State Route 91 Improvement Project between State Route 57 and State Route 55

ORANGE COUNTY, CALIFORNIA
DISTRICT 12 – ORA – 91 (PM 4.7/R10.8)
DISTRICT 12 – ORA – 57 (PM 15.5/16.2)
DISTRICT 12 – ORA – 55 (PM 17.4/R17.9)
EA 0K9800/12-0002-0098

Initial Study with Mitigated Negative Declaration/ Environmental Assessment with Finding of No Significant Impact



Prepared by the
State of California Department of Transportation

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated December 23, 2016, and executed by FHWA and Caltrans.

June 2020

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General Information about This Document

The California Department of Transportation (Caltrans) District 12, as assigned by the Federal Highway Administration (FHWA), has prepared this Initial Study with Mitigated Negative Declaration/Environmental Assessment, which examines the potential environmental impacts of the alternatives being considered for the proposed project located in Orange County, California. Caltrans is the lead agency under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The document tells you why the project is being proposed, what alternatives we have considered for the project, how the existing environment could be affected by the project, the potential impacts of each of the alternatives, and the proposed avoidance, minimization, and/or mitigation measures.

The Initial Study/Environmental Assessment was circulated to the public for 30 days between November 21, 2018 and December 21, 2018. Comments received during this period are included in Appendix I. Elsewhere throughout this document, a vertical line in the margin indicates a change made since the draft document circulation. Minor editorial changes and clarifications have not been so indicated. A copy of the document is available for review at Caltrans District 12, 1750 E. 4th Street, Suite 100, Santa Ana, CA 92705.

If you have questions or would like a copy of the document, please email: Kathleen.Dove@dot.ca.gov

Alternative Formats:

For individuals with sensory disabilities, this document can be made available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please contact Andy Perez at District 12's Public Information Office by phone at (657) 328-6256 (Voice), or use California Relay Service 1 (800) 735-2929 (TTY to Voice), 1 (800) 735-2922 (Voice to TTY), 1 (800) 855-3000 (Spanish TTY to Voice and Voice to TTY), 1-800-854-7784 (Spanish and English Speech-to-Speech) or 711.

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SCH# 2018111042
12-ORA-91 PM 4.7/R10.8
12-ORA-57 PM 15.5/16.2
12-ORA-55 PM 17.4/R17.9
0K9800
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Improve traffic conditions with widening of freeway mainline, primarily in the eastbound direction, and modification to various interchanges, connectors, ramps, and intersections.
State Route 91 from Post Mile (PM) 4.7 to R10.8, State Route 57 (SR-57) from PM 15.5 to PM 16.2, and State Route (SR-55) from PM 17.4 to PM R17.9 in the cities of Anaheim, Fullerton, Orange, and Placentia in Orange County, California.

INITIAL STUDY with MITIGATED NEGATIVE DECLARATION/ ENVIRONMENTAL ASSESSMENT with FINDING OF NO SIGNIFICANT IMPACT

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 USC 4332(2)(C), 49 USC 303, and/or 23 USC 138

THE STATE OF CALIFORNIA
Department of Transportation

RESPONSIBLE AGENCY:
California Transportation Commission
and
Orange County Transportation Authority

Christopher Flynn

Chris Flynn
Deputy District Director
Department of Transportation District 12
1750 E. 4th Street, Suite 100
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NEPA and CEQA Lead Agency

6/22/20
Date of Approval

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CALIFORNIA DEPARTMENT OF TRANSPORTATION
FINDING OF NO SIGNIFICANT IMPACT (FONSI)
FOR
STATE ROUTE 91 IMPROVEMENT PROJECT
From State Route 57 to State Route 55
12-ORA-91 PM 4.7/R10.8;
12-ORA-57 PM 15.5/16.2;
12-ORA-55 PM 17.4/R17.9

The California Department of Transportation (Caltrans) has determined that the Build Alternative (Preferred Alternative) will have no significant impact on the human environment. This FONSI is based on the attached Environmental Assessment (EA), which has been independently evaluated by Caltrans and determined to adequately and accurately discuss the need, environmental issues, and impacts of the proposed project and appropriate mitigation measures. It provides sufficient evidence and analysis for determining that an Environmental Impact Statement is not required. Caltrans takes full responsibility for the accuracy, scope, and content of the attached EA (and other documents as appropriate).

The environmental review, consultation, and any other actions required by applicable federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated December 23, 2016, and executed by FHWA and Caltrans.

