2015
14	Mountain View Avenue Bridge over the SAR SCAG RTP Project #40M0701-2011160	Construct new 4 lane bridge.	MP 5.16 Mountain View currently terminates at south edge of SAR. Project would extend by means of bridge structure across the SAR.	• Biological resources • Waters of the U.S./State • Hydraulics	N/A

Table 4-1. Cumulative Projects

	Project Title	Project Description	Location	Related Effects	Schedule
15	Mountain View Avenue Bridge at Mission Zanja Channel SCAG RTP Project #SBD41317	Widen roadway and shoulder work and existing bridge at Mountain View Avenue to 2 lanes north/south and left turns to make a total of 4 lanes (2 in each direction).	MP 5.16 Mountain View Ave. at bridge.	• Biological resources • Hydrology • Waters of the U.S./State • Water quality (e.g., sedimentation)	RTP anticipates completion by 2018
16	Mountain View Avenue Railway Grade Crossing SCAG RTP Project #SBD41316	Widen railway grade crossing from 1 lane north and south to 2 lanes north and south and upgrade gates (0.75 miles).	MP 5.16 1500 feet north of I-10.	• Air Quality • Noise • Traffic	Planned; timing unknown
17	I-10/ Alabama and Redlands Boulevard and Alabama-Colton Intersection Improvements SCAG RTP Project #20081704	Widen intersection approaches on all four legs of Redlands Boulevard/Alabama Street. Alabama Street intersection and add dual left turn lanes. Realign Alabama Street on north side of intersection to eliminate the 23' horizontal offset at intersection.	MP 7.29-7.47 Redlands Boulevard/Alabama Street Intersection	• Air Quality • Noise • Traffic	RTP does not indicate anticipated construction or operation date
18	Redlands Park Once – Parking Structure	Downtown parking structure north of the rail tracks between Eureka Street and Orange Street. Access to the structure will be from Stuart Avenue. City of Redlands has expressed desire to open new pedestrian crossing across the tracks, crossing can not go underground but will either be at grade or elevated.	MP 8.7 North of the rail tracks between Eureka Street and Orange Street.	• Air Quality • Cultural Resources • Noise • Traffic	2014-2016
19	Cott Beverage Industrial Warehouse	Development of an approximately 345,802 square feet warehouse and industrial and assembly and distribution plant. Project would require the demolition of an existing self-storage facility located on site.	601-650 Waterman Avenue, southeast corner of Waterman Avenue and Mill Street in the City of San Bernardino.	• Air quality • Noise • Traffic	Initial Study dated March 2012

Table 4-1. Cumulative Projects

	Project Title	Project Description	Location	Related Effects	Schedule
20	Redlands Promenade	Development of a 149,800 square feet commercial center including stores, restaurants and offices.	South of Interstate 10 and west of Eureka Street.	• Air Quality • Noise • Traffic	Timing of construction is unknown
21	Central Avenue Corridor Storm Drain Improvements and Utility Master Plan	The Inland Valley Development Agency proposes the improvement of their existing roads and infrastructure as part of the master planned development of the Inland Empire Goods Movement Bill.	Project site encompasses area south of Mill Street, west of Tippecanoe Avenue, north of Orange Show Road, and east of Waterman Avenue.	• Air Quality • Noise • Traffic	Planned; timing unknown
22	Redlands Passenger Rail – Future Phase	Construction of additional stations and double tracking along the Redlands Corridor. New stations could be constructed at Mill Street, Mountain View Avenue, California Street, and/or Alabama Street. Future extensions to connections outside the railroad corridor are considered remote and speculative.	Redlands Corridor.	• Air Quality • Noise • Traffic • Biology • Hydrology • Acquisitions	Planned; timing unknown
23	Opal Basin	Construction of a basin that will hold more than 208 million gallons of water. This facility is located to the east of the Cumulative Study Area and beyond the extent of Figure 4-1.	City of Redlands. Site is bounded by Opal and Citrus Ave. and Walnut St.	• Hydrology • Flood Control • Biology	Planned; timing unknown
24	Arrowhead Parking Lot	Provide temporary parking for the construction workers of the new Justice Center at Third Street and Arrowhead Avenue.	MP 1.3, southeast corner of Rialto Avenue and Arrowhead Avenue	• Hydrology • Flood Control	Constructed by March 2014 and would last 2 years before being removed
25	I-10 High Occupancy Vehicle (HOV) Project SCAG RTP Project #OC2500	Extension of carpool lanes, widen outside existing lanes, pave medians, widen several existing under-crossings, rebuild over-crossings, construct a concrete median barrier, improve drainage and add auxiliary lanes.	MP 5.61/9.45. I-10 between Haven Avenue in Ontario and Ford Street in Redlands	• Hydrology • Transportation	Environmental Review Process started in 2012; construction anticipated in 2020

Table 4-1. Cumulative Projects

	Project Title	Project Description	Location	Related Effects	Schedule
26	University of Redlands Campus Facilities Master Plan	Link the campus across the Zanja Creek and the ridge that stretches from Duke Hall to the Alumni House.	MP 9.8. University of Redlands	• Hydrology	Draft Master Plan anticipated by 2014
27	Dominguez Elementary School	Construction of a new elementary school on a 13-acre site. The school will include 3 new buildings, 16 general classrooms, administration building, playground, and special education classroom.	Southwest corner of S. Waterman Avenue and Rialto Avenue in City of San Bernardino		Currently under construction, operational in 2014
28	San Bernardino Valley Water Conservation District, Upper Santa Ana River (SAR) Wash Land Management and Habitat Conservation Plan	This project would allow the BLM to exchange public lands located within the Santa Ana River Wash Area of Critical Environmental Concern (ACEC) for District-owned lands in San Bernardino County, and would amend existing Santa Ana River Wash ACEC management prescriptions outlined in the South Coast Resource Management Plan.	Santa Ana River Wash Plan Area beginning at the mouth of the SAR Canyon at Greenspot Road and extends westward to Alabama Street.	• Air Quality • Geology/ Soils • Hydrology/ Flooding • Biology • Land Use • Transportation • Cultural Resources	After 2013
29	Santa Ana River (SAR) Trail	This project involves the construction of the multi-use SAR Trail along the eastern bank of the SAR at the location of Bridge 3.4.	MP 3.5 Santa Ana River	• Parks and Recreation • Access • Noise • Flooding	Construction planned for 2015-2017
30	Orange Blossom Trail	Trail proposed and in design to the east of Lincoln Street. Other segments planned parallel to the railroad corridor along the Mission Zanja Flood Control Channel from Mountain Avenue to California Street and between the limits of Church Street and the eastern project terminus.		• Parks and Recreation • Access • Noise	Planned; schedule unknown

Table 4-2. Geographic Scope of Cumulative Effects

Resource Issue	Geographic Area
Land Use, Planning, and Communities	City of Redlands, City of San Bernardino, City of Loma Linda
Transportation	Transit Analysis Zones; subarea of the San Bernardino Valley Focus Model (SBVFM)
Visual Quality and Aesthetics	Southwestern San Bernardino County, City of Redlands, City of San Bernardino
Air Quality, Greenhouse Gases, and Global Climate Change	South Coast Air Basin, global
Noise and Vibration	Railroad corridor and immediate vicinity
Biological and Wetland Resources	Railroad corridor, the SAR Watershed with focus on the Santa Ana River and Mission Zanja Channel
Floodplain, Hydrology, and Water Quality	SAR watershed, Mission Zanja Channel, Mission Storm Drain, Mill Creek Zanja
Geology, Soils, and Seismicity	Railroad corridor and immediate vicinity
Hazardous Waste and Materials	Railroad corridor and immediate vicinity
Energy	Local, regional
Cultural and Historic Resources	City of San Bernardino and City of Redlands
Parklands and Community Services and Facilities	Regional and local facilities
Economic and Fiscal Impacts	San Bernardino County, City of Redlands, and City of San Bernardino
Safety and Security	Local, regional
Section 4(f)	City of San Bernardino and City of Redlands
Environmental Justice	City of Redlands, City of Loma Linda, City of San Bernardino

Cumulative Effects

The following section discusses the potential for the Project to result in cumulatively considerable effects together with the related projects and regional development for each of the environmental issue areas evaluated in Chapter 3. It should be noted that the cumulative effects of implementing the Project, including the Build Alternatives or Design Options, would be substantially similar; therefore, this cumulative analysis uses the term “Project” to collectively refer to the build alternatives and design options. However, in situations where cumulative effects differ substantially among the Build Alternatives and Design Options, separate discussions are included for the Alternative and/or Design Option to denote this finding.

4.3 ENVIRONMENTAL IMPACTS/ENVIRONMENTAL CONSEQUENCES

4.3.1 Land Use, Planning, and Communities

EFFECT 4.3-1	**Land Use, Planning, and Communities.** The Project in conjunction with past, present, and future projects would result in cumulatively considerable adverse effects related to the division and/or disruption of communities.

NO BUILD ALTERNATIVE

The No Build Alternative would not result in changes to established communities; however, it would not increase mobility or decrease traffic congestion, especially in future years. Cumulative projects, particularly development projects and land use intensification along the railroad corridor, are also expected to contribute to the region-wide traffic congestion. As discussed in Section 3.2, Land Use,Planning, and Communities, the No Build Alternative would not be consistent with federal, state, regional, and local land use policies and regulations that promote integration of transportation and land use planning together to create more sustainable communities. In particular, the No Build Alternative would be inconsistent with the 2012 RTP/SCS, which identifies the railroad corridor as a high quality transit corridor and specifically calls for passenger rail service between the City of San Bernardino and Redlands. Because the RTP predicts that traffic will continually worsen in the absence of additional capacity, the No Build Alternative would incrementally contribute to deteriorating access and mobility within the San Bernardino region. Based on these inconsistencies with regional plans and policies, the No Build Alternative would result in an adverse effect that would be cumulatively considerable under NEPA. This inconsistency is considered a cumulatively significant impact under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Temporary Land Use Conflicts

Potential construction-related cumulative effects on land use and development would be similar for each of the Build Alternatives and Design Options. The Project along with other cumulative projects could result in temporary disruptions in community cohesion or connectivity, including access disruptions or temporary road closures. As presented in Table 4-1, Project construction could occur concurrent with multiple planned projects along the railroad corridor, including the Central Avenue Drainage Improvements, Alabama Street Intersection Improvements, Redlands Master Plan, and Redlands Park Once which are planned to begin construction in or shortly after 2015. RTP projects, including the Tippecanoe Avenue Widening Project and Mountain View Avenue Widening Project, are identified as financially constrained projects and will depend on the availability of funding sources to be completed. If funding sources are obtained, there is a potential that these RTP projects could begin construction concurrent with the Project. Implementation of Mitigation Measure TR-1 (Prepare a Traffic Management Plan) as identified in Section 3.3 Transportation, would require SANBAG's construction contractor to prepare a Traffic Management Plan, which would reduce construction related adverse effects to the local roadway network along with non-motorized forms of transportation (e.g., bicycle, pedestrians, etc.). Compliance with this mitigation would require the contractor to coordinate construction activities with local jurisdictions to maximize opportunities for concurrent construction.

