

2.20 Cumulative Impacts

2.20.1 Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of the proposed project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

California Environmental Quality Act (CEQA) Guidelines Section 15130 describes when a cumulative impact analysis is necessary and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts under CEQA can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts under the National Environmental Policy Act (NEPA) can be found in 40 Code of Federal Regulations (CFR) Section 1508.7.

2.20.2 Methodology

The cumulative impact analysis methodology utilized was based on the eight-step process set forth in the California Department of Transportation (Caltrans) *Standard Environmental Reference (SER) Guidance for Preparers of Cumulative Impact Analysis* (2005). The eight-step process is as follows:

- Identify resources to be analyzed
- Define the Study Area for each resource (i.e., Resource Study Area [RSA])
- Describe the current health and historical context for each resource
- Identify direct and indirect impacts of the proposed project

- Identify other reasonably foreseeable actions that affect each resource
- Assess potential cumulative impacts
- Report results
- Assess the need for mitigation

2.20.2.1 Resources Excluded from Cumulative Impacts Analysis

As specified in the Caltrans guidance, if the proposed project would not result in a direct or indirect impact to a resource, it would not contribute to a cumulative impact on that resource and need not be evaluated with respect to potential cumulative impacts.

Those resources for which cumulative effects are not anticipated or for which the impacts were already analyzed in a cumulative context (e.g., traffic, air quality, and noise) are briefly discussed below.

- **Coastal Zone:** The project limits are not located within the Coastal Zone. Therefore, the Build Alternative would not contribute to cumulative adverse impacts to the Coastal Zone.
- **Wild and Scenic Rivers:** There are no wild and scenic rivers in the Study Area. Therefore, the Build Alternative would not contribute to cumulative adverse impacts to wild and scenic rivers.
- **Land Use:** The freeway improvements associated with the Build Alternative are consistent with local and regional goals to improve traffic operations and reduce congestion in the area. The Build Alternative would improve areas that are currently designated or used for transportation. Land use compatibility conflicts would not result where existing land uses would be converted for transportation use. Therefore, adverse cumulative impacts related to land use are not expected.
- **Parks and Recreation:** Partial acquisitions of existing parks or recreational facilities outside of existing Caltrans right-of-way would be minimal and would not make those facilities unusable. Potential effects to resources protected under Section 4(f) would be limited, and appropriate measures have been identified to address any permanent or temporary effects to these resources. A “De Minimis” finding has been made related to resources protected under Section 4(f). Therefore, the Build Alternative would not contribute to cumulative adverse impacts related to parks and recreation.
- **Growth:** The Build Alternative would improve existing and future traffic operations, reduce congestion, and accommodate existing and future planned

- growth that would occur with or without the Build Alternative. The Build Alternative does not induce growth or remove obstacles to growth in the area and, therefore, would not contribute to cumulative adverse impacts related to growth.
- **Utilities and Emergency Services:** Although it is anticipated that two projects may be constructed during the same timeframe as the Build Alternative, it is not anticipated that temporary impacts to emergency services would contribute to a cumulative effect within the Study Area. Additionally, the Build Alternative would not permanently adversely affect utilities or emergency services, and therefore, would not contribute to cumulative adverse effects to utility facilities and emergency service providers.
 - **Traffic/Transportation:** The analysis of future traffic conditions in Section 2.5, Traffic/Transportation, for 2030 (Opening Year) and 2050 (Design Year) is a cumulative analysis in that it considers traffic generated by existing and future planned land uses and the effect of future planned transportation improvements. As a result of the cumulative analysis presented in Section 2.5, the Build Alternative would improve traffic operations and reduce congestion. Therefore, the Build Alternative would not contribute to cumulative adverse impacts to traffic/transportation.
 - **Visual/Aesthetics:** The Build Alternative would not substantially change the existing views of and from Interstate 5 (I-5), and impacts to visual quality would be moderate to low. Therefore, the Build Alternative would not contribute to cumulative adverse effects to visual resources.
 - **Cultural Resources:** Construction of the Build Alternative would not impact known cultural resources or cultural resources on or eligible for listing on the National Register of Historic Places. While cultural resources in the Study Area outside the project limits may be directly or indirectly impacted by other projects, the Build Alternative would not directly or indirectly impact those resources and, therefore, would not contribute to cumulative adverse impacts related to cultural resources.
 - **Hydrology and Floodplains:** Modifications to floodplain crossings from of the Build Alternative would not result in more than a 0.1-foot (ft) change to the base flood elevation, and no encroachments to any hydrologic channels are anticipated. Therefore, the Build Alternative would not contribute to cumulative adverse effects related to hydrology and floodplains.
 - **Water Quality:** As described in Section 2.9, Water Quality, drainages that could be impacted by the Build Alternative would drain into the San Diego Creek/ Newport Bay Watershed. However, those drainages would only experience

temporary construction-related impacts that would be addressed by the implementation of Project Features PF-WQ-1 and PF-WQ-2. Although there would be an increase in new and replaced impervious surfaces under the Build Alternative, 100 percent of that impervious surface area would be treated, providing greater overall water quality benefits to on-site drainages and downstream receiving waters. The Build Alternative would comply with the requirements of the Construction General Permit, the Caltrans Storm Water Management Plan (SWMP), and the Caltrans and City National Pollutant Discharge Elimination System (NPDES) permit requirements, and would include best management practices (BMPs) to target pollutants of concern in storm water runoff during construction and operations. Considering the RSA for the project is urbanized, the limited impacts of and application of regulatory requirements to the Build Alternative would not contribute to cumulative adverse impacts to surface water quality.