Christopher Flynn

Chris Flynn
Deputy District Director Environmental Analysis
District 12
California Department of Transportation

6/22/20
Date

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STATE OF CALIFORNIA
DEPARTMENT OF
TRANSPORTATION

SCH# 2018111042
12-ORA-91 PM 4.7/R10.8
12-ORA-57 PM 15.5/16.2
12-ORA-55 PM 17.4/R17.9
0K9800
1200020098

MITIGATED NEGATIVE DECLARATION

Pursuant to: Division 13, Public Resources Code

Project Description

The California Department of Transportation (Caltrans) proposes to widen the mainline SR-91, improve interchanges and connectors, as well as enhance bridges within the 5.5-mile length of SR-91 from PM 4.7 to R10.8, SR-57 from PM 15.5 to PM 16.2 and SR-55 from PM 17.4 to PM R 17.9 in the cities of Anaheim, Fullerton, Orange, and Placentia in Orange County, California. The project is needed to increase capacity and reduce congestion on State Route 91 (SR-91) in light of existing and future travel demand.

Determination

This Mitigated Negative Declaration (MND) is included to give notice to interested agencies and the public that Caltrans will adopt an MND for this project.

Caltrans has prepared an Initial Study (IS) for this project, and following public review, has determined from this study that the proposed project would not have a significant effect on the environment for the following reasons:

- The proposed project would have no effect on agriculture and forest resources and mineral resources.

- The proposed project would have less than significant effects to aesthetics, air quality, biological resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, public services, recreation, transportation/traffic, tribal cultural resources, and utilities and service systems.

- With the following mitigation measures incorporated, the proposed project would have less than significant effects to cultural resources:

    - PAL-1: Caltrans will ensure that a Paleontological Mitigation Plan (PMP) is prepared and adhered to during widening of the southern portion of the eastbound SR-91 to SR-55 connector, and construction of all bridge support columns or structures, and certain box culverts, retaining walls, and utilities. At a minimum the PMP will include the following instructions:

        - A qualified principal paleontologist (MS or PhD in paleontology or geology familiar with paleontological procedures and techniques) will be retained to prepare a PMP following the Department's Standard Environmental Reference (SER) if auguring or foundation construction will penetrate 5 feet or more into undisturbed sediment.

        - The paleontologist will be present to consult with construction contractors at pre-grading meetings.

- Paleontological monitoring under the direction of the qualified principal paleontologist will be performed for subsurface construction activities involving sensitive geologic formations.
- When fossils are discovered, the paleontologist (or paleontological monitor) will recover them. Construction work in these areas will be halted or diverted to allow recovery of fossil remains in a timely manner.
- Fossil remains collected during the monitoring and salvage portion of the mitigation program will be cleaned, repaired, sorted, and cataloged.
- Prepared fossils, along with copies of all pertinent field notes, photos, and maps, will then be deposited in a scientific institution with paleontological collections.

A final report will be completed that outlines the results of the mitigation program.

Christopher Flynn

Chris Flynn
Deputy District Director Environmental Analysis
District 12
California Department of Transportation

6/22/20
Date of Approval

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Table of Contents

Chapter 1 Proposed Project 1-1

1.1 Introduction 1-1
1.1.1 Existing Facility 1-2
1.2 Purpose and Need 1-2
1.2.1 Purpose of the Project 1-2
1.2.2 Need for the Project 1-2
1.2.3 Independent Utility and Logical Termini 1-14
1.3 Project Description 1-15
1.4 Project Alternatives 1-15
1.4.1 Proposed Build Alternative (Preferred Alternative) 1-15
1.4.2 No-Build Alternative 1-74
1.4.3 Comparison of Alternatives 1-75
1.4.4 Identification of a Preferred Alternative 1-80
1.5 Alternatives Considered but Eliminated from Further Discussion prior to the Draft Initial Study/Environmental Assessment 1-81
1.5.1 Option 1A 1-83
1.5.2 Option 3 1-84
1.5.3 Transportation System Management and Transportation Demand Management Alternatives 1-85
1.6 Permits and Approvals Needed 1-86

Chapter 2 Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures 2.1.1-1

2.1 Human Environment 2.1.1-2
2.1.1 Land Use 2.1.1-2
2.1.2 Growth 2.1.2-1
2.1.3 Community Impacts 2.1.3-1
2.1.4 Utilities/Emergency Services 2.1.4-1
2.1.5 Traffic and Transportation/Pedestrian and Bicycle Facilities 2.1.5-1
2.1.6 Visual/Aesthetics 2.1.6-1
2.1.7 Cultural Resources 2.1.7-1
2.2 Physical Environment 2.2.1-1
2.2.1 Hydrology and Floodplain 2.2.1-1
2.2.2 Water Quality and Stormwater Runoff 2.2.2-1
2.2.3 Geology/Soils/Seismic/Topography 2.2.3-1
2.2.4 Paleontology 2.2.4-1