Additionally, construction activities and supporting staging areas may require temporary, intermittent street and sidewalk closures in the immediate vicinity of the railroad corridor. This could temporarily inhibit, but not eliminate, access to adjacent parcels. Further, based on the up to three year duration of construction, staging areas for multiple projects could be perceived as incompatible with adjacent land uses based on related nuisances. Although these adverse effects would be temporary, when combined with other projects, they would be cumulatively considerable under NEPA. Under CEQA, this cumulative impact is considered significant. Mitigation Measures TR-1 and VQA-1 (Screening of Construction Staging Areas), as identified in Section 3.4, Visual Quality and Aesthetics, and NV-1 (Employ Noise-Reducing Measures during Construction) and NV-2 (Prepare a Community Notification Plan for Project Construction) as identified in in Section 3.6, Noise and Vibration, are proposed to minimize or avoid these adverse effects such that they would no longer be cumulatively considerable.

Long-Term Compatibility with Adjacent Uses

Implementation of the Project and other projects listed in Table 4-1 and identified in the 2012-2035 RTP/SCS would affect a number of land uses adjacent to the railroad corridor. In general, land uses within 150 feet of transportation improvements could experience some kind of land use impact; although existing commercial and industrial uses would be less sensitive to these transportation projects. As described in Section 3.2, Land Use, Planning, and Communities, the Project could create nuisance conditions for adjacent land uses (i.e., University of Redlands, nearby schools, Sylvan Park, and low and high-density residential areas) through a variety of mechanisms. These may include changes in the visual character of adjacent areas as a result of the external appearance of Project-related facilities and new sources of nighttime lighting (e.g., security lighting). Additionally, mitigation proposed in the form of sound barriers would incrementally add to these adverse effects. Other projects, such as the I-10 HOV Project, in the vicinity could also incrementally add to these changes. These adverse effects would be cumulatively considerable under NEPA. Under CEQA, these impacts are considered cumulatively significant. Mitigation Measures VQA-1, VQA-2 (Enhance Exterior Appearance of Structural Facilities), VQA-4 (Sound Barrier Screening and Surface Treatments), and VQA-5 (Minimize Exterior Lighting in Adjacent Uses) are proposed minimize land use incompatibilities with adjacent residential uses,

Likewise, train operations would result in increases in ambient noise levels within the Study Area. Other transportation projects proposed in the Project vicinity, such as the I-10 HOV Project and various roadway improvements, including those to Mountain View Avenue and Tippecanoe Avenue could incrementally add to these noise level increases through higher traffic speeds. These adverse effects would be cumulatively considerable under NEPA. Under CEQA, these impacts are considered cumulatively significant. Mitigation Measures NV-3 (Establish Quiet Zones), NV-4 (Construct Sound Barriers), NV-5 (Wayside Rail Lubrication), and NV-6 (Use Ballast Mats, Resiliently Supported Ties, or Measures of Comparable Effectiveness on Portions of the Rail near Sensitive Receivers) are proposed to minimize adverse effects to land use compatibility. The implementation of these measures in conjunction with the fact that these uses have developed adjacent to and subsequently to the development of the railroad corridor, these effects would not be cumulatively considerable.

Division of Established Communities

The existing railroad corridor represents a known quantity within the Cities of San Bernardino and Redlands with various land uses developing adjacent to the corridor as growth has progressed within the area over the last 100 years. The railroad corridor presents a physical separation in land use under existing conditions and with the implementation of the Project, this

condition would not change. Although fencing would be installed along the railroad corridor to limit access across the tracks for safety purposes, the fencing would not obstruct visibility across the railroad corridor thereby maintaining a visual connection between uses adjacent to the corridor. Additionally, since entering SANBAG's right-of-way (ROW) without proper authorization is considered trespassing under existing conditions, the placement of fencing would not otherwise further limit legal access across the corridor. As discussed in the 2012-2035 RTP/SCS Program EIR (SCH No. 2011051018), projects identified on the RTP project list, including but not limited to roadway improvements to Mountain View Avenue, Alabama Street, and Redlands Boulevard, have the potential to disrupt or divide established communities. For example, the widening of a roadway could be perceived as too great a distance to cross by a pedestrian, thereby dividing a community. However, given that pedestrian access would be maintained at the at-grade crossings throughout much of the corridor as part of the Project, no adverse cumulative effect would occur under NEPA. Under CEQA, potential cumulative impacts would be less than significant.

In contrast to basic fencing, noise barriers, if and where constructed in conjunction within Mitigation Measure NV-4, would present a new physical separation between existing neighborhoods within the Cities of San Bernardino and Redlands. The presence of noise barriers would further contribute to the division of established communities through the physical (and visual) separation of the railroad ROW on one or both sides from adjacent lands uses. These impacts would be most significant in downtown Redlands, the University of Redlands, in the Victoria Community, and in portions of San Bernardino, east of Sierra Way and south of Mill Street. In addition to potential noise barriers associated with the implementation the Project, other future projects, such as the I-10 HOV Project and other programed roadway widening projects, could result in the placement of additional noise barriers thereby incrementally adding to the overall magnitude of such a division. This is considered a cumulatively considerable effect under NEPA. Under CEQA, this impact is considered cumulatively significant. Mitigation Measure VQA-4 is proposed to minimize this adverse effect; however, a cumulatively considerable adverse, indirect effect would remain under NEPA. Under CEQA, this cumulatively considerable indirect impact would remain significant and unmitigable.

Land Acquisitions, Displacements, and Relocations

Each of the Build Alternatives and Design Options considered would require partial and full acquisitions for some of the adjacent properties along the railroad corridor. The number of properties requiring full acquisitions will vary slightly under each Build Alternative and Design Option (see Table 3.2-9). Many of the partial takes and roadway easements at various at-grade crossings are associated with programmed roadway improvements and, therefore, the Project accounts for these planned or already funded improvements. SANBAG will be required to comply with the provisions of the Uniform Act and California Act to ensure that affected property owners receive relocation assistance and just compensation. In the case of the Project, two relocations are necessary as a result of the Project. In this context, an adverse effect would result under NEPA. Under CEQA, these impacts could be cumulatively significant. Mitigation Measure LU-1 (Minimize Project Land Requirements and Comply with Federal and State Relocation Laws) is proposed to minimize these impacts.

With projected increases in ridership in the future, a future phase of the RPRP could be constructed, which would include additional double tracking along the railroad corridor. Additionally, there would be a potential change in mode-type (e.g., LRT), which could also require new electrical transmission, distribution, and transformer improvements. These improvements, if ultimately proposed by SANBAG, would require property acquisitions beyond

those required for the Build Alternatives and Design Options due to the expanded ROW requirements. This could in turn result in displacements and relocations of existing businesses and residences that are not otherwise required for the Build Alternatives and Design Options due to the expanded ROW needs. More than 200 additional private properties could be affected by the expanded ROW requirements. Additionally, properties impacted as part of the Project could be affected a second time in the future. As indicated in Section 3.2, all affected property owners would be required to receive relocation assistance and just compensation pursuant to the Uniform Act and California Act. In this context, no cumulatively considerable adverse effect would occur under NEPA. Under CEQA, this is considered a significant cumulative impact. Mitigation Measure LU-1 would be effective in minimizing these impacts such that they would no longer be cumulatively considerable.

Communities and Neighborhood

As discussed in Section 3.2, Land Use, Planning, and Communities, construction and operation of the Build Alternatives and Design Options would have the potential to affect community mobility, viability of local businesses, community resources and events, population, housing, and employment. Construction of other local, un-programmed transportation and infrastructure projects (e.g., flood control maintenance) could overlap with the Project construction period (2015-2017). Based on this cumulative context, the Project in conjunction with other cumulative projects could potentially result in adverse effects to community mobility, viability of local businesses, and community resources. Concurrent construction as a result of these combined projects could result in multiple street closures and the use of multiple construction staging areas simultaneously. These adverse effects would be cumulatively considerable under NEPA. Under CEQA, these impacts are considered cumulatively significant. Mitigation Measures TR-1, NV-1, NV-2, SS-2 (Fencing), and VQA-1 would be effective in minimizing and/or avoiding these adverse effects such that they would not be cumulatively considerable.

4.3.2 Transportation

EFFECT 4.3-2	**Transportation.** The Project in conjunction with past, present, and future projects would result in adverse cumulative effects to the local motorized and non-motorized transportation networks.

NO BUILD ALTERNATIVE

Under the No Build Alternative, the lack of additional transit service as offered by the Project would likely have a direct effect on traffic circulation and existing bus service. As identified in Section 3.3, Transportation, increased traffic would occur in parallel with future population increases, which would decrease the roadway intersection level of service (LOS) and volume to capacity ratio (V/C) for the years 2018 and 2038. Because the RTP predicts that traffic will continually worsen in the absence of additional capacity, the No Build Alternative would contribute to deteriorating access and mobility within the San Bernardino region. Likewise, the No Build Alternative would not promote a diversification in transit modes or take advantage of the direct connectivity of the Redlands corridor, which could otherwise contribute to reductions in the use of personal automobiles. Based on these considerations, the No Build Alternative would be inconsistent with the SCAG RTP/SCS 2012-2035. This adverse effect would be cumulatively considerable under NEPA. This impact is considered cumulatively significant under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Traffic Disruption During Construction

Construction of the Project would require temporary roadway closures and possible detours adjacent to the at-grade crossings, which would disrupt the flow of traffic, thereby temporarily reducing LOS and V/C at roadway intersections. In addition, construction detours and closures could disrupt bus stops and routes during construction of the Project, which could affect bus schedules. Construction activities could also result in temporary detours or blockages to bike routes and pedestrian walkways. Construction-related adverse effects may be compounded if planned projects, such as the California HST Project and other transportation projects listed in Table 4.1-1, such as the Tippecanoe Avenue Widening and Mountain View Avenue Widening Projects, occur at the same time as the Project. Although currently constrained by funding, if sources of funding become available, there is a potential that these and other RTP projects could begin construction concurrent with the Project. Concurrent construction activities would contribute incrementally to the local roadway network and could result in multiple roadway closures at the same time if not properly coordinated. These adverse effects would be cumulatively considerable under NEPA. Under CEQA, these impacts would be cumulatively significant. With the implementation of Mitigation Measure TR-1, the combination of preparing a Project-specific Traffic Management Plan in conjunction with maximizing opportunities for concurrent construction would be effective in minimizing these adverse effects to the extent that they would no longer be cumulatively considerable.

Level of Service and Congestion Management

As indicated in Chapter 2, ridership in the opening year is conservatively estimated at 820 and 1,330 in 2038. This total ridership would then translate into a reduction in the number of single occupancy vehicles on local roadways and highways during both the peak AM and PM hours. Additionally, there is a strong possibility in future years that ridership demand will increase beyond these estimates, especially if any intensification in land use occurs along the railroad corridor in the future. With the Project infrastructure in place, up to 2,620 daily ridership trips could occur in future years (see Table 4.2 of Appendix C), which in turn would result in further decreases in VMT from those estimated in Section 3.5, Air Quality and Greenhouse Gases. Additionally, if there is an increase in the number of stations or an increase in the service frequency, ridership could increase upwards of 6,100 (Appendix C), thereby incrementally adding to the Project's daily ridership and associated direct and indirect benefits as identified in Sections 3.2, 3.3, and 3.5.

As discussed in Section 3.3, there are two major limited-access highways that parallel or intersect the Study Area, I-10 and I-215. Currently, the I-10 and I-215 are experiencing increased congestion, which results in poor operating conditions (e.g., fuel efficiency) and delay. The level of congestion on I-10 and I-215 is a byproduct of a relatively high share of regional and local trips diverted onto highways as a result of the limited connectivity between Redlands and San Bernardino created by the SAR. The connectivity between Redlands and San Bernardino offered by the Project would assist in reducing the number of vehicle trips (and associated VMT) on these regional and local roadways. The availability of the Project would incrementally add to improvements in circulation along with other planned roadway improvements within the region (e.g., I-10 HOV).