- **Geology/Soils/Seismic/Topography:** The potential impacts of the Build Alternative related to geologic conditions and soils as discussed in Section 2.10, Geology/Soils/Seismic/Topography, would be addressed based on site-specific geotechnical design features, as described in Project Feature PF-GEO-1. As a result, the Build Alternative would not contribute to cumulative adverse impacts related to geology, soils, seismic, and topography.
- **Air Quality:** With implementation of Project Features PF-AQ-1 through PF-AQ-3, and Measure AQ-4 identified in Section 2.13, construction-related emissions would not be substantial and are unlikely to contribute to cumulative air quality issues. In general, construction activities related to the Build Alternative will last for less than five years at one general location, so construction-related emissions do not need to be included in regional and project-level conformity analysis. During operation, the Build Alternative would result in very small increases or decreases in the regional emissions and would not contribute substantially to regional vehicle emissions. As described in Section 2.13, the Build Alternative was determined not to be a Project of Air Quality Concern (POAQC) by the Transportation Conformity Working Group (TCWG).
- **Noise:** Although it is anticipated that two projects may be constructed during the same timeframe as the Build Alternative, it is not anticipated that temporary noise impacts would contribute to a cumulative effect within the Study Area. After implementation of noise abatement as described in Section 2.14, the increases in predicted traffic noise levels to modeled receptors would cease; therefore, the

- Build Alternative would not contribute to cumulative adverse effects related to noise.
- **Natural Communities:** Although the Biological Study Area (BSA) contains natural communities (freshwater marsh) and area for wildlife movement for bobcats and coyotes, riparian habitat in the freshwater marsh and the functionality of wildlife crossings are not expected to experience permanent impacts. Construction activities would avoid freshwater marsh. Generally, the proposed project occurs in an already urbanized area and, therefore, cumulative impacts to natural communities would be unlikely. According to the *Natural Environment Study* (May 2017), wildlife movement would be unobstructed during periods when construction is stopped. During operation, there would be no new impacts to wildlife crossings or natural communities. As a result, the Build Alternative would not contribute to cumulative adverse effects related to natural communities.
 - **Wetlands and Other Waters:** The Build Alternative would not have an impact on wetlands, and natural streambeds would not be converted. The potential California Department of Fish and Wildlife (CDFW) jurisdictional area that would be impacted by the Build Alternative is concrete-lined. Therefore, the Build Alternative would not contribute to cumulative adverse effects related to wetlands and other waters.
 - **Plant Species:** Although literature research has identified that the BSA contains suitable habitat for southern tarplant, southern tarplant plants were not observed or otherwise detected during field surveys conducted for the proposed project. No additional special-status plant species or special-status plants were identified during literature research, observed, or otherwise detected during field surveys for the proposed project. As a result, the Build Alternative would not impact special-status plant species and, therefore, would not contribute to cumulative adverse effects related to special-status plant species.
 - **Invasive Species:** The Build Alternative would not substantially increase the potential for the spread of invasive species. Compliance with standard invasive species control procedures (refer to Project Feature PF-IS-1 in Section 2.19, Invasive Species) would address this impact. Therefore, the Build Alternative would not contribute to cumulative adverse effects related to invasive species.

2.20.3 Resources Evaluated for Cumulative Impacts

The following discussion of potential cumulative impacts is presented by environmental resource area. The reasonably foreseeable projects considered in this analysis are presented in Table 2.20.1 and are shown on Figure 2.20-1.

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Table 2.20.1: Planned Projects List