2.2.5 Hazardous Waste/Materials 2.2.5-1
2.2.6 Air Quality 2.2.6-1
2.2.7 Noise 2.2.7-1
2.3 Biological Environment 2.3.1-1
2.3.1 Natural Communities 2.3.1-1
2.3.2 Wetlands and Other Waters 2.3.2-1
2.3.3 Plant Species 2.3.3-1
2.3.4 Animal Species 2.3.4-1
2.3.5 Threatened and Endangered Species 2.3.5-1
2.3.6 Invasive Species 2.3.6-1
2.4 Cumulative Impacts 2.4-1
2.4.1 Regulatory Setting 2.4-1
2.4.2 Methodology 2.4-1
2.4.3 Resources Excluded from Cumulative Impacts Analysis 2.4-2
2.4.4 Resource Evaluated for Cumulative Impacts 2.4-9

Chapter 3 California Environmental Quality Act (CEQA) Evaluation . 3-1

3.1 Determining Significance under CEQA 3-1
3.2 CEQA Environmental Checklist 3-1
3.2.1 Aesthetics 3-3
3.2.2 Agriculture and Forest Resources 3-6
3.2.3 Air Quality 3-8
3.2.4 Biological Resources 3-10
3.2.5 Cultural Resources 3-13
3.2.6 Geology and Soils 3-15
3.2.7 Greenhouse Gas Emissions 3-18
3.2.8 Hazards and Hazardous Materials 3-19
3.2.9 Hydrology and Water Quality 3-23
3.2.10 Land Use and Planning 3-27
3.2.11 Mineral Resources 3-30
3.2.12 Noise 3-31
3.2.13 Population and Housing 3-35
3.2.14 Public Services 3-37
3.2.15 Recreation 3-39
3.2.16 Transportation/Traffic 3-40
3.2.17 Tribal Cultural Resources 3-43
3.2.18 Utilities and Service Systems 3-45
3.2.19 Mandatory Findings of Significance 3-48
3.3 Climate Change 3-52
3.3.1 Regulatory Setting 3-52
3.3.2 Environmental Setting 3-55

3.3.3 Project Analysis 3-57
3.4 References 3-69

Chapter 4 Comments and Coordination 4-1

4.1 Interagency Coordination and Consultation 4-1
4.1.1 Native American Consultation 4-1
4.1.2 Historical Consultation 4-3
4.1.3 State Historic Preservation Officer 4-4
4.1.4 U.S. Fish and Wildlife Service 4-4
4.1.5 National Marine Fisheries Service 4-4
4.1.6 Section 4(f) Resources Consultation 4-4
4.1.7 Federal Highway Administration 4-5
4.1.8 California Department of Fish and Wildlife 4-5
4.2 Community Outreach and Public Involvement 4-5
4.2.1 History of Community Outreach 4-5
4.2.2 Project Development Team 4-6
4.2.3 Orange County Transportation Authority Project Website 4-6
4.3 Draft IS/EA Circulation and Outreach 4-6
4.3.1 Public Hearing Outreach 4-6
4.3.2 Public Hearing 4-8
4.3.3 Noise Barrier Surveys 4-8
4.4 Draft IS/EA Circulation Documents 4-9
4.4.1 Newspaper Ads 4-9
4.4.2 Fliers and Extended Outreach 4-11
4.4.3 Electronic Notices 4-13
4.5 Agency Coordination 4-27
4.5.1 Native American Heritage Commission Consultation 4-27
4.5.2 State Historic Preservation Officer Concurrence 4-64
4.5.3 U.S. Fish and Wildlife Service Species List 4-66
4.5.4 National Marine Fisheries Services Species List 4-70
4.5.5 Federal Highway Administration – Air Quality Conformity Determination Letter 4-75
4.5.6 Federal Highway Administration – Air Quality Conformity Determination Letter 4-77
4.5.7 California Department of Fish and Wildlife 4-78

Chapter 5 List of Preparers 5-1

5.1 California Department of Transportation, District 12 5-1
5.2 Orange County Transportation Authority 5-4
5.3 Advanced Civil Technologies 5-4

5.4 ICF 5-5
5.5 Kleinfelder 5-7
5.6 Michael Baker, International 5-7
5.7 TranSystems 5-8

Chapter 6 Distribution List 6-1

6.1 Federal Agencies 6-1
6.2 State Agencies 6-2
6.3 Regional Agencies 6-3
6.4 County Agencies 6-3
6.5 Local Agencies 6-4
6.5.1 Anaheim 6-4
6.5.2 Fullerton 6-4
6.5.3 Orange 6-5
6.5.4 Placentia 6-5
6.6 Federal Legislators 6-5
6.7 State Legislators 6-6
6.8 Local Elected Officials 6-6
6.9 Interested Groups, Organizations, and Individuals 6-7
6.10 Utilities, Services, and Businesses 6-8