As discussed in Section 3.3, at opening day (2018), only two of the 38 intersections analyzed (Orange Street and Pearl Avenue and 6th Street and Pearl Avenue) would not operate at satisfactory LOS in the PM peak hour (LOS D). Additionally, the V/C for two intersections

(California Street and I-10 West Ramps, and California Street and I-10 East Ramps) would exceed V/C thresholds. Other development projects, such as the Redlands Crossing Center and new development within the Downtown Redlands Specific Plan (DRSP) Area, which are anticipated to generate commercial related (shopping and restaurants) roadway trips, would incrementally contribute along with the Project to these reductions in LOS and V/C. Adverse effects associated with the deterioration in LOS and V/C in Year 2018 as a result of the Project combined with other projects would be cumulatively considerable under NEPA. Under CEQA, this impact is cumulatively significant. Mitigation Measure TR-2 is proposed so that SANBAG coordinates with local jurisdictions to fund its "fair share" of the identified roadway improvements. With this mitigation, adverse effects would not be cumulatively considerable.

Under 2038 conditions with the Project (see Table 3.3-13), a total of 15 intersections would experience multiple peak hour impacts (e.g., AM LOS, PM LOS, and V/C). A total of five intersections in the AM peak hour and 13 intersections in the PM peak hour intersections would operate at an unsatisfactory LOS. A total of 12 intersections would have an unsatisfactory V/C in the PM peak hour and six intersections in the AM peak hour under 2038 conditions with the Project; although, a majority of these effects occur in the Year 2038 without the Project (No Build). Other cumulative projects listed in Table 4-1, such as the Redlands Crossing Center, could incrementally contribute to these adverse effects and, therefore, this adverse effect is cumulatively considerable under NEPA. These impacts are cumulatively significant under CEQA. Similar to 2018 conditions, the implementation of Mitigation Measure TR-2 is proposed to minimize these effects such that they would no longer be cumulatively considerable. Likewise, cumulative projects would be subject to similar mitigation measures to reduce traffic impacts.

Transportation Safety and Design Hazards

The RPRP Traffic Report (see Appendix E) provides a summary of the grade crossing influence zone queue analysis for year 2038. The results indicate the potential for adverse effects during the AM Peak Hour for the following intersections: EB I-10 Ramps and the California Street; Redlands Boulevard and the California Street; Redlands Boulevard and the Alabama Street; and Redlands Boulevard and the Tennessee Street. During the PM Peak Hour, the following intersections would experience impacts: Waterman Avenue and the Orange Show Road; Orange Show Road and the Waterman Avenue; EB I-10 Ramps and the California Street; Redlands Boulevard and the California Street; Industrial Park Avenue and the Alabama Street; Redlands Boulevard and the Alabama Street; and Redlands Boulevard and the Tennessee Street. These effects would be considered adverse and cumulatively considerable under NEPA. Under CEQA, this impact would be cumulatively significant.

The Traffic Report provided in Appendix E also provides a summary of the Project crossing spillback queue for year 2038. The results indicate that the queues from certain grade crossing locations exceed the available storage between the grade crossing and the signalized intersection and could potentially block the intersection. During the AM Peak Hour, six intersections would experience impacts. During the PM Peak Hour, eight intersections would experience impacts. Other projects listed in Table 4-1 would incrementally add to these cumulative effects and, therefore, would be considered adverse under NEPA and significant under CEQA. With implementation of Mitigation Measures TR-1, TR-3 (Approval from CPUC for Grade Crossings and Safety Measures), and TR-4 (Recommended Pre-Signals for Queuing), these cumulative effects would be minimized and no residual adverse effect would occur.

Alternative Transportation

As discussed in Section 3.3, the availability of passenger rail service could result in changes to existing bus service by rerouting existing bus routes, eliminating routes, or less frequent bus service. Without sufficient coordination between existing transit providers and SANBAG, it is possible that existing transit services would not efficiently interface with passenger rail operations thereby resulting in schedule conflicts and impacts to existing transit ridership. Additionally, changes in ridership demand as a result of other projects, such as Transit-Oriented Development and the DRSP, could incrementally add to these changes. Additionally, other cumulative projects could result in additional conflicts to planned non-motorized transportation routes, such the I-10 HOV and local roadway improvement projects. This is considered an adverse effect that would be cumulatively considerable under NEPA. Under CEQA, this impact is considered cumulatively significant. Mitigation Measure TR-5 (Transit Operations Realignment) is proposed to enable for the realignment of transit services in conjunction with the Project's long-term operation. Mitigation Measure PCS-1 (Coordinate Trail Planning with Local Jurisdictions) is proposed to minimize conflicts with locally planned non-motorized transportation routes. With the implementation of these measures, cumulative effects would be less than considerable

4.3.3 Visual Quality and Aesthetics

EFFECT 4.3-3	**Visual Quality and Aesthetics.** The Project in conjunction with past, present, and future projects would result in cumulative effects related to the placement of proposed physical improvements (e.g., rail stations and canopies, layover facilities, sound barriers, etc.).

NO BUILD ALTERNATIVE

Under the No Build Alternative, existing conditions would generally be maintained albeit some minor changes along the railroad ROW as a result of track maintenance and bridge replacement. It is unlikely that these activities would result in adverse effects to visual resources outside the ROW (e.g., ornamental trees). Likewise, no new structures would be constructed within the Study Area that could otherwise contribute to physical changes in the visual character of the adjacent communities, including new sources of glare or nighttime lighting. In this context, no cumulatively considerable adverse effects to visual quality would occur under NEPA. Under CEQA, a less than significant cumulative impact would occur.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Changes in Visual Character

Construction along the railroad corridor would result in short-term visual effects and a temporary alteration of the existing visual quality along the railroad corridor as a result of earthmoving and other activities (e.g., staging/stockpiling, presence of construction equipment, and temporary traffic barricades). Residents, schools, and parks fronting the railroad ROW would have direct sight lines to the site during construction of the Project, which in some instances, could last longer than twelve months in duration (e.g., staging areas). Given the subjective sensitivity of individuals to visual changes, if construction of the Project occurred during the same time as other cumulative projects such as new development associated with the DRSP and University of Redlands Master Plan, various roadway improvements (e.g., Tippecanoe Avenue Widening), and drainage channel maintenance, especially where activities are concentrated for longer

durations in close proximity to residences, short-term visual changes are anticipated. Considering the long duration of Project construction in conjunction with other planned and proposed projects in Table 4-1, an adverse cumulative considerable effect would occur under NEPA. Under CEQA, this impact is considered cumulatively significant. Mitigation Measures VQA-1 and SS-2 are proposed to lessen and minimize these effects such that no cumulatively considerable effect would result.

As described in Section 3.4, longer-term direct and indirect visual effects of the Project would be in the form of the placement of new physical facilities including, but not limited to, rail stations, layover facilities, and, if proposed, sound barriers. Of these structural improvements, the installation of sound barriers would have the most pronounced, distinctive change in the visual landscape as a result of their longer linear nature (e.g., thousands of feet) and associated height (e.g., up to 12 feet). These sound mitigation features along with those that may be required for other projects (e.g., I-10 HOV and other roadway improvements) would incrementally contribute to the creation of new long, linear physical obstructions in the landscape that could be considered disruptive visually to multiple individuals by eliminating existing middle or background views, creating shading effects, and providing an attractive source for graffiti. As discussed in the 2012-2035 RTP/SCS Program EIR, proposed alignments or facilities identified in the RTP Project List, could result in similar aesthetic effects if these projects require large cut-and-fill slopes or noise barriers. Likewise, depending on future ridership demands, if a future phase of the RPRP is ultimately constructed, a conversion in transit mode (e.g., LRT) could entail a reduction in operational noise thereby negating the need for noise barriers for the Project in future conditions. In this context, the adverse indirect visual effects of the Project components are cumulatively considerable under NEPA. These visual impacts would be cumulatively significant under CEQA. Mitigation Measures VQA-2, VQA-3 (Tree Replacement), and VQA-4 are proposed to address the physical appearance of Project facilities. However, indirect effects associated with the placement of sound barriers would visually dominate the railroad corridor, where constructed, thereby resulting in a cumulative effect that would remain adverse under NEPA and significant under CEQA.

Light and Glare

The Project is located in an urban setting with existing sources of light and glare associated with surrounding commercial, industrial and residential uses. The Project would result in the creation of new source of lighting and glare associated with stations, layover facility, at-grade crossing signals, and station platforms and parking lots. SANBAG would coordinate final design plans for the Project with the Cities of San Bernardino and Redlands prior to final approval regarding lighting fixtures, light shielding, parking lot orientation, and glare-reduction materials. Each project considered in this cumulative analysis, including, but not limited to, development projects such as the National Orange Show Industrial Project, Redlands Crossing Center, Redlands Park Once, and Cott Beverage Industrial Warehouse, would be required to individually meet building code requirements, as well as the requirements of local policies. Notwithstanding these considerations, the Project could result in a cumulatively considerable lighting and glare effect that would be adverse under NEPA. Under CEQA, this significant impact would be cumulatively considerable. With the implementation of Mitigation Measures VQA-1 and VQA-5, cumulatively significant impacts under CEQA would be reduced to a less than significant level. Under NEPA, with the proposed mitigation, these cumulative effects would not be adverse.

4.3.4 Air Quality, Greenhouse Gases, and Global Climate Change

EFFECT 4.3-4	**Cumulative Effect to Air Quality Standards.** Implementation of the Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is in nonattainment or GHG emissions that could otherwise contribute to global climate change.

NO BUILD ALTERNATIVE

Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. The region of analysis for cumulative effects on air quality is the SCAB (see Table 4-2). Under the No Build Alternative, the Project would not occur and existing conditions along the railroad corridor would remain. Maintenance improvements would be required to occur along the existing track alignment, which would include bridge replacement or rehabilitation. These construction activities would be required to comply with SCAQMD Rule 403 for fugitive dust emissions from earth-moving and grading activities. In this context, the No Build Alternative is not anticipated to violate state or federal air quality standards. In this context, no adverse, cumulatively considerable effect would result under NEPA and a less than significant cumulative impact would result under CEQA.

The SCAB is currently in extreme nonattainment for O_3, serious nonattainment for particulate matter less than 10 microns (PM_{10}), nonattainment for particulate matter less than 2.5 microns ($PM_{2.5}$), serious maintenance for CO under NAAQS, and nonattainment for O_3, $PM_{10,}$ $PM_{2.5}$, and NO_2 under CAAQS. These air quality conditions are a result of past and present projects and will likely further degrade by reasonably foreseeable future projects. These nonattainment conditions within the region are considered cumulatively significant and SCAQMD thresholds have been established to ensure attainment of NAAQS and CAAQS. As discussed in Section 3.5, the mass transit opportunities associated with the proposed Project would reduce single-occupancy vehicle trips on regional roadways, resulting in a net regional air quality benefit and a reduction in nonattainment pollutants and GHG emissions. As provided in Tables 3.5-9 and 3.5-10, emissions of criteria air pollutants associated with the No Build Alternative (e.g., continued freight) would be less than those associated with the Build Alternatives due to the addition of train emission with the Project. However, the No Build Alternative would negate the possibility of future technological advances (e.g., beyond Tier 4) or future modes changes (e.g., LRT) that could result in additional emission reductions under future conditions. Notwithstanding these shortcomings, no adverse air quality effects would result under the No Build Alternative that would otherwise be cumulatively considerable under NEPA and CEQA.

