

2.22 Cumulative Impacts

2.22.1 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.

The 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 NEPA can be found in 40 CFR Section 1508.7.

2.22.2 Methodology

The cumulative impact analysis methodology utilized was based on the eight-step process set forth in the Caltrans Standard Environmental Reference (SER) Guidance for Preparers of Cumulative Impact Analysis (Caltrans 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

2.22.2.1 Resources Excluded from Cumulative Impact Analysis

As specified in the Caltrans SER 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. The proposed project has no potential to contribute to cumulative adverse impacts to the Coastal Zone.
- **Wild and Scenic Rivers:** No wild and scenic rivers are in the Study Area. The proposed project has no potential to 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. The proposed project would not require any conversion of other land uses to transportation, and the proposed project would not contribute to cumulative adverse land use impacts.
- **Parks and Recreation:** The proposed project would not result in any acquisition of park or recreational land. The Build Alternative would not result in any use of publicly owned public parks or wildlife or waterfowl refuges pursuant to Section 4(f). The proposed project 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 project. 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.
- **Community:** The proposed project would be constructed primarily within Caltrans right-of-way, except for the two TCEs discussed in detail in Section 2.3.2.3. As discussed parking would be maintained; however temporary relocation of personal items would be required. Additionally, typical construction related delays area also anticipated. The project would implement a TMP to minimize construction-related impacts on the community. During operation of the proposed Build Alternative, the project would result in in reduced congestion and decreased travel times. The Build Alternative would not contribute to cumulatively adverse impacts on the community.
- **Utilities and Emergency Services:** It is not anticipated that temporary impacts to emergency services would contribute to a cumulative effect within the Study Area. Additionally, the proposed project 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 and Transportation/Pedestrian and Bicycle Facilities, for 2035 (Opening Year) and 2055 (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 SR 55 and impacts to visual quality would be 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 NRHP. While cultural resources in the Study Area outside the project limits may be directly or indirectly impacted by other projects, the proposed project 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 the Build Alternative would not result any change to the base flood elevation, and no encroachments to any hydrologic channels are anticipated. Therefore, the proposed project would not contribute to cumulative adverse effects related to hydrology and floodplains.
- **Water Quality:** As described in Section 2.9, Water Quality and Stormwater Runoff, drainages that could be impacted by the Build Alternative would drain into the Santa Ana River Watershed. However, those drainages would experience only temporary construction-related impacts that would be reduced by the implementation of Project Features PF-WQ-1 and PF-WQ-2. Although an increase in new and replaced impervious surfaces would occur under the Build Alternative, the new impervious surface area would be treated, providing greater overall water quality benefits to receiving waters. The Build Alternative would comply with the requirements of the Construction General Permit, the Caltrans SWMP, and the Caltrans and City NPDES permit requirements and would include BMPs to target pollutants of concern in stormwater runoff during construction and operations. Considering the urbanized nature of the project area, 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 avoided or minimized 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, seismicity, and topography.
- **Hazardous Waste/Materials:** Three properties are located in the vicinity of the maximum disturbance limits of the Build Alternative and were identified as potential RECs; however, no improvements or excavation is anticipated on or adjacent to these three sites. Temporary impacts related to hazardous materials/wastes during project construction could occur within the maximum disturbance limits for the Build Alternative. None of the properties proposed for use as TCEs were identified as having a hazardous waste concern. No additional permanent easements or permanent property acquisitions would be required. All staging would occur within Caltrans' right-of-way, and no permanent property acquisition would be required. The Build Alternative would not result in adverse impacts associated with the TCE during construction. Construction may disturb contaminated soil, hazardous material pipelines, ADL, yellow striping or other paint potentially containing chromium and or lead, ACM, and contaminated

groundwater. Project Features PF-HAZ-1 through PF-HAZ-6 would avoid impacts and would not contribute to cumulative adverse Hazardous Waste/Material impacts.