Appendices

Appendix A Section 4(f)/6(f) Evaluation *De Minimis* Finding

Appendix B Title VI Policy Statement

Appendix C Summary of Relocation Benefits

Appendix D Avoidance, Minimization, and/or Mitigation Summary

Appendix E List of Acronyms and Abbreviations

Appendix F FTIP Project Listings

Appendix G Evaluated Noise Barriers

Appendix H Project Plans – Build Alternative (Preferred Alternative)

Appendix I Response to Comments

Appendix J FHWA Air Quality Conformity Determination

Appendix K Natural Environment Study Amendment (Fish Passage Assessment)

Appendix L List of Technical Studies

List of Tables

Table		Page
1-1	Eastbound State Route 91 (Mainline) Level of Service	1-7
1-2	Westbound State Route 91 (Mainline) Level of Service	1-8
1-3	Eastbound State Route 91 VMT, VHD, and Travel Time	1-10
1-4	Westbound State Route 91 VMT, VHD, and Travel Time	1-10
1-5	SR-91 Eastbound Mainline Collision Data	1-11
1-6	Build Alternative (Preferred Alternative) Ramp Improvements	1-64
1-7	Build Alternative (Preferred Alternative) Bridges/Structure Improvements	1-65
1-8	Build Alternative (Preferred Alternative) Proposed Offsite Drainage Improvements	1-66
1-9	Affected Utilities	1-68
1-10	Permanent Right of Way and Temporary Construction Easements	1-69
1-11	Anticipated Temporary Ramp and Connector Closures	1-70
1-12	Summary of Project Cost Estimate	1-72
1-13	Comparison of Alternatives and Impacts	1-76
1-14	Alternative Evaluation	1-80
1-15	Permits, Licenses, Agreements, and Certifications	1-86
2.1.1-1	Existing Land Use in Study Area	2.1.1-2
2.1.1-2	Forecasted Growth	2.1.1-6
2.1.1-3	Related Projects	2.1.1-7
2.1.1-4	Parks and Recreational Facilities within the Study Area	2.1.1-14
2.1.1-5	Consistency with Plans and Policies	2.1.1-20
2.1.1-6	Land Use Impacts in Study Area	2.1.1-32
2.1.2-1	Projected Population Growth	2.1.2-2
2.1.2-2	Projected Housing Demand Growth	2.1.2-2
2.1.2-3	Projected Employment Growth	2.1.2-2
2.1.3-1	Study Area Census Tracts	2.1.3-2
2.1.3-2	Age Distribution Demographics in the Study Area Census Tracts	2.1.3-6
2.1.3-3	Race and Ethnicity in the Study Area Census Tracts	2.1.3-7
2.1.3-4	Median Household Income in the Study Area Census Tracts	2.1.3-8
2.1.3-5	Housing Characteristics in the Study Area	2.1.3-9
2.1.3-6	Community Facilities and Public Services by City in the Study Area Census Tracts	2.1.3-13
2.1.3-7	Permanent Impacts under Build Alternative (Preferred Alternative)	2.1.3-21
2.1.3-8	Temporary Construction Easements	2.1.3-22

2.1.3-9 Median Household Income in the Study Area Census Tracts as Compared to the DHHS Poverty Threshold 2.1.3-70
2.1.3-10 Permanent Right-of-Way Impacts within the Census Tract Study Area 2.1.3-71
2.1.3-11 Proposed Detours for Construction-Period Closures 2.1.3-72
2.1.3-12 Temporary Construction Easements within the Census Tract Study Area 2.1.3-74
2.1.4-1 Potential Effects on Utility Facilities during Construction of Build Alternative (Preferred Alternative) 2.1.4-3
2.1.4-2 Potential Freeway and Street Closures 2.1.4-4
2.1.5-1 Summary of Lanes in the Study Area (Existing) 2.1.5-3
2.1.5-2 Study Area Freeway Ramps (Existing) 2.1.5-4
2.1.5-3 Study Area HOV/HOT Lanes 2.1.5-5
2.1.5-4 Study Area Arterial Intersections 2.1.5-6
2.1.5-5 Existing Freeway Mainline Performance 2.1.5-8
2.1.5-6 Existing Freeway Ramp Performance 2.1.5-10
2.1.5-7 Existing HOV Lane Performance 2.1.5-11
2.1.5-8 Existing Arterial Corridors Intersection Performance 2.1.5-12
2.1.5-9 Existing Off-Ramp Queuing 2.1.5-13
2.1.5-10 Existing CMP Highway System Performance 2.1.5-14
2.1.5-11 Existing Bicycle Facilities 2.1.5-14
2.1.5-12 Existing Pedestrian Facilities 2.1.5-15
2.1.5-13 2030 No-Build and Build Westbound SR-91 Freeway Mainline Performance 2.1.5-17
2.1.5-14 2030 No-Build and Build Eastbound SR-91 Freeway Mainline Performance 2.1.5-18
2.1.5-15 2030 No-Build and Build Northbound SR-57 Freeway Mainline Performance 2.1.5-19
2.1.5-16 2050 No-Build and Build Westbound SR-91 Freeway Mainline Performance 2.1.5-20
2.1.5-17 2050 No-Build and Build Eastbound SR-91 Freeway Mainline Performance 2.1.5-21
2.1.5-18 2050 No-Build and Build Northbound SR-57 Freeway Mainline Performance 2.1.5-22
2.1.5-19 2030 No-Build and Build Freeway Ramp Performance 2.1.5-23
2.1.5-20 2050 No-Build and Build Freeway Ramp Performance 2.1.5-25
2.1.5-21 2030 No-Build and Build HOV Lane Performance 2.1.5-27
2.1.5-22 2050 No-Build and Build HOV Lane Performance 2.1.5-27
2.1.5-23 2030 and 2050 No-Build and Build Arterial Corridors Intersection Performance 2.1.5-29
2.1.5-24 2030 and 2050 No-Build and Build Future Off-Ramp Queuing 2.1.5-31