Greenhouse Gases

Over the long term under the No Build Alternative, freight operations would continue similar to existing conditions and could expand to include new customers based on ongoing negotiations between BNSF and potential new customers. Under the No Build Alternative, increased traffic congestion in the Cumulative Study Area without the Project would increase personal vehicle emissions, as indicated in the Air Quality and GHG Technical Report prepared for the Project (Appendix G). Tables 3.5-13 and 3.5-14 show that carbon dioxide equivalent (CO_2e) emissions would not exceed SCAQMD's thresholds during construction and operation in future forecast years 2018 and 2038. Therefore, the No Build Alternative in conjunction with cumulative projects listed on Table 4-1 would result in no cumulatively considerable adverse effect under NEPA and a less than significant cumulative impact under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Temporary Construction

As shown in Tables 3.5-6 and 3.5-10, emissions of construction-related criteria pollutant emissions would be below both regional and localized SCAQMD thresholds of significance. Construction impacts related to other projects located in areas surrounding the Study Area such as the California HST Project, various roadway improvements project, and Redlands Park Once would be cumulatively considerable within the SCAB if their combined construction emissions would exceed the SCAQMD daily emission thresholds for construction. However, any project located within the SCAB would be required to comply with SCAQMD rules and regulations to reduce potential emissions during construction. Other projects would be required to implement measures targeted at minimizing emissions through fugitive dust control measures and the use of construction equipment equipped with engine designations of EPA Tier 2 or 3. Based on these considerations, implementation of the Project in conjunction with other cumulative projects would not result in a cumulatively considerable adverse effect under NEPA. Under CEQA, the cumulative impact would be less than significant.

Criteria Air Pollutants from Operations

The Project is listed in a conforming RTP and FTIP and is, therefore, consistent with the AQMP and SIP. The SCAB is currently classified as extreme nonattainment for ozone, serious nonattainment for PM_{10}, nonattainment for $PM_{2.5}$, serious maintenance for CO under NAAQS, and nonattainment for ozone, PM_{10}, $PM_{2.5}$, and NO_2 under CAAQS. These designations are a result of past and present projects with reasonably foreseeable future projects incrementally adding to basin-wide emissions. As provided in Section 3.5, with the use of Tier 4 technology, Project operational criteria air pollutant emissions for each of the vehicle technologies under consideration would be below both regional and localized SCAQMD thresholds of significance during 2018 opening year and 2038 forecast year operations (see Tables 3.5-9, 3.5-10, and 3.5-11). Additionally, cumulative projects (e.g., future RPRP phase, I-10 HOV, HSR, etc.) within the Cumulative Study Area and in future conditions could further improve cumulative air quality conditions. Furthermore, as discussed in the 2012-2035 RTP/SCS Program EIR, the projects identified in the RTP (which includes the Project) would not result in cumulatively considerable emissions. Based on these considerations, emissions of criteria air pollutants in conjunction with other projects listed in Table 4-1 would not be cumulatively considerable and, therefore, no adverse effect would occur under NEPA. Under CEQA, Project-related emissions in combination with other cumulative projects would be less than significant.

Toxic Air Contaminants

Project-related temporary, short-term construction and long-term operations could expose nearby existing off-site or proposed on-site sensitive receptors to TACs. TAC emissions associated with temporary, short-term construction activities and stationary sources are site-specific and would be less than significant for the Project as detailed in Section 3.5. The proposed passenger rail operations would occur in close proximity of nearby sensitive receptors, thereby exposing these nearby on-site receptors to TACs from diesel emissions. However, as described in the analysis in Section 3.5 and provided in Table 3.5-12, the combination of using Tier 4 technology in conjunction with the use of electrical power for station idling would minimize the potential for Project operations to expose sensitive receptors to high levels of TACs. Given that other cumulative projects would be subject to the same best available control technologies, Project-related TACs would not be cumulatively considerable. For these reasons, the Project would not result in a cumulatively considerable adverse effect

under NEPA. Under CEQA, the Project's contribution to a significant cumulative impact would be less than significant.

Greenhouse Gases

Based on the results of the project-level analysis provided in Section 3.5, the Build Alternatives and Design Options would not result in any unmitigable air quality effects. As provided in Table 3.5-13 and 3.5-14, GHGs generated from short-term construction and the Project's long-term operation would not exceed applied thresholds. Therefore, cumulative effects resulting from the Project in relation to the generation of GHGs and global climate change would not be considerable. For this reason, no adverse effect would occur under NEPA. Under CEQA, cumulative effects would be less than significant.

4.3.5 Noise and Vibration

EFFECT 4.3-5	**Noise and Vibration.** The Project in conjunction with past, present, and future projects would result in cumulative adverse effects related to construction and operational noise and vibration.

NO BUILD ALTERNATIVE

Under the No Build Alternative, existing conditions within the railroad corridor would generally be unaffected. As described in Chapter 2, SANBAG would still be required to perform regularly scheduled maintenance of the existing track and corresponding improvements to the at-grade crossings and bridges to facilitate continued freight service. These improvements would be incrementally implemented on an as-needed basis and would be limited in geographic extent at any given time. In this context, although sensitive receptors could be exposed to maintenance-related construction noise and vibration, the corresponding duration and extent would be limited. In this context, when considered in conjunction with other cumulative projects, no cumulatively considerable adverse effect would occur under NEPA. Under CEQA, cumulative effects would be less than significant.

Under the No Build Alternative, the railroad corridor would continue to be used for low-speed, local freight service. Although no extension of freight service is proposed east of Tippecanoe Avenue, the extension of such service further east would remain a possibility if new customers request service from BNSF. Additionally, changes in the frequency of deliveries would remain at BNSF's discretion. Given that these changes could occur under existing conditions, potential operational noise impacts would not be cumulatively considerable and no adverse effect would occur under NEPA. Under CEQA, operational impacts in conjunction with other cumulative projects would be less than significant.

BUILD ALTERNATIVES AND DESIGN OPTIONS

When determining whether the noise and vibration effects from cumulative projects would be cumulatively considerable, it is important to note that noise and vibration are generally localized occurrences; as such, they decrease rapidly in magnitude as the distance from the source to the receptor increases. Therefore, only those cumulative projects that are in the direct vicinity of the Project would have the potential to be considered in a cumulative context with the Project's incremental contribution. The following cumulative projects are considered for this noise and vibration cumulative analysis: future development within the DRSP, Redlands Park Once, I-10/Alabama and Redlands Boulevard intersection improvements, California HST Project,

DSBPRP, Omnitrans sbX BRT Project, I-10 HOV, University of Redlands Master Plan, and transit oriented development (TOD) in the cities of San Bernardino and Redlands.

Short-Term Construction Noise Exposure and Vibration

Implementation of the Project would result in a temporary, short-term exposure of sensitive receptors to increased equipment noise, groundborne noise, and vibration from construction. Given that some of the Project construction activities could occur during nighttime hours, these activities would be in conflict with local noise ordinances and municipal codes. As described in Section 3.6, noise levels during construction would exceed FTA criteria for daytime and nighttime construction (13 daytime and 65 nighttime Category 2 receivers), if required. Additionally, construction-related vibration impacts would also exceed FTA's annoyance criteria at 56 Category 2 land uses that include residences and hotels (see Appendix H). Additionally, adverse effects from construction-related vibration could also result to historic structures that may be more sensitive to vibration (e.g., Redlands Depot).

Noise associated with the construction of other projects listed in Table 4-1, such as the development projects within the University of Redlands Master Plan and DRSP, including Redlands Park Once, or local roadway improvement projects, could be greater if constructed concurrently in the general vicinity of the Project. Therefore, adverse noise effects associated with the Project in conjunction with the potential noise effects of other cumulative projects would be cumulatively considerable under NEPA. This is considered a significant cumulative impact under CEQA. Implementation of Mitigation Measures NV-1 to employ noise-reducing measures during construction and NV-2 to prepare a community awareness program would minimize or reduce these impacts. However, even with the implementation of these mitigation measures cumulatively considerable noise impacts could remain adverse under NEPA and significant under CEQA.

Long-Term Noise and Vibration from Train Operations

The Build Alternatives and Design Options would result in long-term increases in ambient noise levels and vibration along the railroad corridor due to operation of passenger trains along the railroad corridor. As identified in Table 3.6-6, these permanent increases in ambient noise would result in moderate and severe noise impacts on Category 2 and 3 land uses distributed throughout and along the railroad corridor for the all the vehicle technologies under consideration. Moderate impacts from rail noise would occur at up to 115 Category 2 land uses and three Category 3 land uses, including a church, a public park, and the University of Redlands. Severe impacts from rail noise would occur at up to 83 Category 2 land uses. Additionally, ground-borne vibration impacts at up to 24 Category 2 uses are considered severe. These adverse noise and vibration effects, which could occur with any one of the vehicle technologies under consideration, would occur in conjunction within other cumulative projects listed in Table 4-1, such as the California HST Project, DSBPRP, I-10 HOV, and Omnitrans sbX Bus Rapid Transit Project. The combination of these projects would increase the ambient noise levels for existing Category 2 and 3 land uses and, therefore, would be cumulatively considerable under NEPA. Under CEQA, long-term noise impacts would be cumulatively significant.

As discussed in Section 3.6, noise and vibration effects due to Project operations would be reduced with the implementation of a combination of mitigation measures. As described in Section 3.6, the combination of noise mitigation including establishing quiet zones (Mitigation Measure NV-3), constructing sound barriers at certain locations (Mitigation Measure NV-4), the use of rail lubrication (Mitigation Measure NV-5), and the use of ballast mats and resiliently

supported ties (Mitigation Measure NV-6) would minimize Project-related noise impacts. Mitigation Measure NV-3 would be capable of achieving desired reductions in operational noise. However, the full implementation of Mitigation Measure NV-3 requires the approval of the City of San Bernardino and the City of Redlands to adopt the quiet zones at each of the at-grade crossings. Although SANBAG would design the at-grade crossing to be quiet zone ready, the implementation of these measures is outside SANBAG's jurisdiction to fully implement and, thus, full implementation cannot be assumed. In the event that quiet zones are not approved by the cities of San Bernardino and Redlands, noise impacts would be greater, thus requiring the construction of sound barriers in more locations along the Redlands corridor. Based on these circumstances and the financial reality of mitigating noise impacts for all sensitive receptors, long-term noise would remain an adverse effect that would be cumulatively considerable under NEPA. Under CEQA, the impact of long-term noise is considered cumulatively significant and unmitigable.

From a broader land use perspective, the cities of San Bernardino and Redlands are considering an increase in land use densities along the railroad corridor. These land use plans contemplate advancing TOD forms of development along the railroad corridor, which is identified as a high quality transit area in the RTP (21012). As a result, there is a potential for new residential land uses to be constructed within close proximity to the railroad corridor that could be adversely affected by noise levels generated by trains. However, per local exterior and interior noise standards, developers of new noise-sensitive land uses would be conditioned to minimize noise at these locations through various measures including, but not limited to, noise insulation and noise barriers.