- **Air Quality:** It is anticipated that construction will last for approximately 24 months. Project Features PF-AQ-1 through PF-AQ-12, identified in Section 2.13, minimize construction-related emissions; and emissions would not contribute to cumulative adverse impacts during construction. 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 proposed project was determined not to be a POAQC by the TCWG.
- **Noise:** PF-N-1 would minimize temporary noise impacts, and the project would not contribute to a cumulative adverse effect during construction within the project area. Changes in operational noise range from -1.1 to 2.0 dBA as described in Section 2.14; the increases in predicted traffic noise levels to modeled receptors would be barely perceptible; therefore, the proposed project would not contribute to cumulative adverse effects related to noise.
- **Natural Communities:** Although Santiago Creek crosses SR 55 within the Study Area and contains riparian vegetation, the nearest improvements to Santiago Creek are approximately 1 mile south near the eastbound SR 22 to the northbound SR 55 connector and approximately 3 miles north at the Katella Avenue/SR 55 southbound on-ramp. No habitats or natural communities of special concern would be directly or indirectly impacted by the proposed project. Santiago Creek may provide for wildlife movement of common animal species such as coyotes, raccoons, ground squirrels, and other small mammals. No construction would occur within or adjacent to Santiago Creek, and no direct or indirect impacts to wildlife movement are anticipated. During operation, no new impacts to wildlife crossings or natural communities would occur. The Build Alternative would not contribute to cumulative adverse effects related to natural communities.
- **Animal Species:** A bat habitat assessment was conducted in 2018 (May 2018). Temporary direct and indirect impacts from noise and vibration may occur to roosting bats and maternity colonies of roosting bats during bridge or culvert widening and/or replacement activities. Four potential night roosting sites (Lincoln Avenue undercrossing, Taft Avenue undercrossing, Chapman Avenue undercrossing, and westbound SR 22 separation) surrounding bat foraging habitat is considered relatively low quality; and, therefore, a low probability exists that bats consistently utilize these structures for roosting. However, the loss of night roost sites could impact bat energetics, even though bats often change night roost sites. Temporary construction activities would only occur adjacent to the Lincoln Avenue undercrossing associated with relocation of the southbound Lincoln Avenue off-ramp. Foliage-roosting bats may also be subject to direct temporary impacts during clearing and grubbing associated with project activities. Additionally, if vegetation is cleared during the nesting season (February 1 – September 30), impacts to migratory birds could occur. If ground-disturbing activities cannot be avoided during this nesting season, a qualified Biologist with experience in conducting breeding bird surveys will conduct weekly bird surveys, beginning at least two weeks prior to the initiation of project activities. These surveys will detect presence/absence of native bird species occurring in suitable nesting habitat that is to be directly or indirectly disturbed and any other such habitat within an appropriate buffer distance of the disturbance area. The project would implement Mitigation Measures

BIO-1 to avoid, minimize, and/or mitigate impacts to bats and BIO-2 to avoid impacts to migratory birds. The Build Alternative would not contribute to cumulative adverse effects related to animal species.

- **Wetlands and Other Waters:** The Build Alternative would not have an impact on wetlands, and natural streambeds would not be converted. The potential CDFW jurisdictional area that would be impacted by the Build Alternative is concrete-lined. Therefore, the proposed project would not contribute to cumulative adverse effects related to wetlands and other waters.
- **Plant Species:** No special status plant species were identified within the project Study Area (Table 2.17-1). No temporary or permanent impacts would occur to any special status plant species, including the three covered plant species as identified in the NCCP/HCP (Table 2.17-2). The Build Alternative 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. With implementation of measure BIO-3 in Section 2.20, Invasive Species, the proposed project would not contribute to cumulative adverse effects related to invasive species.

2.22.3 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 2.22-1. The proposed project, which would be primarily constructed within State right-of-way and two private properties (TCEs for construction; see Section 2.3.2.3 for detailed discussion of TCEs) considers other Caltrans projects within or adjacent to the SR 55 corridor. Except for the Lincoln Avenue Park and Ride, currently under construction, the listed project would improve existing facilities rather than construct new facilities. All of the projects listed in Table 2.22-1, except for Meats Avenue interchange, would be constructed prior to the Build Alternative. Meats Avenue interchange would be constructed sometime after 2035. The following resources are evaluated to determine if the Build Alternative would result in cumulatively considerable impacts: Paleontological Resources.