2.1.5-25 2030 and 2050 No-Build and Build CMP Highway System Performance 2.1.5-32
2.1.5-26 Proposed Detours for Mainline Construction-Period Closures.....2.1.5-36
2.1.5-27 Anticipated Detour for Construction-Period Closure 2.1.5-38
2.1.6-1 Visual Impact Ratings Using Viewer Response and Resource Change 2.1.6-25
2.2.1-1 Summary of Beneficial Uses for Water Bodies Associated with Floodplains 2.2.1-5
2.2.2-1 Existing Biofiltration Swales along Route 91 West.....2.2.2-5
2.2.2-2 Summary of Proposed Project Sub-Watersheds and Discharge Water Bodies.2.2.2-5
2.2.2-3 Summary of Receiving Waterbodies Surface Beneficial Uses.....2.2.2-9
2.2.2-4 Summary of 303(d) Listed Constituents and TMDL Constituents 2.2.2-9
2.2.2-5 Proposed Biofiltration Swales along Route 91 West 2.2.2-11
2.2.3-1 Fault Data.....2.2.3-4
2.2.4-1 Summary of Paleontological Potential Analysis 2.2.4-4
2.2.6-1 Local Air Quality Levels at Anaheim – Pampas Lane Monitoring Station (ARB ID 30178; EPA AQS ID 060590007).....2.2.6-4
2.2.6-2 Sensitive Land Uses in the Project Area 2.2.6-5
2.2.6-3 State and Federal Criteria Air Pollutant Standards, Effects, Sources, and Attainment 2.2.6-9
2.2.6-4 Status of State Implementation Plans Relevant to the Project Area 2.2.6-14
2.2.6-5 Existing and Opening Year Daily Traffic Volumes.....2.2.6-17
2.2.6-6 Horizon-Year (2050) Daily Traffic Volumes.....2.2.6-19
2.2.6-7 Existing and Opening Year Level of Service 2.2.6-20
2.2.6-8 Horizon Year (2050) Level of Service 2.2.6-21
2.2.6-9 Study Area Daily Vehicle Emissions 2.2.6-24
2.2.6-10 2030 MSAT Emissions.....2.2.6-26
2.2.6-11 2050 MSAT Emissions.....2.2.6-26
2.2.6-12 Estimated Daily Construction Emissions.....2.2.6-28
2.2.7-1 Activity Categories and Noise Abatement Criteria 2.2.7-2
2.2.7-2 Noise Levels for Existing, Future No Build, and Future Build and Proposed Abatement.....2.2.7-7
2.2.7-3 Construction Equipment Noise.....2.2.7-27
2.2.7-4 Summary of Abatement Key Information 2.2.7-29
2.3.2-1 Summary of Potential USACE, RWQCB, and CDFW Jurisdiction 2.3.2-3
2.3.2-2 Summary of Potential Permanent Impacts on USACE, RWQCB, and CDFW Features 2.3.2-6
2.3.2-3 Summary of Potential Temporary Impacts on USACE, RWQCB, and CDFW Features 2.3.2-67
2.3.3-1 Likelihood of Occurrence for Special-Status Plant Species 2.3.3-4
2.3.4-1 Habitat Presence for U.S. Fish and Wildlife Service Animal Species 2.3.4-10

2.3.5-1 FESA Effect Findings 2.3.5-3
2.3.5-2 Potential to Occur for State – and/or Federally Listed Plant and Wildlife Species 2.3.5-7
2.3.6-1 Invasive Species Occurring within the BSA 2.3.6-2
3-1 Daily Vehicle Hours Traveled Summary 3-58
3-2 Annual Greenhouse Gas Emissions 3-59
3-3 Average Required Fuel Economy (mpg) 3-61
4-1 Summary of Native American Consultation 4-2
4-2 Summary of Historical Consultation 4-3