ID Number	Name	Jurisdiction	Planned Uses	Status	Potential Environmental Impacts
1	SR-55 (I-5 to SR-91)	City of Orange, City of Santa Ana, City of Tustin	Provide congestion relief, improve operations, and increase mobility on SR-55 between I-5 and SR-91. A PEAR was conducted in November 2014, which defined seven alternatives (which includes the No Build Alternative) and six design options, which include operational improvements and capacity enhancements that would generally be within existing ROW.	Draft Environmental Document was circulated for public review September 2019 to October 2019. The Final Environmental Document is scheduled for release in early 2020.	Transportation/Traffic Noise Hazardous Materials
2	SR-55 (I-405 to I-5)	City of Tustin, City of Santa Ana, City of Irvine	Widen SR-55 in both directions from just north of the I-405/SR-55 interchange to just south of the I-5/SR-55 interchange between PM 6.4 to PM 10.3 to relieve projected traffic growth on SR-55.	In final design phase. (Construction slated to start 2021) MND/FONSI approved August 2017	Transportation/Traffic Hazardous Materials
3	I-5 (SR-55 to SR-57)	City of Orange, City of Santa Ana, City of Tustin	Reduce current and future freeway congestion, and address delays caused by two HOV lanes merging into one HOV lane by adding one new HOV lane in both directions of I-5, including replacing concrete barriers with striping to provide free-flow of traffic in and out of the HOV lanes.	Under construction. ND/FONSI Approved April 2015	No adverse effect on environmental resource areas
4	I-405(I-5 to SR-55) ³	City of Costa Mesa, City of Irvine	Add 1 mixed flow (general purpose) lane in each direction from I-5 to SR-55, including merging improvements.	PA/ED phase (Construction TBD)	Traffic Noise, Air Quality (temporary)
5	I-405 (University Drive to Sand Canyon Road) ³	City of Irvine	Add one SB auxiliary lane from University Drive to Sand Canyon Road, and Sand Canyon Avenue to SR-133.	Construction complete	Traffic Noise, Air Quality (temporary)
6	I-5 (SR-73 to El Toro Road)	City of Lake Forest, City of Laguna Hills, City of Laguna Niguel, City of Laguna Woods, City of Mission Viejo, City of San Juan Capistrano	Add one general purpose lane on I-5 in each direction between Avery Parkway to Alicia Parkway and El Toro Road, extend the second HOV lane in both directions and add auxiliary lanes where needed from El Toro Road to Alicia Road. Reconstruct Avery Parkway and La Paz Road interchanges, construct new auxiliary lanes at six locations and re-establish auxiliary lanes, modify on- and off-ramps at six locations, convert buffer-separated carpool lanes to continuous access, and provide standard lane and shoulder widths.	Under construction.	Traffic Noise, Air Quality (temporary)
7	Newport Avenue Extension Project and Grade Separation ³	City of Tustin	Phase II (North of Edinger Avenue to Myrtle Avenue). Grade separation at OCTA/SCRRA Railway.	FEIR certified. Completion dependent on funding.	Traffic Noise, Air Quality (temporary)
8	Red Hill Avenue Grade Separation ³	City of Tustin	Grade separation of Red Hill Avenue (just north of Edinger Avenue) from the OCTA/SCRRA railway.	Preliminary Engineering/ Planning Report under development	Traffic Noise, Air Quality (temporary)
9	Laguna Canyon Road/I-405 Overcrossing Widening Project IS/MND ²	City of Irvine	Includes widening the existing Laguna Canyon Road / I-405 overcrossing and completing the widening of the bridge approaches. This widening would add a median and two lanes of traffic west of the existing bridge.	Final Design [Project On-Hold]	No adverse effect on environmental resource areas
10	Trabuco Road lane widening improvements at SR-133 ³	City of Irvine	Add new on-ramps and off-ramps at Trabuco Road and SR-133.	PSR-PDS phase started January 2017	Traffic Noise, Air Quality (temporary)
11	Metrolink Service Track Expansion and Grade Crossing Improvements	City of Fullerton, City of Anaheim, City of Orange, City of Santa Ana, City of Tustin, City of Irvine, City of Lake Forest, City of Mission Viejo, City of Laguna Niguel	Part of a plan to implement 30-minute headways. May include turn back facilities, layover facilities, and/or reliability improvements for high frequency Metrolink service operations between Fullerton and Laguna Niguel/Mission Viejo Metrolink stations. ³	Completed ⁴	No adverse effect on environmental resource areas
12	JOST I-5 Bicycle-Pedestrian Overcrossing	City of Irvine	Class I separated bicycle-pedestrian overcrossing the I-5 freeway (east of Jeffrey Road)	PSR-PDS Completed. PA/ED Underway	Traffic Noise, Air Quality (temporary)
13	Jeffrey and Walnut Intersection Improvements	City of Irvine	Improve intersection at Jeffrey and Walnut - On EB Jeffrey Road - Add left- turn lane (two left-turn lanes), add a shared through / right-turn lane, and add an on-street Class II bike lane.	Completed.	Traffic Noise, Air Quality (temporary)

Table 2.20.1: Planned Projects List

ID Number	Name	Jurisdiction	Planned Uses	Status	Potential Environmental Impacts
14	Jeffrey Park and Ride Expansion Project	Caltrans	Expansion of existing Park-and-Ride facility located at the northeast corner of Jeffrey Road and Walnut Avenue. Parking lot expansion will add approximately 390 additional spaces (i.e., 140,000 sf).	Completed	Traffic Noise, Air Quality (temporary)
15	Red Hill Apartments at 13751 & 13841 Red Hill Avenue	City of Tustin	Mixed-use development consisting of 201 apartment DUs, 3,000 sf health club, 10,000 sf general office, 4,000 sf shopping center, 3,000 sf high-turnover restaurant, and parking structure.	Under review	Traffic Noise, Air Quality (temporary)
16	Residential development at 1051 Bonita Street	City of Tustin	Residential development consisting of demolition of two single-family DU and construction of an apartment building with four DUs	Completed	No adverse effect on environmental resource areas
17	Residential development at 1381 & 1391 San Juan Street	City of Tustin	Residential development consisting of demolition of one single-family DU and construction of five detached condominium DUs	Under construction.	No adverse effect on environmental resource areas
18	Residential development at 1872 San Juan Street	City of Tustin	Residential development consisting of demolition of six single-family DUs and construction of 26 detached condominium DUs	Completed.	No adverse effect on environmental resource areas
19	Vintage Lofts Residential Project (Applicant: Intracorp So Cal-1) at 420-436 W. 6th Street and 330-694 S. B Street ¹	City of Tustin	Subdivide a 6.81 ac parcel into two parcels for the development of 140 single-family attached. Would require a general plan amendment and zone change to change the land use designation from industrial to planned community residential.	Under construction.	Noise
20	Residential Units at Cypress Village and Oak Creek	City of Irvine	Zoning Code and General Plan Amendment to replace 1.7 million sf of medical and science uses with 1,433 residential units.	Constructed.	Traffic Noise Air Quality
21	Los Olivos Apartments, at Irvine Center Drive and Bake Parkway	City of Irvine	Master Plan Modification for Master Landscape Plan, Trail Plan, and for Phase 1 - 940 apartment units and Phase 2 – 1,950 apartment units, a school, and a community park.	Phase 1 w/ 940 apartments complete / occupied. Phase 2 w/ 1,950 apartments under construction.	No adverse effect on environmental resource areas
22	PA 40 East-East Residential Development	City of Irvine	470 Condos, 105 Apartments to replace 403,180 sf office at Ridge Valley / Marine Way	Under Development Review as of October 2019.	Traffic Noise
23	Pacific Center East Specific Plan	City of Tustin	Up to 992,841 sf of office and 98,400 sf of commercial remain to be built.	Partially constructed.	Noise Air Quality (temporary)
24	Red Hill Avenue Specific Plan ¹	City of Tustin	Specific Plan to redevelop approximately 55.8 ac of land along Red Hill Avenue, from Bryan Avenue to Walnut Avenue.	Program EIR completed and NOD issued in 2018; Specific Plan adopted in November 2018.	Traffic Noise Air Quality (temporary)
25	Tustin Downtown Commercial Core Specific Plan (DCCSP) ¹	City of Tustin	Specific Plan to guide the long-term growth and development in Old Town Tustin and surrounding areas. Includes rezoning parcels within the specific plan area into six Development Areas (DA) that identify development parameters including permitted land uses, development standards, and design guidelines. A maximum of 887 new residential units may be constructed within the specific plan area.	Program EIR completed and NOD issued in 2018; Specific Plan adopted in July 2018.	Traffic Noise
26	Tustin Legacy (MCAS Tustin Specific Plan/Reuse Plan)	City of Tustin	As of February 2017, The Tustin Legacy Specific Plan area contains existing residential, commercial, institutional development, vacant land, including the Tustin Field, Columbus Square, Columbus Grove Tustin, and Columbus Grove Irvine neighborhoods (2,507 units; 402 units in Irvine and 2,105 in Tustin), The District commercial development (approximately 1,016,000 sf), schools (one school has opened: Heritage Elementary STEAM Magnet School), regional law enforcement training facility, an Army Reserve Center, two transitional housing/emergency shelters, and a South Orange County Community College District campus (14,680 sf of housing) that is the first phase of a larger mixed-use educational campus (the Advanced Technology & Education Park). Three residential projects are under construction, two of which have been completed; 225 DU of affordable housing, 533 DU multi-family homes, 375 DU single-family homes. Approximately 867 ac of the project area	Partially constructed.	Traffic Noise Air Quality