Table 2.22-1: Cumulative Project List — Caltrans Projects on or Adjacent to SR-55

Project Number	Description	Milestone Dates
EA 0Q350K	Lincoln Ave/Santiago Boulevard Lane Reconfiguration	Design: July 2018 to October 2019 Construction: February 2020 to February 2022
EA 0R150	Upgrade lighting at Chapman Avenue	Design: June 2022 to September 2023
EA 0R320	Multi-Asset Project	Design: Feb 2025 to September 2026
EA0R670	Add safety lighting and median barrier	Design: Jan 2022 to July 2023
EA 078100	Meats Ave Interchange Project	This project is currently not expected to be completed by the opening date (2035) but is included in the Traffic Operations Report for the Design Year (2055)
EA 0J3400	SR 55 (I-405 to I-5)	PA & ED – December 2018 Design – July 2022 Construction – February 2026
EA 0K9800	SR 91 (SR-57 to SR-55)	PA & ED – Present until Summer 2019 Design – Summer 2022 to Summer 2025 Construction – Summer 2026 to Winter 2030
EA 0Q4804	Lincoln Avenue Park-and-Ride	Under Construction

Notes: ED: Environmental Document; PA: Programmatic Agreement

2.22.4 Avoidance, Minimization, and/or Mitigation Measures

Paleontological Resources

The RSA includes the project right-of-way where excavation would occur within undisturbed soils. The literature reviewed included published and unpublished scientific papers. A paleontological record search was conducted at the LACM (November 14, 2017), and no localities were identified within the project area. However, several fossil localities are adjacent to the project area that have been recorded from the same sedimentary deposits that occur within the project area at the surface and at depth. Additional record searches of online databases were completed. Localities LACM 1067, 1729, 2019, 3408, 3802, 3977, 3978, 3980, and 3986, which are located southwest of the project area east of Upper Newport Bay, collectively produced ghost shark (*Chimaera*, *Chimaeroidei*), thresher shark (*Alopias superciliosus*), giant white shark (*Carcharocles*), white shark (*Carcharodon carcharias*, *Carcharodon sulcidens*), bonito shark (*Isurus oxyrinchus*), spiny dogfish (*Squalus acanthias*), hake (*Merluccius productus*), codling (*Moridae*), queenfish (*Seriphus*), sculpins (*Cottidae*), rockfish (*Sebastes*), auklet (*Mancalla californiensis*), turkey (*Meleagris*), shearwater (*Puffinus felthami*), sea lion (*Otariidae*). Locality LACM 1652 is located northwest of the project area and northwest of the Santa Ana River and produced fossil sheep (*Ovis*). Locality LACM 4943 is located northwest of the project area and east of the Santa Ana River and produced fossil horse (*Equus*). Locality LACM 7867 is located southeast of the project area in Orange County Park and produced fossil pocket gopher (*Thomomys*) (October 2018).

Excavations (including drilling) into areas containing native Miocene, Pliocene, and Pleistocene sediments may result in significant impacts to paleontological resources. Surface grading or shallow excavations that are entirely within Quaternary young alluvial fan, wash, and landslide

deposits and artificial fill in the project area are unlikely to impact significant fossil vertebrate remains. However, older deposits are likely present at depth beneath Quaternary young sedimentary deposits and previously disturbed or artificial fill.

Due to the flat terrain of the central and southern project areas and limited exposures of subsurface native sediments on the entire project area, the depth of native Miocene, Pliocene, and Pleistocene sediments beneath the ground surface could not be determined during the field survey. Only one exposure of in situ Pliocene Fernando Formation was observed during the survey. Depending on the depth and location of earthmoving activities, project construction has the potential to result in significant adverse direct impacts to paleontological resources within the project area. There is potential for impacts both at the surface and at depth in areas of native high sensitivity deposits and at depth in areas of low sensitivity surface deposits. If other projects listed in Table 2.22-1 also require excavation within fossiliferous formations within the project right-of-way, the project has potential to result in cumulatively considerable impacts to paleontological resources; however, the Build Alternative includes Mitigation Measures PALEO-1 and PALEO-2 to mitigate potential adverse impacts on paleontological resources. Other projects listed in Table 2.22-1 would also require similar measures and thus, when considered with the Build Alternative, would not result in cumulatively considerable adverse impacts on paleontological resources.

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