List of Figures

Figure		Page
1-1	Regional Vicinity	1-3
1-2	Project Location	1-5
1-3	Levels of Service for Freeways	1-9
1-4	Build Alternative (Preferred Alternative) Map	1-17
1-5	Lakeview Option 1A (eliminated from further consideration)	1-84
1-6	Lakeview Option 3 (eliminated)	1-85
2.1.1-1	Existing Land Use	2.1.1-3
2.1.1-2	Related Projects	2.1.1-9
2.1.1-3	Section 4(f) Resources	2.1.1-17
2.1.3-1	Community Impact Study Area	2.1.3-3
2.1.3-2	Median Household Income of Study Area Census Tracts	2.1.3-11
2.1.3-3	Community Features	2.1.3-15
2.1.3-4	Right of Way Impacts	2.1.3-23
2.1.5-1	Regional Statistical Area (RSA) Location Map	2.1.5-2
2.1.5-2	Arterial Intersection Locations Map	2.1.5-7
2.1.6-1	Officially Designated State Scenic Highway	2.1.6-3
2.1.6-2	Key View Locations Map	2.1.6-5
2.1.6-3a	Key View 1 – Existing Condition	2.1.6-7
2.1.6-3b	Key View 1 – Proposed Condition	2.1.6-9
2.1.6-4a	Key View 2 – Existing Condition	2.1.6-13
2.1.6-4b	Key View 2 – Proposed Condition	2.1.6-15
2.1.6-5a	Key View 3 – Existing Condition	2.1.6-17
2.1.6-5b	Key View 3 – Proposed Condition	2.1.6-19
2.1.6-6a	Key View 4 – Existing Condition	2.1.6-21
2.1.6-6b	Key View 4 – Proposed Condition	2.1.6-23
2.2.1-1	Federal Emergency Management Agency Flood Zones in the Project Area	2.2.1-3
2.2.2-1	Project Watershed and Surface Waterbodies Map	2.2.2-7
2.2.4-1	Geologic Map	2.2.4-3
2.2.4-2	Paleontological Potential Map	2.2.4-5
2.2.5-1	Landfill Extent	2.2.5-5
2.2.6-1	Nearby Land Uses Sensitive to Air Quality	2.2.6-7
2.2.7-1	Noise Levels of Common Activities	2.2.7-3
2.3.2-1	USACE/RWQCB Aquatic Resources	2.3.2-7
2.3.2-2	CDFW Aquatic Resources Potential Impacts	2.3.2-37
3-1	2020 BAU Emissions Projection, 2014 Edition	3-56
3-2	Possible Use of Traffic Operation Strategies in Reducing On-road CO_2 Emissions	3-57
3-3	Cascade of Uncertainty in Climate Change Simulations	3-62
3-4	The Governor's Climate Change Pillars: 2030 Greenhouse Gas Reduction Goals	3-64

Chapter 1 Proposed Project

1.1 Introduction

California participated in the Surface Transportation Project Delivery Pilot Program (Pilot Program) pursuant to 23 United States Code (USC) 327, for more than five years, beginning July 1, 2007, and ending September 30, 2012. MAP-21 (P.L. 112–141), signed by President Obama on July 6, 2012, amended 23 USC 327 to establish a permanent Surface Transportation Project Delivery Program. As a result, the California Department of Transportation (Caltrans/Department) entered into a Memorandum of Understanding (MOU), pursuant to 23 USC 327 (National Environmental Policy Act [NEPA] Assignment MOU), with the Federal Highway Administration (FHWA). The NEPA Assignment MOU became effective October 1, 2012, and was renewed on December 23, 2016, for a term of five years. In summary, the Department continues to assume FHWA responsibilities under NEPA and other federal environmental laws in the same manner as was assigned under the Pilot Program, with minor changes. With NEPA Assignment, FHWA assigned and the Department assumed all of United States Department of Transportation (USDOT) Secretary under NEPA. This assignment includes projects on the State Highway System and Local Assistance Projects off the State Highway System within California, except for certain categorical exclusions that FHWA assigned to Caltrans under the 23 USC 326 CE Assignment MOU, projects excluded by definition, and specific project exclusions.

Caltrans, as assigned by FHWA, is the lead agency under NEPA. Furthermore, Caltrans is the lead agency under the California Environmental Quality Act (CEQA).