Likewise, if land use intensifies along the railroad corridor, ridership may increase thereby enabling for the implementation of a future RPRP phase, which could increase the frequency in service or a change in mode (e.g., LRT). Both of these factors could decrease (e.g., LRT) or increase (e.g., higher frequency) ambient noise levels beyond the operations considered in this EIS/EIR; however, the impacts remain too speculative for consideration. Given that future development along adjacent properties would be required to design new structures based on the presence of train operations, implementation of the Project in conjunction with other cumulative projects would result in no adverse, cumulatively considerable effect under NEPA. Under CEQA, this cumulative impact is considered less than significant.

4.3.6 Biological and Wetland Resources

EFFECT 4.3-6	**Biological Resources.** The Project in conjunction with past, present, and future projects would result in cumulative effects related to sensitive biological and wetland resources.

NO BUILD ALTERNATIVE

Sensitive wildlife and botanical species occur along the SAR and to a lesser extent Twin, Warm, and Mill Zanja Creeks. As such, maintenance activities and bridge replacement could result in direct and indirect effects to sensitive species. Also, the replacement or rehabilitation of bridges could result in construction-related adverse effects in terms of in-channel construction or debris falling into surrounding waterways. The implementation of the No Build Alternative in conjunction with other cumulative projects (e.g., Long-Term Channel Maintenance and Mountain View Avenue Bridge) that occur along the SAR has the potential to directly and indirectly affect the same biological resources. However, given uncertainties regarding the timing, potential overlap with other projects, and presence of existing regulatory requirements,

the No Build Alternative would result in no adverse, cumulatively considerable effect to sensitive species and jurisdictional resources under NEPA. This is considered a less than significant cumulative impact under CEQA

BUILD ALTERNATIVES AND DESIGN OPTIONS

Numerous other projects, independent of the RPRP, would occur within the Cumulative Study Area ranging from private development to road and bridge improvements. Long term channel maintenance activities for local waterways within SBCFCD's jurisdiction would also be required and could conceivably occur concurrent with construction. The different Project components of the Build Alternatives and Design Options would affect different geographic areas within the Cumulative Study Area. These effects could combine with other projects adjacent to and outside the Cumulative Study Area. For this reason, the cumulative analysis for biological resources considers a broader geographic context than the area contained within the Cumulative Study Area and, instead considers potential cumulative effects at the watershed level (e.g., Upper SAR Watershed).

Although implementation of the Project would not result in long-term adverse effects to biological resources, it would result in direct adverse effects during construction that would require mitigation and appropriate regulatory permits (e.g., Section 404 permit and Section 7 Consultation) in coordination with USACE, USFWS, and CDFW. From a cumulative perspective, a majority of the projects considered would occur entirely within upland urban areas and would not result in adverse effects to sensitive biological resources, which are generally concentrated around the SAR and mouth of the Mission Zanja Channel. There are six main projects in the vicinity of or adjacent to the Cumulative Study Area that are anticipated to potentially contribute to biological resource impacts based on their location: (1) Long-Term Maintenance of Flood Control and Transportation Facilities throughout San Bernardino County; (2) Mountain View Avenue Bridge over the SAR; (3) SAR Trail and Mission Zanja Channel Bridge; (4) Upper SAR Wash HCP; (5) I-10 HOV; and (6) Mountain View Avenue Bridge at Mission Zanja Channel.

Sensitive Vegetation Communities and Plant Species

Implementation of the Project would result in effects to sensitive vegetation communities such as Southern Willow Scrub (SWS) and Southern Cottonwood Willow Riparian Forest (SCWRF) as a result of bridge replacements, track improvements, and bank reinforcement within the Mission Zanja Channel. Implementation of other cumulative projects, such as the SAR Trial, I-10 HOV, and SBCFCD's Long-Term Maintenance Program, are anticipated to result in similar effects to sensitive vegetation communities (e.g., SWS and SCWRF). Absent mitigation, a loss to valuable habitat and associated sensitive vegetation communities from Project construction and other cumulative projects would be considered an adverse effect under NEPA. Under CEQA, this impact would be cumulatively significant. However, through the implementation of Mitigation Measures BIO-1 (Pre-Construction Survey - Conduct Preconstruction Survey for Special Status Plants and Wildlife and, if Found, Implement Avoidance and Compensation Measures), BIO-2 (LBV), and BIO-4 (Protection of Sensitive Plants and Habitats, no net loss of these resources would occur. Following the application of the prescribed mitigation, cumulative impacts would not be adverse under NEPA and less than significant under CEQA.

Implementation of the Project would result in a direct effect to one federally endangered Santa Ana River woolly star individual located immediately south of the existing Bridge 3.4 located in the SAR. The plant is a single individual that is not part of a larger population in the Study Area, and is located approximately 0.7 miles downstream from the closest, locally established

population. Although the direct effect to the individual Santa Ana River woolly star may be unavoidable, it would not be considered a cumulative adverse effect to the species' population as a whole with the application of Mitigation Measures BIO-1 and BIO-4. Given that other projects considered in the cumulative analysis would be required to mitigate for direct and indirect impacts to the Santa Ana River woolly star population, the cumulative effect of the Project would not be adverse under NEPA. Under CEQA, this significant impact would not be cumulatively considerable with implementation of Mitigation Measures BIO-1 and BIO-4.

Sensitive Zoological Communities

Implementation of the Project would result in direct effects to SWS and SCWRF, which are habitats that support the federally endangered LBV and other sensitive avian species such as yellow warbler and those protected under the MBTA. In addition, the Project could potentially affect suitable habitat for the State Species of Concern, western spadefoot toad and western burrowing owl. Degradation of wildlife habitat caused by the Project, when combined with other habitat effects occurring from other proposed transportation projects (e.g., Mountain View Avenue SAR Bridge and I-10 HOV Bridge), the SAR Trail, SBCFCD maintenance activities, and development projects within the region, could result in cumulatively considerable effects under NEPA and CEQA. Additionally, construction-related indirect effects (e.g., noise) could also result from the Project and other projects, which in the absence of mitigation, could be cumulatively considerable under NEPA and CEQA.

In response to the potential for cumulative effects to listed species or those of special concern, CDFW and USFWS have promulgated a regulatory scheme that limits impacts on these species. The effects of the Project would be minimized through mitigation requiring compliance with all applicable regulations that protect wildlife species. More specifically, Mitigation Measures BIO-1 through BIO-5, HWQ-2 (Prepare and Implement a SWPPP), and HWQ-3 (Prepare and Implement a Flow Diversion Plan for Construction) would be imposed and the provisions required by law (e.g., pre-construction surveys and resource staking, presence of an environmental monitor, contractor training) would minimize effects to biological resources. Similar to the Project, other projects considered would also be subject to these regulatory requirements (e.g., Sections 7 and 10 of the ESA). Based on these considerations, under NEPA no cumulatively considerable adverse effect would occur. Under CEQA, cumulative impacts would be less than significant.

State and Federal Jurisdictional Areas

Project implementation would permanently and temporarily affect state and federal jurisdictional areas. Permanent effects to USACE and CDFW jurisdictional areas would occur primarily within the SAR, Mission Zanja Channel, Twin Creek and Warm Creek as a result of bridge replacement and bank stabilization/armoring. Total permanent impacts to USACE jurisdictional areas are estimated at up to 0.39 acres (Preferred Project) and 0.92 acres for CDFW jurisdiction. These calculated areas represent a very small fraction of the total acreage of wetlands and waters of the U.S. and State within the overall watershed of the Upper SAR Hydrologic Area. However, these impacts to jurisdictional areas would likely overlap with other cumulative projects, including the Mountain View Avenue SAR and Mission Zanja Channel Bridges and I-10 HOV Bridge, the SAR Trail, and SBCFCD maintenance activities could be cumulatively considerable. Although specific impacts to jurisdictional areas are not available for these other projects, it is possible that the temporal overlap of potential jurisdictional impacts from the combined project could exceed several acres and, thus, would be cumulatively considerable.

Direct and indirect Project-related effects to jurisdictional areas would be mitigated through implementation of Mitigation Measures BIO-6, HWQ-2 and HWQ-3 along with any additional measures established during the permitting process. Mitigation Measure BIO-6 would require the securing of a Clean Water Act (CWA) Section 404 Permit and implement all permit conditions to ensure no net loss of functions and values of wetlands, other waters of the U.S., and waters of the State. Through these measures, SANBAG would be responsible for maintaining a no net-loss of jurisdictional areas subject to USACE's "no-net-loss" standard. Similar to the Project, other cumulative projects that affect jurisdictional areas would be subject to similar mitigation requirements and regulatory permit conditions to maintain no net-loss of jurisdictional areas. With the implementation of the proposed mitigation measures, adverse effects under NEPA would not be cumulatively considerable. Similarly, with mitigation, cumulative impacts to wetlands and Waters of the U. S. and State would be less than significant under CEQA.

Local Ordinances

The Project could require the removal of numerous ornamental and other native trees as part of construction. Similarly, other cumulative projects may result in the removal of trees as part of construction. However, the Project would adhere to local tree ordinances prior to the removal of native and ornamental trees and would not require the removal of native oak trees. In considering that other cumulative projects would be subject to local tree ordinances, cumulative effects related to local tree ordinances would not be cumulatively considerable under NEPA and CEQA.

4.3.7 Floodplains, Hydrology, and Water Quality

EFFECT 4.3-7	**Floodplains, Hydrology, and Water Quality.** The Project in conjunction with past, present, and future projects would result in cumulative adverse effects related to local and regional hydrology, the placement of structures within a 100-year flood zone, and water quality.

NO BUILD ALTERNATIVE

According to the FEMA maps, portions of the existing railroad corridor and bridges are located within a 100-year floodplain. Based on this determination, the replacement of tracking and bridges would be subject to 100-year flood hazards and would be required to be designed and constructed in accordance with BNSF, SBCFCD, and USACE standards to avoid adverse effects from flooding. Under existing conditions, flash floods could lead to washout of tracks and impacts to existing freight service; whereas moderate rainfall events over longer durations could render some track segments impassable. The development of other cumulative projects, especially projects, which would add impervious surfaces (e.g., University of Redlands Master Plan, Redlands Crossing, Redlands Park Once, and Orange Show Investments), would further contribute to hydromodification of the watershed. However, given that little to no new impervious surfaces would be developed under the No Build Alternative and existing hydraulics would be maintained at existing bridge crossings, floodplain impacts would not be cumulatively considerable under NEPA or CEQA.

Under the No Build Alternative, limited maintenance and rehabilitation activities would extend over an area greater than one acre and these activities would be required to apply for coverage under the NPDES General Construction Permit. Preparation and implementation of a SWPPP in

compliance with the General Construction Permit would minimize the potential for cumulative water qualityeffects during construction. Similarly, compliance with BNSF's existing SWPPP for operational discharges would minimize the potential for any long-term water quality effects. Based on these considerations, the No Build Alternative would not contribute to a cumulatively considerable adverse effect under NEPA or significant cumulative impact under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Drainage and Hydrology

Local hydrology, drainage, and groundwater conditions are often affected by multiple activities within the watershed. Generally, the limits of the Cities of Redlands and San Bernardino contain mainly developed areas including paved roads, existing structures, and other impervious surfaces (e.g., parking lots). Both cities have existing stormwater drainage and conveyance infrastructure in place that connects with larger flood control facilities (e.g., Mission Zanja Channel). Stormwater drainage and flood control facilities in both cities is operated and maintained by a combination of USACE, SBCFCD, and the respective engineering departments for each City. As described in Section 3.8, the Mission Zanja Channel, which accepts drainage from the eastern portion of the Study Area, is limited in its ability to contain flood waters during moderate to large storm events and is prone to flooding at multiple locations. This condition is a result of hydromodification within the larger watershed (see Figure 3.8-2), which has effectively reduced the time of concentration for flood waters to reach the Mission Zanja Channel. Hydromodification is a result of incremental increases in impervious surfaces from development from both within the cities and unincorporated areas in the upper watershed that increase the peak runoff volume, which places strain not only on the local storm drain system, but the Mission Zanja Channel as well (City of Redlands 2011). A similar, but less severe, condition affects southeastern portions of San Bernardino, south of Orange Show Road.