Table 2.20.1: Planned Projects List

ID Number	Name	Jurisdiction	Planned Uses	Status	Potential Environmental Impacts
			are vacant or contain unoccupied buildings. The area currently has 12 ac of public and private neighborhood parks in residential neighborhoods.		
27	Lyon Communities at 1901-1907 East First Street	City of Santa Ana	2,424 sf commercial, 250 DU apartments, 14 DU townhomes	Construction complete.	Traffic Noise
28	Restaurant at 14232 Newport Avenue	City of Tustin	1,800 sf fast-food restaurant w/ drive-through	Planning stages.	Hazardous Waste Noise Air Quality
29	Retail at the Chevron/Extra Mile, Heritage Plaza Center at 14446 Culver Drive	City of Irvine	Under construction - Add retail square footage to the Chevron/Extra Mile store.	Construction complete.	No adverse effect on environmental resource areas
30	Office Building, Waterworks Way and Odyssey	City of Irvine	Constructed a 71,141 sf office building.	Construction complete.	No adverse effect on environmental resource areas
31	PA 33 Office Towers at 200 and 400 Spectrum Center Drive	City of Irvine	PA 33 – two office towers (450,705 sf and 434,847 sf) under construction being occupied at 200 and 400 Spectrum Center Drive.	Construction complete.	Traffic Noise
32	52 Discovery (Warehouse)	City of Irvine	Conversion of 213,800 sf from Warehouse to Research and Development at 52 Discovery.	Under Development Review as of March 2017.	No adverse effect on environmental resource areas
33	Karma Automotive at 9950 Jeronimo	City of Irvine	90,000 sf office, 134,149 sf Research and Development, and 37,9620 sf warehouse.	In process now, not yet approved as of March 2017.	Traffic Noise
34	Chapman University Expansion 9750 Jeronimo	City of Irvine	Site expansion to accommodate 1,135 students and 287 faculty.	Under Development Review as of September 2019.	Traffic
35	Orange County Great Park	City of Irvine	A project area spanning approximately 1,300 ac, with more than 200 ac developed and 688 ac in planning and design. Approved in 2013, the 688 ac parkland project is under construction, including 4,606 DUs of residential development, a community ice facility, 194 ac sports park and fitness complex, a 188 ac golf course and golf practice facility and clubhouse, 71 ac agriculture component, 40 ac Bosque area, 36 ac Upper Bee Canyon area, improvements that will connect the Great Park to Irvine Boulevard, as well as a 178 ac Wildlife Corridor.	Under construction. Residential: District 1 & 2 constructed/occupied, District 3 under construction, District 4 & 5 – future construction / under development review. Sports Park: Phase 1 (24 tennis courts, 6 soccer fields, 5 volleyball courts and playground, 3 championship stadiums for soccer, volleyball and tennis) completed. Baseball Complex and softball complex completed.. Future phases TBD.	Growth Utilities Traffic Air Quality Noise Hazardous Waste
36	Cultural Terrace at the Orange County Great Park	City of Irvine	A 260 ac portion of the approved 688 ac Master Plan for the Orange County Great Park. Includes an amphitheater, lake, library, and museums.	Planning stages.	Noise (temporary)
37	Park Design Plan, Ridge Valley and Marine Way	City of Irvine	Park Design Plan for a 1.98 ac private park.	Under review and plans developed. City / Agency Cooperative Agreements in progress.	No adverse effect on environmental resource areas

Table 2.20.1: Planned Projects List

ID Number	Name	Jurisdiction	Planned Uses	Status	Potential Environmental Impacts
38	The Rinks Ice Facility at Great Park	City of Irvine	270,000 sf community ice complex and practice facility.	Construction complete in January 2019.	No adverse effect on environmental resource areas

Sources: LSA (2017), City of Tustin (2017), City of Irvine (2017), and City of Santa Ana (2017).