Caltrans District 12, in cooperation with the Orange County Transportation Authority (OCTA), is proposing to improve traffic operations on State Route (SR) 91 from post mile (PM) 4.7 to PM R10.8 (from west of State College Boulevard to east of Lakeview Avenue), on SR-57 from PM 15.5 to PM 16.2 (from just south of SR-91 to just north of SR-91), and on SR-55 from PM 17.4 to PM R17.9 (from south of SR-91 to SR-91) in the cities of Anaheim, Fullerton, Orange, and Placentia in Orange County, California, a distance of approximately 6 miles. See Figures 1-1 and 1-2 for project vicinity and project location maps. The proposed improvements would include SR-91 freeway mainline widening, primarily in the eastbound direction, and modifications to various interchanges, connectors, ramps, and intersections. Construction of the proposed project is expected to begin in 2026 and anticipated to be completed in 2030. The project is classified as Category 4A, as described in Chapter 8 of the Project Development Procedures Manual. This proposed project is included in the 2019 Federal Transportation Improvement Program (FTIP) as project ID ORA150110 (see Appendix F). It is also included in the Southern California Association of Governments (SCAG) 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy Final Amendment #3 (2016 RTP/SCS) as project ID 2M0736. The 2019 FTIP listing describes the project as extending from SR-91 PM 4.2 to R11.0; these postmiles were based on a preliminary, conservative identification of the anticipated start and end points for the project. Since then, the project design has progressed, and the project limits have been refined to extend from PM 4.7 to R10.8. These updated limits are consistent with the proposed project improvements (including ground disturbance related to new signage) and the area that was evaluated in the environmental analyses conducted for the project. This change in postmiles is not due to changes in operational features or capacity-related improvements.

1.1.1 Existing Facility

SR-91 is a major corridor in the east-west direction connecting Riverside County with Los Angeles and Orange Counties. In Orange County, SR-91 generally consists of an eight-lane freeway facility with three general purpose lanes[1] and one high occupancy vehicle (HOV) lane[2] in each direction. There is an additional lane that begins in the eastbound direction and terminates in the westbound direction just west of the SR-91/SR-55 interchange that serves as the beginning and end of the 91 Express Lanes[3], respectively. The study area covers an approximately five-mile stretch along SR-91 in Orange County from west of State College Boulevard to east of Lakeview Avenue. The study area includes SR-91 at State College Boulevard, northbound SR-57 from Lincoln Avenue to Orangethorpe Avenue, Kraemer Boulevard/Glassell Street, Tustin Avenue, Lakeview Avenue, and SR-55 Connectors. SR-91 carries approximately 224,000 to 321,000 annual average daily traffic (AADT)[4] based on AADT volumes published by Caltrans.

1.2 Purpose and Need

The project purpose is the set of objectives the project intends to meet. The project need is the transportation deficiency that the project was initiated to address.

1.2.1 Purpose of the Project

The purpose of the proposed project within the corridor is to:

- Improve capacity and reduce congestion.
- Reduce weaving and merging between successive ramps at several interchanges.

1.2.2 Need for the Project

The current deficiencies on SR-91 within the project limits are as follows:

- Existing and projected SR-91 mainline peak-period traffic demand exceeds available capacity in numerous locations within the project limits.
- Congestion due to weaving and merging between successive ramps at several interchanges creates bottlenecks along westbound SR-91.

[1] A general purpose lane is a travel lane available for use by the general public without any restrictions or tolls.

[2] A high-occupancy vehicle (HOV) lane is a non-tolled exclusive lane, available only for use by high-occupancy vehicles (i.e., vehicles carrying multiple individuals, as defined for the facility in question) and certain other qualified vehicles.

[3] Express lanes are traffic lanes that are separated from general purpose lanes where users are charged a toll to use the lanes.