Implementation of the Project would create a relatively small fraction of new impervious surfaces, up to 20 acres from the station platforms, parking areas, and layover facility (except Design Option 2), that would result in a small increase in the volume of runoff. Although, in many instances, the Project would correct numerous pre-existing drainage deficiencies, the increased efficiency of Project-related drainage infrastructure combined with an increase in impervious surface in combination with similar impervious surfaces for other projects (i.e., Transit-Oriented Development, Redlands Crossing, Redlands Park Once) could incrementally contribute to cumulatively considerable increases in peak discharges under NEPA and CEQA. Conformance with LID principles briefly summarized in Mitigation Measures HWQ-1 (Prepare Drainage Plans for Structural Facilities) and conformance with applicable state and local regulations regulating surface water runoff, including the procedures outlined in the San Bernardino County Drainage Manual and Storm Water Management Plan, would reduce cumulative drainage impacts such that no adverse effect would remain under NEPA. Under CEQA, cumulative drainage impacts would be reduced to a less than significant level.

During construction of the Project, in-channel construction activities in combination with other projects, such as Mountain View Avenue Bridge and Long-term Maintenance Activities by SBCFCD, would have the potential to result in temporary restrictions in channel capacity along the SAR and Mission Zanja channel. Depending on the duration and overlap of these projects, temporary reductions in channel capacity could be cumulatively considerable under NEPA and CEQA. In response to this concern, the implementation of Mitigation Measure HWQ-3 is proposed to minimize flooding hazards during construction. With the implementation of Mitigation Measure HWQ-3, the Project would not result in a cumulatively considerable

incremental contribution to an adverse effect under NEPA or a significant cumulative impact under CEQA.

Floodplain Encroachment and Development

As discussed in Section 3.8, several sections of the railroad corridor are currently susceptible to flooding from just moderate rainfall events as a result of hydromodification within the larger watershed. With the construction of the stations, tracking, bridges, and layover facilities within the limits of the 100-year flood zone (some within the 10-year), these Project features would be susceptible to damage from flood waters. In the case of the bridge structures at MP 1.1, 3.4, 5.78, and 9.4, each structure is designed to maintain or increase the existing hydraulic capacity thereby avoiding an associated rise in the 100-year flood elevation. In this context, Project-related floodplain effects (or hydraulics) at these bridge locations when considered in conjunction with other cumulative projects, such as the I-10 HOV and Mountain View Avenue Bridges, would not be cumulatively considerable under NEPA and CEQA. However, in the case of the track, station, and layover facility improvements, these Project improvements would be subject to existing floodplain conditions.

As discussed in detail in Section 3.8, based on pre-existing drainage limitations within both the Cities of Redlands and San Bernardino, the placement tracking, rail stations, and layover facilities within the 100-year flood zone would occur at multiple locations (see Table 3.8-4) and is inconsistent with SCRRA and BNSF standards. In considering these Project-specific effects in conjunction with other past, present, and reasonably foreseeable projects within the Cumulative Study Area, let alone the larger watershed, the Project infrastructure and new development (e.g., TOD) would be subject to cumulatively considerable flooding impacts. For example, construction of the Project could encourage an intensification in land use densities within a quarter to half mile proximity of the proposed station locations, which could result in a pattern of development that would result in the placement of additional structures and uses within the delineated 100-year floodplain. Mitigation Measures HWQ-4 (Prepare a Natural Hazard Management Plan) and HWQ-5 (Flood-Proofing of Critical Infrastructure) are proposed to mitigate these adverse effects in the form of flood damage to new Project-related structures in the event of flooding. However, since Project-related structures would continue to be subject to inundation from flooding and new development adjacent to the railroad corridor would not be subject to the mitigation proposed by SANBAG, an adverse cumulative effect would remain under NEPA and a significant cumulative impact would remain under CEQA

SBCFCD in coordination with the USACE and FEMA is in the process of planning and securing the necessary funding for a combination of drainage improvements that would effectively reduce the threat of flooding throughout the Cumulative Study Area. However, the timing and implementation of these larger, watershed-scale flood control improvements that are currently subject to funding limitations remains uncertain. For example, the construction of the Opal Basin (see Table 4-1) would alleviate the frequency of the flooding in the City of Redlands by providing temporary detention of storm runoff for up to a 25-year storm event. Likewise, the future Mission Storm Drain Bypass is expected to alleviate the flooding in downtown Redlands by adding capacity to the existing Mission Storm Drain (see Figure 3.8-2). Although these drainage improvements would incrementally help to alleviate these flooding issues, the provision of 100-year flood protection is contingent on the completion of a combination of projects that remain outside SANBAG's control. Based on this context and the fact that operations would likely start in advance of the completion of the necessary flood control projects, the Project in conjunction with other projects would result in an adverse, cumulatively considerable effect under NEPA. Under CEQA, this cumulative flooding impact is considered significant and unmitigable.

Construction-Related Water Quality

Construction activities during implementation of the Project would involve extensive grading and movement of earth. Substantial construction-related alteration of on-site drainages could result in soil erosion and stormwater discharges of suspended solids, increased turbidity, and potential mobilization of other pollutants from project-related construction sites. This contaminated runoff could enter Warm Creek (Historic), Twin Creek, Mill Creek Zanja, the SAR, and the Mission Zanja Channel. In response to these concerns, SANBAG's contractor would be required to prepare and implement a SWPPP consistent with the existing statewide NPDES General Construction Permit. Implementation of these regulatory requirements in addition to Mitigation Measures HWQ-2 and HWQ-3 would reduce the significant water quality and erosion impacts from construction activities. Although there are no assurances that other cumulative projects listed in Table 4-1 would incorporate the same degree or methods of treatment as the Project, each related project would be required to comply with NPDES General Construction Permit and local stormwater ordinances, at a minimum. In this context, Project construction would not result in a cumulatively considerable water quality impact. For this reason, the Project's incremental contribution to cumulative water quality impacts would not be adverse under NEPA. Under CEQA, the cumulative impact would be minimized through the proposed mitigation and reduced to a less than significant level.

Long-Term Stormwater Discharges

Urban runoff can carry dissolved or suspended residue from both natural and man-made land uses into natural water bodies. Cumulative projects including, but not limited to, the National Orange Show Industrial Project, Redlands Crossing, Cott Beverage Industrial Warehouse, University of Redlands Master Plan, and Redlands Park Once would include various pollutant sources similar to the Project including, but not limited to, parking lots and streets, industrial uses, rooftops, exposed earth at construction sites, and landscaped areas. Pollutants in runoff from these areas can include sediment, oil and grease, hydrocarbons, heavy metals, pathogens, nutrients, and other water quality threats (e.g., brake fluids, solvents, etc.). To address effects related to long-term impacts from polluted runoff, post-construction runoff BMPs as proposed as part of Mitigation Measures HWQ-1, HWQ-2, and HWQ-6 to protect minimize post-construction and operational effects on water quality. Each cumulative project considered in Table 4-1 would also be subject to similar mitigation. Given that the SAR is listed generally not listed as an impaired water body under Section 303(d) of the CWA for pollutants of concerns for the Project, with the implementation of the proposed mitigationmeasures, no cumulatively considerable adverse effect would result under NEPA. Under CEQA, cumulative, long-term water quality impacts would be reduced to a less than significant level.

4.3.8 Geology, Soils, and Seismicity

EFFECT 4.3-8	**Geology, Soils, and Seismicity.** The Project in conjunction with past, present, and future projects would not result in cumulatively considerable effects related to geology, soils, and seismicity.

NO BUILD ALTERNATIVE

The No Build Alternative would not result in changes to the existing ROW beyond periodic maintenance and rehabilitation that would result in adverse effects related to strong seismic shaking, risks due to landslides, create unstable geologic conditions, or be subject to hazards from problematic soils. Based on these considerations, the No Build Alternative would not

contribute to a cumulative geology, soils, and seismicity effect. The No Build Alternative would not result in a cumulative adverse effect under NEPA or significant cumulative impact under CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Geologic hazards based on the local geologic characteristics of a project site are typically site specific and addressed on a project-by-project basis, rather than in a cumulative nature. Although the Study Area is not underlain by or immediately adjacent to any known faults, as described in Section 3.9, the Project components could be subject to seismic ground shaking from an earthquake occurring along one of several major active or potentially active faults and related secondary effects (e.g., liquefaction). Other projects would be subject to the same risks of ground shaking as a result of displacement along one or more faults in close proximity to the Study Area. Similar to the Project, other projects (e.g., Mountain View Bridge, I-10 HOV) would be subject to similar mitigation requirements per federal, state and local requirements. In this context, no cumulatively considerable effects would occur under NEPA and CEQA.

The Study Area is underlain with soils that are susceptible to erosion, settlement, liquefaction, collapse, lateral spreading, and corrosion. In addition, portions of the railroad corridor, from approximately MP 3.8 to 5.8, have experienced bank failures in the recent past. It is possible that portions of the railroad corridor that parallel Mission Zanja Channel could be susceptible to instability. Other cumulative projects could contribute to additional instability (e.g., Long-Term Maintenance by SBCFCD). Mitigation Measure GEO-1 would reduce adverse effects related to these geologic hazards, including landslides, through integration of site-specific geotechnical recommendations and design measures as required by the CBC. Similarly, other cumulative projects would be subject to similar mitigation and federal, state, and local regulations. Therefore, the Project would not result in a cumulatively considerable effect under NEPA and CEQA.

4.3.9 Hazardous Waste and Materials

EFFECT 4.3-9	**Hazards and Hazardous Waste and Materials.** The Project in conjunction with past, present, and future projects could not result in cumulatively considerable adverse effects related to local hazards and hazardous waste and materials.

NO BUILD ALTERNATIVE

Under the No Build Alternative, maintenance and rehabilitation activities would occur within SANBAG's ROW. These activities could involve the use of hazardous materials. The handling of such materials would occur during short-term construction activities and would be subject to federal, state, and local health and safety requirements. Other cumulative projects would be subject to federal, state, and local health and safety requirements. No demolition of structures (beyond existing bridges requiring replacement) or encroachment into adjacent listed hazardous materials sites would occur under the No Build Alternative. Based on these considerations, the No Build Alternative would not contribute to a cumulatively considerable effect under NEPA or CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Encountering Documented and Undocumented Sources of Contamination

Health and safety effects associated with the past or current uses of a project site generally occur on a project-by-project basis, rather than in a cumulative nature. Implementation of the Project would require construction-related disturbances on adjacent properties with known hazardous materials exposure. Any hazardous wastes or materials encountered through ground-disturbing activities would be handled and disposed of in accordance with federal, state and local regulatory requirements. All future projects in the Cumulative Study Area and adjacent to the railroad corridor, such as the National Orange Show Industrial Project, Redlands Crossing Center, and Cott Beverage Industrial Warehouse, would be subject to the same local, regional, state and federal regulations. These regulations require an individual site evaluation and, if hazardous materials are encountered, clean up prior to construction. Further, the implementation of Mitigation Measures HAZ-3 (Prepare Phase I and/or Phase II ESA for Indeterminate or High-Risk Sites) and HAZ-4 (Halt Construction Work if Potentially Hazardous Materials are Encountered) would serve to further minimize potential risk such that they would not be cumulatively considerable under NEPA and CEQA.