¹ City of Tustin Planning & Development Updates (accessed February 14, 2017).

² Irvine Discretionary Projects List Under Review, as of March 8, 2017.

³ Southern California Association of Governments (SCAG) 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Project List

⁴ SCAG 2017 Federal Transportation Improvement Program (FTIP) Completed Projects List

ac = acre

Caltrans = California Department of Transportation

DU = dwelling unit

EB = eastbound

EIR = Environmental Impact Report

ft = foot/feet

HOV = high-occupancy vehicle

I-5 = Interstate 5

I-405 = Interstate 405

MCAS = Marine Corps Air Station

mi = mile/miles

OCTA = Orange County Transportation Authority

PA/ED = Project Approval/Environmental Documentation

PA = Planning Area

PEAR = Preliminary Environmental Analysis Report

PM = Post Mile

PS&E = Plans, Specifications, and Estimates

PSR-PDS = Project Study Report/Project Development Support

ROW = right-of-way

SB = southbound

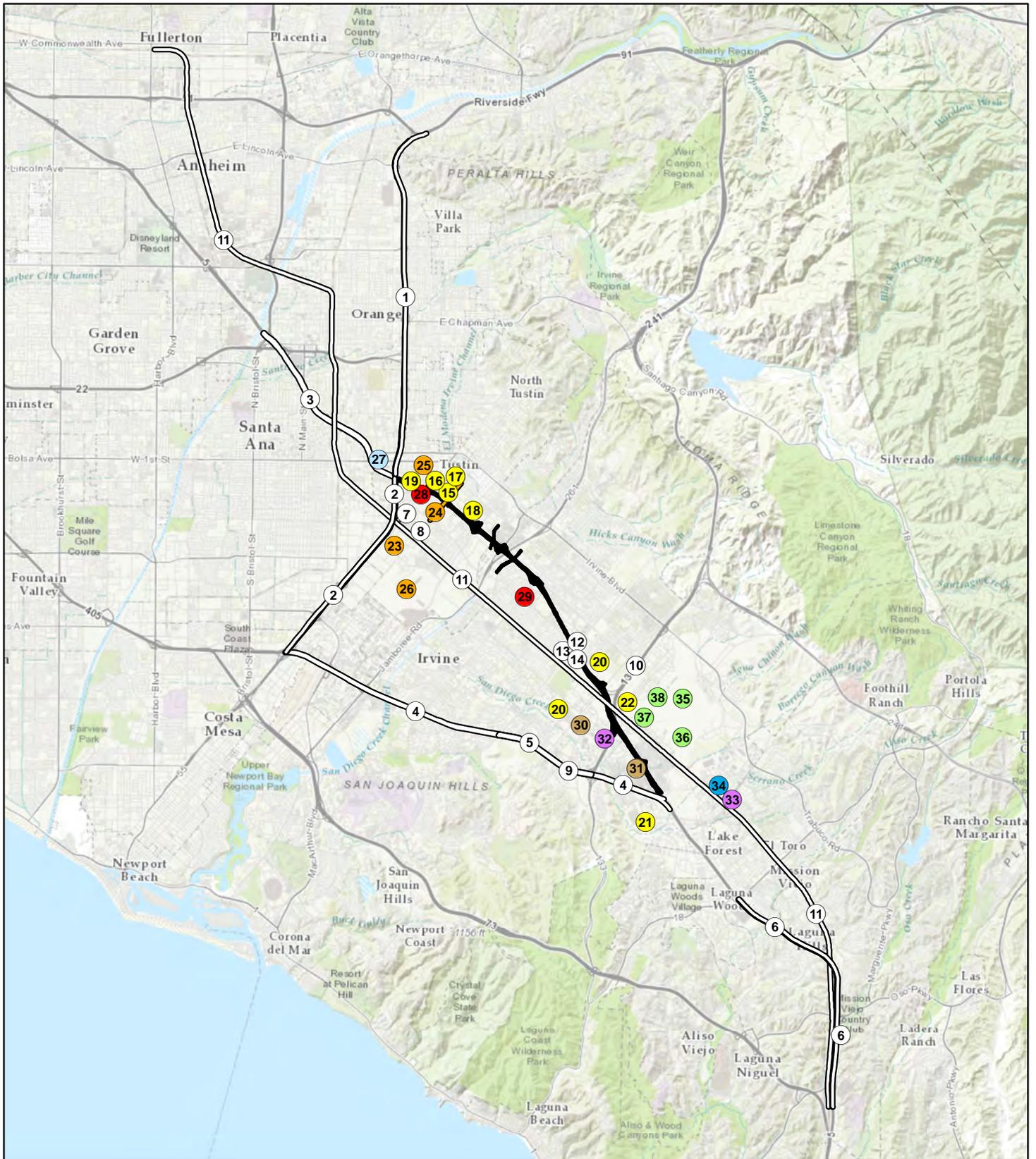
SCRRA = Southern California Regional Rail Authority

sf = square feet

SR-55 = State Route 55

SR-91 = State Route 91

SR-133 = State Route 133

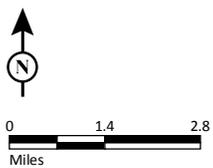


LEGEND

- | | | |
|---|---|--|
|  Project Footprint |  Commercial and Services |  Mixed Use |
|  Facilities |  Parks and Recreation |  Residential |
|  General Office |  Specific Plan |  Transportation |
|  Light Industrial | | |

I-5 Improvement Project: I-405 to SR-55

Planned Projects
 12-ORA-5 PM 21.3/30.3
 EA No. 0K670



SOURCE: Esri (2015); AECOM (11/2016)

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FIGURE 2.20-1

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In general, most of the development projects listed are infill projects, and the listed transportation projects would improve existing facilities rather than construct new facilities.