The Project would also require the demolition of a limited number of existing structures, which may contain asbestos, and/or lead based paint. Other projects involving the removal of existing structures would also be subject to this hazard (e.g., Redlands Park Once, University of Redlands Master Plan, California HST Project, and DSBPRP). Any adverse effects would be mitigated on a project specific basis pending final engineering design. With the implementation Mitigation Measures HAZ-2, Project-specific health and safety hazards would be minimized such that no cumulatively considerable adverse effects would occur under NEPA or CEQA.

Use, Transport, and Storage of Hazardous Materials

The Project and related projects, such as the National Orange Show Industrial Project, Redlands Crossing Center, California HST Project, and Cott Beverage Industrial Warehouse, would all involve the storage, use, disposal, and transport of hazardous materials to varying degrees during construction and operation. Adverse effects from these activities are negligible for the Project because the storage, use, disposal, and transport of hazardous materials are extensively regulated by federal, state, and local laws, regulations, and policies. It is foreseeable that the Project and the related projects would implement and comply with these existing hazardous materials laws, regulations, and policies. Implementation of Mitigation Measures HAZ-1 would further minimize and reduce any Project-specific health and safety hazards such that no adverse cumulatively considerable effects would occur under NEPA. Under CEQA, cumulative impacts would be reduced to less than significant levels.

Wildfire Hazards

Wildfire hazards are inherent to Southern California's dry climate and certain activities can increase these hazards and to adjacent areas. As discussed in Section 3.10, the proposed track improvements and the SAR Bridge are located in moderate to high fire hazard zones. Project-related construction activities in conjunction with other projects that are located near moderate to high fire hazards zones, such as the Cott Beverage Industrial Warehouse and Central Avenue Corridor Storm Drain Improvements and Utility Master Plan Project, could increase the relative probability of a wildfire occurring. However, with the implementation of Mitigation Measures HAZ-5 (Keep Construction Area Clear of Combustible Materials) and HAZ-6 (Provide Accessible Fire Suppression Equipment) hazards related to wildfires would be minimized, no cumulatively considerable effects would result under NEPA and CEQA.

4.3.10 Energy

EFFECT 4.3-10	**Energy.** The Project in conjunction with past, present, and future projects would not result in cumulative effects related to energy.

NO BUILD ALTERNATIVE

Implementation of the No Build Alternative would indirectly contribute to increased energy consumption as a result of increased traffic congestion that is projected to occur in conjunction with future growth and the corresponding VMT. This alternative would not further the energy conservation initiatives of the region or the local cities, nor would it contribute to the state's GHG reduction targets in accordance with Assembly Bill (AB) 32. Likewise, the No Build Alternative would not implement the key goals or initiatives set forth in the Cities EECS, SCAG's RTP and SCS, or Department of Transportation's System Safety Program Plan (SSPP). Therefore, the No Build Alternative would not be consistent with applicable federal, state, or local energy conservation plans. In this context, the No Build Alternative would result in an adverse effect under NEPA that could be cumulatively considerable. Under CEQA, this cumulative impact is considered significant.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Construction-Related Energy Demand

The construction of the Project would result in temporary increases in demand for energy in the form of fuel used for construction vehicles and other equipment used during site clearing, grading, and construction. The energy used for project construction would not require significant additional capacity or significantly increase peak or base period demands for electricity and other forms of energy. In this context, no cumulatively considerable adverse effect would occur under NEPA or CEQA.

Long-Term Energy Demands

The Project would accommodate current and anticipated ridership demands for alternative transportation in the region. The Project would have a beneficial effect on energy resources by providing improved transit service, which would encourage more individuals to use public transit services, thereby reducing the number of personal vehicles on the roads requiring gasoline and fuel consumption. Regional VMT would also be reduced. Additionally, the cities of San Bernardino, Loma Linda, and Redlands may propose to increase land use densities, and update land use plans and development regulations to advance TOD within a high quality transit zone delineated in the RTP (2012) along the Redlands corridor. Due to the proximity of proposed TOD areas to rail stations associated with the Project and proposed mass transit projects such as the California HST Project, DSBPRP, Omnitrans sbX BRT Project, and existing regional transportation services including local Omnitrans bus service, an increase in the use of mass transit is anticipated and the associated level of ridership could in actuality be much higher than projected for in this EIS/EIR for 2038. By supporting and helping to improve public rail transit operation, the Project is expected to have an incremental beneficial effect when compared to existing conditions with regards to energy resources.

Given the planning period available, energy providers have sufficient information to include the Project in their demand forecasts. In the context of other projects considered in Table 4-1, all development projects would be required to comply with the energy efficiency standards as identified in Title 24. Based on these factors, the Project in conjunction with other past, present, and reasonable foreseeable transportation improvements projects (e.g., DSBPRP, Omnitrans sbX, and California HST Project), the improved transit service and reduced VMT offered by the combined projects is considered a beneficial cumulative effect under NEPA and CEQA.

4.3.11 Cultural and Historic Resources

EFFECT 4.3-11	**Cultural and Historic Resources.** Construction of the Project in conjunction with past, present, and future projects could result in cumulatively considerable adverse effects related to cultural and historic resources.

NO BUILD ALTERNATIVE

Under the No Build Alternative, there is a potential that ground-disturbing activities associated with maintenance activities could disturb, damage, or degrade known and unknown, intact, and potentially significant archaeological resources. In addition, ground disturbance could potentially damage or destroy unknown buried human remains. Damage to these potential resources is considered an adverse effect under NEPA that could be cumulatively considerable when considered with other projects (e.g., DRSP, Park Once, etc.). Under CEQA, these cumulative impacts are considered significant.

PREFERRED PROJECT AND DESIGN OPTIONS

According to the County of San Bernardino General Plan, more than 11,000 prehistoric and historic archaeological sites and over 2,000 historic structures have been documented within the County. Many of these sites are located on private lands under the jurisdiction of the County. The preponderance of both prehistoric and historic sites throughout the County, and the vast areas that have yet to be systematically surveyed for cultural resources, indicate that an equal number of cultural resources, as yet unidentified, are present. Given the rapid development within the County, numerous cultural resource sites will be affected by development (County of San Bernardino 2007).

Historical Resources

The records search conducted for the Project indicates that the APE has been previously inventoried for cultural resources and that approximately 161 prehistoric and historic-era districts, sites, features, and isolated artifacts have been identified (Appendix M). NRHP-listed resources identified within the APE include: (1) features from Native American habitation including the “Zanja”; and (2) structures and landscape districts of historic-era activities, in particular, those related to Gold Rush-era, railroad, and agricultural operations (see Tables 3.12-2, 3.12-3, and 3.12-4). Of these resources, the Project would require construction through the National Register-listed Redlands Santa Fe Depot Historic District, which was evaluated and listed in the National Register in 1991 (1S status code; Appendix M). It currently consists of 23 contributing properties of which eight are located within the APE. The construction in close proximity to historic structures (e.g., Redlands Depot) could result in indirect effects that in conjunction with other projects within the DRSP area would be cumulatively considerable under NEPA and CEQA. However, with the application of Mitigation Measure CUL-1 (Structural Evaluations), cumulative effects to the historic district would be

minimized and no adverse effect would result under NEPA. Under CEQA, cumulative effects would be minimized to a less than significant level.

In addition, the Preferred Project and Design Options would require an encroachment into the historic eligible I-10/California Citrus Grove adjacent to the railroad corridor, which is one of eight groves owned by the City of Redlands. The groves are an important historical element of the landscape and if additional groves are removed in the City of Redlands and for that matter the San Bernardino Valley, the incremental effect would be cumulatively considerable. Given that the Preferred Project and Design Options would result in the removal of up to two rows (or one-third) of the I-10/California Citrus Grove, the incremental reduction in the total acreage allocated to the remaining citrus groves would be significant impact that is cumulatively considerable under CEQA. The implementation of Mitigation Measure CUL-3 would reducer this impact to a less than significant level such that it would not be cumulatively considerable.

In additional to direct effects to historic resources, indirect effects from Project-related mitigation measures (e.g. NV-4 – Construction of Noise Barriers) could adversely affect the Second Baptist Church and the Redlands Lawn Bowling Area, both of which are eligible for listing on the NRHP. Other cumulative projects, including new development within the DRSP and the University of Redlands Master Plan, could incrementally add to these adverse effects. However, through the implementation of Mitigation Measures CUL-2, VQA-3, and VQA-4 these indirect effects would be mitigated such that no cumulative adverse effect to these historic resources would result under NEPA and CEQA.

Archaeological Resources

Although many portions of the APE have been subjected to detailed archaeological surveys and historical investigations (e.g., Chinatown), much of this research has been piece-meal. Several of the prehistoric resources documented within the APE have not been formally evaluated for significance per NRHP and the CRHR criteria (e.g., Redway House, Chinatown). Regardless of their association or eligibility, the large number of cultural resources documented within the APE indicates that in particular eastern sections of the APE have long been the focus of intensive activity. Construction activities implemented as part of the Project and other projects, such as Redlands Park Once and new development within the DRSP area, could result in direct adverse impacts to these resources. Although no resources and artifacts were identified within SANBAG's ROW based on archaeological testing, the potential for discovery of resources remains; especially in portions of the Project footprint that extend beyond SANBAG's ROW. With the implementation of Mitigation Measure CR-4, Project-related impacts to NRHP and CRHP resources would be minimized through avoidance techniques or systematic evaluation and data recovery, if necessary. Therefore, the Project would not result in a cumulatively considerable incremental contribution to the regional loss of known archaeological resources or artifacts under NEPA and CEQA.

REDUCED PROJECT FOOTPRINT ALTERNATIVE

Effects to historical and archaeological resources under this alternative would largely be similar to those associated with the Preferred Project. The main difference under this alternative is that drainage facilities would be contained within the ROW between California Street and just of west of Nevada Street. This alternative would contain drainage within a large diameter pipe that would require the track be raised approximately 2 feet to facilitate avoidance of the I-10/California Citrus Grove. Under the Reduced Footprint Alternative, no cumulatively considerable adverse effect would occur to the I-10/California Citrus Grove under NEPA. Under CEQA, cumulative impacts to the I-10/California Citrus Grove would be less than significant. All other effects to cultural and historical resources would be similar to the Preferred Project.

4.3.12 Parklands and Community Services and Facilities

EFFECT 4.3-12	**Parklands and Community Services and Facilities.** The Project in conjunction with past, present, and future projects could result in cumulatively considerable adverse effects related to parklands and community services and facilities.