The following resources are evaluated in this section for cumulative impacts: community impacts, hazardous waste, and animal species. The Build Alternative would have a similar potential contribution to cumulative impacts for these resources and are, therefore, discussed as one.

2.20.3.1 Community Impacts

Community Character and Cohesion

The RSA for cumulative community impacts consists of Census Tract 524.10 in the Cities of Lake Forest and Irvine; Census Tracts 524.04, 524.18, 525.05, 525.17, 525.18, 525.25, 525.26, 525.27 in the City of Irvine; Census Tracts 525.02, 525.24, 755.07, 755.12, 755.13, 755.14; and Census Tract 755.05 in the Cities of Tustin and Santa Ana. Census tracts provide established boundaries for community demographics. Each of the cities within the RSA exhibit one or more community cohesion indicators in comparison to the overall Orange County population. Lake Forest has a higher percentage of owner-occupied residences than the County overall. Tustin and Santa Ana each have a larger average household size and a higher percentage of transit-dependent residents than the County overall. In addition, each of the cities within the RSA has at least one ethnically homogenous community. While Lake Forest has one ethnically homogenous community, Tustin and Santa Ana each have two ethnically homogenous communities, and Irvine has seven such communities. All 16 of the census tracts in the RSA exhibit one or more community cohesion indicators compared to the County population, and seven of the census tracts within the RSA (Census Tracts 524.10, 525.02, 525.05, 525.26, 525.27, 755.05, and 755.12) demonstrate three or more community cohesion indicators compared to the County. Based on these data, the census tracts within the RSA with one community cohesion indicator appear to exhibit a moderate degree of community cohesion. Census Tracts 524.10, 525.02, 525.05, 525.26, 525.27, 755.05, and 755.12, which each have three or more community cohesion indicators, appear to exhibit a high degree of community cohesion.

Most of the cities within the RSA had a lower unemployment rate than the County in August 2017; however, Santa Ana had a higher unemployment rate (4.9 percent) than Orange County overall (4.2 percent). In August 2017, unemployment rates in the RSA ranged from 3.0 percent in Lake Forest to 4.9 percent in Santa Ana. The number

of primary jobs in the RSA ranged from 35,387 in Lake Forest to 237,200 in Irvine. While Irvine functions as a regional employment center, the other cities within the RSA have a lower jobs-to-housing ratio.

The percentage of persons living below the poverty level is substantially higher in Santa Ana (22.1 percent) than in the County (12.8 percent). The percentages of persons living below the poverty level in Tustin (12.2 percent) and Irvine (12.2 percent) are similar to that of Orange County overall, while Lake Forest has a lower percentage (7.4 percent) than that of the County. Four of the 16 census tracts within the RSA exhibit a higher percentage of persons living below the poverty level than the County. The percentage of persons living below the poverty level in Census Tract 755.14 in Tustin is substantially higher than the County, at approximately 27 percent.

During construction, community members would still be able to use community services and facilities. However, there would be some degree of inconvenience due to construction-related delays, temporary closures, and construction equipment operation. Additionally, construction jobs would generate temporary employment and revenues for both local and regional economies.

Once operational, the Build Alternative would result in beneficial effects related to community character and cohesion in terms of improved access and connectivity, and decreased travel times. It is unlikely that community character and cohesion would be permanently impacted by the Build Alternative in any of the cities within the RSA. It is also important to note that I-5 has been a prominent transportation corridor in the area since the late 1950s, and most of the communities in the RSA have been established adjacent to the existing I-5 right-of-way. Changes associated with the Build Alternative would result in minimal alterations to community character and cohesion, and no substantial adverse effects to communities would occur.

As previously noted in Table 2.20.1, several planned transportation and development projects occur in the general vicinity of the Build Alternative with the potential to cumulatively affect communities in the area. Projects related to the State Route 55 (SR-55)/I-5 interchange (refer to Project IDs 1 and 2), could compound effects to communities within the RSA for the proposed project. However, these projects occur near communities that are already freeway-adjacent geographically, and so impacts to community cohesion are unlikely. Further, the RSA for the proposed project is largely developed, and communities in the vicinity are also already freeway-adjacent. Therefore, the proposed project would not change the fundamental nature of adjacent

communities and the project contribution to cumulative impacts to community character and cohesion is minimal, and mitigation would not be required.

Displacements

As stated above, the Build Alternative would not result in any residential displacements, but implementation of Alternative 2A would displace five businesses and commercial properties whereas Alternative 2B (Preferred Alternative) would not result in any business displacements. Although the Build Alternative would not displace residences, a few of the identified transportation projects have the potential to displace some businesses and/or residents. Therefore, there could be some cumulative effects if multiple business displacements occur in the same area. Additionally, the planned land development projects would add or modify businesses or residences. However, it is anticipated that businesses and/or residents affected by planned projects could be relocated to surrounding areas, and there are adequate available properties in surrounding areas to accommodate the business displacements for the Build Alternative (*Draft Relocation Impact Statement 2017*). Therefore, the Build Alternative, in combination with other planned projects, would not result in substantial cumulative impacts with respect to displacements in the community, and mitigation would not be required.

2.20.3.2 Hazardous Waste/Materials Impacts

The RSA for hazardous waste/materials extends approximately 1 mile from the limits of the proposed project, consistent with the National Priority List (NPL) records search area for the Initial Site Assessment.

The RSA was historically ranchland and farmland up until the early 20th century. The construction of military bases in Tustin and surrounding areas in the 1940s led to substantial growth in the surrounding areas, and orchards were converted to housing and commercial and industrial facilities. Since the 1940s, the RSA has continued to urbanize and is currently built out and contains residential, commercial, industrial, vacant, and open space/recreational uses. The use and generation of hazardous waste/materials is a normal function of commercial and industrial operations. Historically, poor business practices and inadequate storage facilities have resulted in contaminated soil and groundwater in the RSA, which is typical of Southern California cities. In addition, bridge structures, a parking garage, a church structure, a surface parking lot, a cell tower, and a storage facility were constructed with building materials that are now considered hazardous and are typically removed during renovation, demolition, or after detection of leakage or exposure, such as residual

contamination from past agricultural uses; asbestos-containing materials (ACMs), lead-based paint (LBP), mercury, and/or chlorofluorocarbons, and potential hazardous chemicals associated with adjacent commercial businesses that handle or utilize these types of materials.

The Build Alternative would require excavation, reconstruction of existing infrastructure, and demolition and reconstruction of bridges. Through excavation activities associated with partial right-of-way acquisitions, the Build Alternative has the potential to encounter contaminated soil and groundwater (aerially deposited lead, volatile organic compounds [VOCs] and petroleum hydrocarbons associated with crude oil), pesticides, ACMs, LBP, and potentially hazardous waste storage areas from adjacent or nearby properties. Replacing and widening bridges and reconstruction of transportation facilities may involve exposure to hazardous materials such as ACMs, LBP, lead chromate, and polychlorinated biphenyls (PCBs).

Prior to project approval, site investigations will be conducted at several properties with hazardous waste releases that could impact the Build Alternative in order to determine the extent of any subsurface investigations required to quantify and delineate the extent of contamination. The site investigations will identify any site-specific steps that would be needed for construction of the Build Alternative, consistent with regulatory requirements. In addition, the Build Alternative would be required to adhere to State and federal regulations with respect to the use, generation, and disposal of hazardous waste/materials during construction and operation of the project. Based on an urbanized RSA and adherence to regulatory requirements, the contribution of the Build Alternative to cumulative hazardous waste/materials impacts is not considerable.

The planned projects in Table 2.20.1 consist primarily of residential and transportation uses, which are low risk uses with respect to hazardous waste/materials impacts. Comparatively, commercial and industrial facilities may present a higher risk with respect to hazardous waste/materials impacts depending on the type of operations and the degree to which these materials are used. Regardless, there is an existing regulatory framework in place for use, generation, and disposal of hazardous waste/materials and penalties for noncompliance.

Like the Build Alternative, some of the planned projects have the potential to be exposed to hazardous waste/materials through releases at adjacent or nearby properties or through renovation or demolition of buildings or other structures. This

could occur with transportation projects such as SR-55 (I-5 to SR-91) (Project ID 20), which may require the demolition of structures such as bridges or the removal of yellow pavement traffic markings, or in development projects such as the Orange County Great Park (Project ID 35) which may include the unintentional release of hazardous materials. Likewise, these planned projects would be required to comply with State and federal regulations with respect to the use, generation, and disposal of hazardous materials/waste during construction and operation. Therefore, the Build Alternative, in combination with other planned projects, would not result in substantial cumulative hazardous waste/materials impacts, and mitigation would not be required.

2.20.3.3 Paleontology Impacts

The RSA for paleontological resources includes areas where excavation would occur for the proposed project. The RSA is made up entirely of Young Alluvial Fan Deposits and Artificial Fill. Geologic mapping and the results of the locality search through the Natural History Museum of Los Angeles County (LACM) indicates the entire RSA contains Holocene to late Pleistocene (less than 126,000 years ago) Young Alluvial Fan Deposits. In addition to Young Alluvial Fan Deposits, Artificial Fill also underlays the RSA as indicated by a pedestrian survey. The upper 10 ft of the Young Alluvial Fan Deposits are unlikely to contain scientifically significant paleontological resources because of their young age (likely less than 4,200 years), although the sediments of the Young Alluvial Fan Deposits below a depth of 10 ft may be old enough to contain scientifically significant paleontological resources. As a result of geologic mapping and a LACM record search, one fossil has been recorded from younger Quaternary sediments similar to those mapped within the RSA. This fossil record, identified as LACM 1652, is located in the City of Anaheim along Rio Vista Street south of Lincoln Avenue (approximately seven miles from the RSA), produced a specimen of sheep (*Ovis*). The closest locality in the older alluvial deposits, the fossil record identified as LACM 4943, located northwest of the RSA in the City of Orange along Fletcher Avenue east of Glassell Avenue (approximately six miles from the RSA), produced a specimen of horse (*Equus*) at a depth of approximately 8–10 ft below the surface. The fossil record, identified as LACM 7867, yielded a specimen of pocket gopher (*Thomomys*) at a depth of approximately 25 ft below the surface in the City of Irvine near the intersection of C Street and 5th Street (approximately 0.5 mile from the RSA). Lastly, the fossil record identified as LACM 7713 produced a specimen of ground sloth (*Myliodontidae*) from an unstated shallow depth near the intersection of State Route 133 (SR-133) and Interstate 405

(I-405) (immediately adjacent to the RSA). However, the majority of sediments underlying the proposed project contain disturbed sediments (Artificial Fill) where there would not be scientifically significant paleontological resources.