NO BUILD ALTERNATIVE

Under the No Build Alternative, maintenance activities would be limited to the existing ROW and would not have the potential for disruption to existing parkland, community services, and other public facilities. Although bridge improvements would have the potential to interfere with trails (e.g., SAR Trail) and bike lanes, these effects would be temporary, contained within SANBAG's ROW, and would maintain the existing design. Based on these circumstances and in considering the disturbed nature of the railroad corridor, there would be no cumulatively considerable adverse effects to parkland, community services, and other public facilities under NEPA. Under CEQA, no significant cumulative impact would result.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Parks and Recreation

The installation of Project facilities along the railroad corridor could include disruptions to bicycle and hiking trails, local parks, and sports fields. These incremental disruptions in conjunction with other projects, such as the Tippecanoe Avenue Widening Project, Mountain View Avenue Widening Project, Flood Control Maintenance by SBCFCD, and the University of Redlands Master Plan could be cumulatively considerable. With implementation of Mitigation Measures TR-1, VQA-1, PCS-1 (Coordinate Trail Planning with Local Jurisdictions.), NV-1, and NV-2, effects related to the temporary disruption to local streets, impacts to the SAR Trail, access to recreational areas during construction, and nuisance-related construction effects on recreational areas and parks would be minimized. With these mitigation measures, no cumulatively considerable adverse effect to parklands and communities facilities would result under NEPA. Under CEQA, cumulative impacts would be reduced to less than significant levels.

4.3.13 Economic and Fiscal Effects

EFFECT 4.3-13	**Economic and Fiscal Effects.** The Project in conjunction with past, present, and future projects would result in beneficial cumulative effects as a result of increases in the number of jobs and spending in the local and regional economy.

NO BUILD ALTERNATIVE

Under this alternative, some short-term job creation would occur to implement maintenance improvements along with other cumulative projects under the No Build Alternative. As a result, the No Build Alternative would have no adverse effect under NEPA to economic or fiscal resources. However, because passenger rail service would not be implemented, this alternative would not realize value-added dollars income for the regional economy or facilitate the opportunities within a high quality transit area as delineated by the 2012 RTP. Although this alternative would potentially perpetuate existing blight conditions along the railroad corridor and create less incentive for private investment and corresponding cumulative projects (e.g., TOD), these conditions remain speculative and not cumulatively considerable under NEPA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

The Project would enhance transportation options for the Cities of San Bernardino and Redlands and facilitate passenger train service within a high quality transit corridor as delineated in the 2012 RTP. The Project would increase accessibility by rehabilitating the railroad corridor and constructing new station locations that would benefit local business by increasing the pool of potential consumers (or shoppers) that could access businesses by foot. This new access and enhanced pedestrian connectivity would not only potentially increase the visibility for local businesses, but support (or increase) the vitality of local business. Additionally, if future stations are constructed as demand increases (e.g., future RPRP phases) and land use intensifies (e.g., TOD); additional incremental benefits could result. These indirect economic benefits would be cumulatively considerable under NEPA.

The Project is expected to generate 1,390 job-years (Appendix O). The Project is also expected to create $103.9 million in value added, including $71.3 million in labor income. Additionally, the Project is expected to generate $14.4 million in federal taxes and $7.6 million in state and local taxes. Beyond economic benefits related to short-term job creation, the Project is expected to generate long-term employment opportunities. The economic benefits would add incrementally to the labor market (California HST Project, I-10 HOV, etc.) within southwestern San Bernardino County. The Project would have a beneficial effect on the regional and local economy along with other projects listed in Table 4-1. These direct economic benefits would be cumulatively considerable under NEPA.

Future passenger train operations would be funded by Measure I (Rail) as provided in Chapter 2. This funding source is specifically allocated for rail operations per the voter approved Measure I. In this context, the Project would not result in a cumulatively considerable adverse affect to funding allocations for other transit operations within San Bernardino County.

4.3.14 Safety and Security

EFFECT 4.3-14	**Safety and Security Effects.** The Project in conjunction with past, present, and future projects could result in a potential for adverse safety conditions, including station accidents, right-of-way accidents and collisions, conflicts with non-motorized forms of transportation (e.g., bicycles), and adverse security conditions.

NO BUILD ALTERNATIVE

Under the No Build Alternative, existing conditions safety and security conditions would continue along the railroad corridor. Unobstructed and unauthorized access (e.g., trespassing) across the railroad corridor would likely continue to persist. Additionally, security concerns (e.g., graffiti, illegal encampments, etc.) would also likely continue to persist. These conditions would be representative of existing conditions and would generally only be influenced by other projects that intersect the railroad corridor, such as the Mountain View Avenue, Tippecanoe Avenue, and Alabama Street widening projects. As a result, minimal to no cumulatively considerable changes to existing safety and security conditions within the Study Area would occur.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Given the nature of the proposed passenger rail and pedestrian improvements, potential effects to local crime rates are expected to be negligible. Similar to the Project, security concerns associated with other projects within the Study Area would be addressed on a project-specific

basis with the inclusion of site-specific security measures or the payment of fees to cover the provision of police services. Additionally, during construction of the Project and other concurrent projects, the implementation of Mitigation Measure TR-1 would ensure for the notification of local emergency service providers in an effort to coordinate with local law enforcement and emergency response providers. Once operational, design of the Project in conformance with LASD Transit Police Services Bureau and Metrolink station design and operation standards in conjunction with the implementation of Mitigation Measure SS-1 would minimize any long-term security risk. Given that security risks would generally be specific to the Project, implementation of the Project would not contribute to a cumulatively considerable adverse effect in terms of security under NEPA or CEQA.

Safety concerns for motorists and pedestrians would increase locally, particularly if other development and transportation projects are constructed in the vicinity of the railroad corridor concurrently. These concerns and the potential for any incremental effects from other projects would be minimized through the implementation of Mitigation Measure TR-1 and SS-2. Once operational the Project, in combination with other projects, would be unlikely to contribute to a cumulatively considerable adverse effect on safety since the Project's design would factor other projects that interface with the railroad corridor (e.g., roadway widening projects, Redlands Park Once, DSBPRP, and University of Redlands Master Plan) and follow standardized engineering practices, including at proposed bridge locations. The Project would include the incorporation of safety measures at each of the rail stations, bridges, and at-grade crossings per Mitigation Measures SS-1, GEO-1, and TR-3. In this context, the Project would not result in a cumulatively considerable adverse effect to safety under NEPA and CEQA.

4.3.15 Environmental Justice

EFFECT 4.3-15	**Environmental Justice.** The Project in conjunction with past, present, and future projects would result cumulatively considerable adverse effects that would predominately be borne by environmental justice populations; however, these cumulative effects would not be disproportionately high.

NO BUILD ALTERNATIVE

As discussed in detail in Section 3.17 Environmental Justice, the No Build Alternative would generally not result in direct or indirect adverse effects to environmental justice (EJ) populations because maintenance would be limited in geographic extent, duration, and confined to SANBAG's existing ROW. Nevertheless, these activities could occur at any location along the entire length of the railroad corridor in conjunction with projects listed in Table 4-1, such as the Tippecanoe Avenue Widening Project and Mountain View Avenue Widening Project, and result in temporary disruptions in access, construction-related noise, and increased delay on affected roadways. Based on the demographic characteristics of the Planning Area, which includes a combination of low-income and minority populations immediately adjacent to the railroad corridor, these adverse effects would be predominately borne by EJ populations.

Existing bus service and freight use along the railroad corridor would be maintained under the No Build Alternative; however, no increases in connectivity to regional public transit would be offered beyond planned conditions; extension to downtown San Bernardino (e.g., DSBPRP). Traffic congestion in the Planning Area is anticipated to increase, which may result in transit service being impacted by this congestion. As a result, the mobility of transit-dependent

populations (some of which are EJ populations) could be disrupted more in the future. However, these poor operating conditions on local roadways and highways are part of the existing environmental conditions and, therefore, would not be cumulatively considerable under NEPA and CEQA.

BUILD ALTERNATIVES AND DESIGN OPTIONS

Construction-Related Effects

Minority and low-income populations located within the Planning Area and in close proximity to the railroad would be subject to potential adverse effects during construction of the Project. These adverse construction-related effects, although temporary, could include noise and vibration, hazards and safety concerns, disruptions to traffic and circulation, temporary displacement of parking, land acquisitions, and changes in local aesthetics and visual quality. The construction-related effects would occur in conjunction with the construction of other roadway improvement projects (e.g., Mountain View Avenue widening) and development projects (e.g., University of Redlands Master Plan). In limited circumstances (e.g., nighttime construction noise), even following the application of mitigation, the Project-related effects during construction could remain adverse and cumulatively considerable under NEPA and CEQA.

Construction of the Project and other roadway projects listed in Table 4-1 including, but not limited to, Alabama Street and Tippecanoe Avenue widening and California HST Project, would likely result in temporary closures and/or detours during construction activities. Mitigation Measure TR-1 proposed in Section 3.3 would reduce potential adverse effects as a result of temporary road closures, detours, and obstructions in access. To minimize the number of temporary construction easements and land acquisitions, Mitigation Measure LU-1 would be implemented to further minimize the Project's land requirements during final engineering design. Each of these mitigation measures would be applied throughout the corridor. Other cumulative projects would also be required to follow similar requirements to minimize the taking of private properties. As discussed in Section 3.6, Mitigation Measures NV-1 and NV-2 would reduce noise and vibration effects, however, even with these measures, Project-related construction activities could exceed daytime and nighttime noise thresholds established by FTA. EJ populations border much of the length of the railroad corridor (except for Loma Linda) and, therefore, these populations would be subjected to adverse noise effects during construction (see Figure 3.17-3). Although these effects would be temporary, construction-related noise would occur over the three-year duration of Project construction during all hours of the day and when considered with other projects listed in Table 4-1, such as the California HST Project, this is considered a cumulatively considerable adverse effect under NEPA.

Long-Term Operations

Project operations would include new passenger rail service and supporting activities that would result in potential adverse effects to EJ populations related to traffic/circulation; noise and vibration; visual resources; and land use. These project-level and cumulative effects are analyzed throughout Chapters 3 and 4. In most instances, these adverse effects associated with the Project would be minimized through the implementation of proposed mitigation measures or standard engineering practices. In limited instances, no mitigation is available or the applied mitigation would be ineffective in reducing the effect, is infeasible, or outside SANBAG's control to fully implement. Further consideration of these effects for specific resources is provided below in the context of the EJ populations potentially affected within the Planning Area.

Adverse noise effects during construction would be predominately experienced by low-income and minority populations bordering the railroad corridor. EJ populations would be in close proximity to passenger train operations and related noise and vibration effects. In the vicinity of downtown Redlands, adverse noise impacts would be experienced disproportionately by EJ populations. However, these adverse noise effects would generally decrease with increasing proximity from the railroad corridor and, therefore, would be confined to areas at relatively short distances from the railroad corridor (e.g., less than 500 feet). Thus, the entire low-income census tract or minority block group would not be affected equally. Notwithstanding this circumstance, the Project along with other projects listed in Table 4-1, such as the California HST Project, I-10 HOV, and local roadway widening projects, would result cumulatively considerable adverse noise effects to EJ populations under NEPA.

Multiple mitigation measures are proposed that address increased noise; however, these measures in of themselves result in indirect adverse effects. For example, the physical scale of sound barriers (up to 12 feet) at sensitive receptor locations would create a distinct and significant aesthetic change to the community character of the area in which they are construction. Additionally, these noise barriers may result in an adverse, indirect impact on adjacent land uses by creating a physical barrier between existing uses that are otherwise continuous and connected. These adverse effects would be experienced mostly by portions of the respective populations living closest to the railroad corridor, typically the first row tier of buildings. Receptors at greater distances would be less affected. Based on this context, the Project would result in cumulatively considerable indirect adverse effects to minority and low-income populations under NEPA. These cumulatively considerable adverse effects would be disproportionate for EJ populations in downtown Redlands and east of I-10 when compared to non-EJ populations.