At some locations, excavation during the construction of Build Alternative is expected to extend deeper than ten ft below the original ground surface and, as a result, it is likely that older sensitive sediments that might contain paleontological resources would be encountered. The construction of Alternative 2A or Alternative 2B (Preferred Alternative) would require similar ground disturbance, excavation, and modifications to existing freeway and local street facilities and structures. The new lanes, new shoulders, new and re-established auxiliary lanes, and ramps are expected to require excavation to depths of less than five ft below the original ground surface and would not have the potential to impact paleontological resources. Excavation depths for undercrossings and overcrossings will vary by location and range from less than five ft to more than 100 ft for some cast-in-drilled-hole piles. Similarly, excavation depths for retaining walls and noise barriers will depend on the location and final design. As such, excavation for some of the undercrossings, overcrossings, retaining walls, and sound walls may extend below a depth of ten ft and have the potential to impact paleontological resources.

The Build Alternative and other projects in the vicinity of the RSA could disturb sensitive sediments that may contain paleontological resources; thus contributing to cumulative impacts to paleontological resources. Project such as Vintage Lofts Residential, Residential Units at Cypress Village, and Los Olivos apartments (Project IDs 19, 20, and 21, respectively), which would subdivide parcels and/or potentially excavate in previously undisturbed areas, could in conjunction with nearby construction requiring ground disturbance, contribute cumulatively to impacts on paleontological resources. However, impacts to paleontological resources as a result of other projects would depend on the depth of excavation, if excavation is required, and the presence of sensitive sediments. Additionally, the RSA and the surrounding environment are urbanized and largely underlain by disturbed sediments (Artificial Fill). The potential to encounter paleontological resources would be highly dependent on factors mentioned previously, and the potential to encounter paleontological resources during construction activities would be minimal. Therefore, the Build Alternative, in combination with other planned projects, would not result in substantial cumulative impacts to paleontological resources, and mitigation would not be required.

2.20.3.4 Animal Species Impacts

The RSA for Animal Species is the Biological Study Area (BSA) for the proposed project. The RSA consists of residential, commercial, industrial, vacant, and open space/recreational uses. During the early part of the 20th century, Orange County consisted of communities comprising small, insular villages and towns that subsisted on an agricultural economy (citrus in particular). At this time, a greater number and diversity of animal species may have been present within the RSA. However, changes to the local and regional economy spurred development that would drastically alter the rural, agricultural landscape of the early 20th century. Postwar (WWII) development and the baby boom in the 1940s and 1950s spurred the creation of military bases, manufacturing, construction, trade, residential development, and expanded transportation systems that phased out vast quantities of open space and agricultural land. From the 1950s through the latter half of the 20th century, economic growth in the region has continuously moved populations and services outward toward the periphery of Orange County. This change from a rural to an urbanized setting in the RSA has resulted in the reduction of habitat for animal species in the RSA. At present, animal species in the RSA are exposed to an urban environment, including noise from nearby transportation and industrial sources, poor air and water quality, and limited habitat.

Bridge or culvert widening or replacement activities associated with construction of the Build Alternative could result in potential effects to roosting bats and maternity colonies of roosting bats. Yuma myotis, a California Department of Fish and Wildlife (CDFW) special-status animal species, was observed roosting within two structures in the RSA: the Bee Canyon Bridge beneath I-5 and the Michelle Road Bridge over the El Modena-Tustin Channel. Other special-status bat species, including the pallid bat (a CDFW Species of Special Concern that may roost in structures within the RSA), and the western yellow bat (a CDFW Species of Special Concern) and hoary bat (a CDFW Special Animal) may roost in trees in the RSA. However, with the implementation of Measures BIO-12 through BIO-18, provided in Section 2.18.4 of Section 2.18, Animal Species, no substantial cumulative effects are anticipated to occur to roosting bats or maternity colonies of roosting bats.

Additional animal species are also present within the RSA that are not special-status species. For example, there is suitable habitat for the western pond turtle (a Covered Species in the Orange County Transportation Authority (OCTA) Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP) in the RSA, particularly

in Peter's Canyon Wash. However, the Build Alternative will not be directly impacting this area. With implementation of Measures BIO-6 through BIO-10, provided in Section 2.18.4, potential temporary impacts during project construction to western pond turtle would not be substantial. Therefore, this temporary impact would not be adverse and there would be no substantial cumulative effect to this species related to the Build Alternative.

There is also suitable nesting or foraging habitat present within the RSA for special-status bird species protected under the Migratory Bird Treaty Act (MBTA) and the California Fish and Game Code, including the Cooper's hawk, Great blue heron, Ferruginous hawk, the White-tailed kite, and the California horned lark. With implementation of Measure BIO-11, provided in Section 2.18, potential temporary impacts during project construction to nesting birds would not be adverse, and there would be no substantial cumulative effect to bird species related to the Build Alternative.

Like the Build Alternative, each of the planned projects has the potential to directly or indirectly impact animal species during construction or and/or operation. Similar to the Build Alternative, other planned projects would avoid, minimize, or mitigate any direct or indirect impacts as a result of construction activities or long-term impacts. The Build Alternative is located in an area already urbanized (i.e., consisting of developed, ornamental, and ruderal habitats) and is expected to only incrementally affect riparian habitat (e.g., widening of bridges over creeks). The primary biological effects in the region occurred with the original construction of the roadways, and cumulative effects to individual species would be expected to be less than substantial. Therefore, it is anticipated that the Build Alternative would also not result in substantial cumulative impacts to animal species in combination with other planned projects.

2.20.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, and/or mitigation measures for cumulative impacts are required.