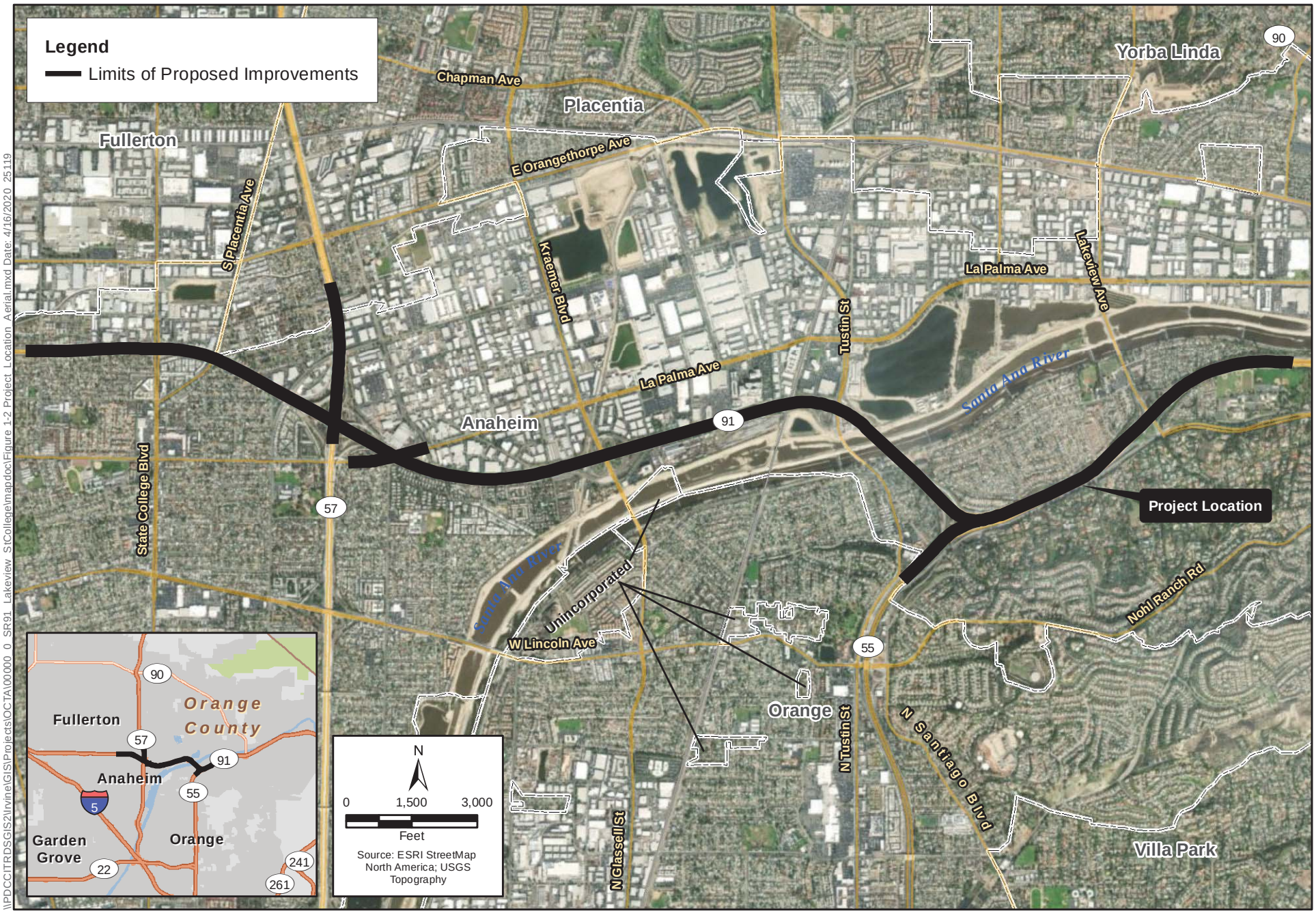
[4] Annual average daily traffic (AADT) identifies the average traffic volume in both directions on a section of road, adjusted for seasonal variation.



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Figure 1-1
Regional Vicinity
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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\\PDCCITRDSGIS2\Irvine\GIS\Projects\OCTA\00000 0 SR91 Lakeview StCollege\mapdoc\Figure 1-2 Project Location AerialLmxd Date: 4/16/2020 25119

Figure 1-2
Project Location
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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CAPACITY, TRANSPORTATION DEMAND, AND SAFETY

SR-91 from Lakeview Avenue to State College Boulevard currently has insufficient capacity on the freeway mainline to accommodate existing traffic volumes. This is projected to worsen in the future. As a result, this corridor is operating with a condition in which traffic demand exceeds capacity.

A Traffic Study Report was prepared for the proposed project. As discussed in the report, population growth in the study area from 2010 to 2035 is expected to be approximately 12 percent, and employment growth is projected to be approximately 17 percent, which averages to about 0.5 percent per year (System Metrics Group 2017).

Discussions were held early in the project development phase by the Project Development Team (PDT) regarding the appropriate baseline year due to the various improvements constructed within the project area over the last several years (i.e., SR-91 [SR-55 to Tustin Avenue], SR-91 [I-5 to SR-57] Lane Addition Project, and Capital Prevention Maintenance Strategy Project). It was decided that the baseline year needed to be prior to 2014 (when the Project Approval and Environmental Document [PA&ED] phase was initiated) to capture normal operating conditions before the construction of improvement projects, though they are included as part of the future No-Build Alternative.

Levels of Service

Table 1-1 presents the mainline level of service (LOS)[5] along eastbound SR-91 under existing-year (2014) conditions, along with projected LOS under opening-year (2030) and design-year (2050) conditions. Table 1-2 presents the same information for westbound SR-91.

Table 1-1. Eastbound State Route 91 (Mainline) Level of Service

Location	Existing (2014)		Opening Year (2030)		Design Year (2050)	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
West of State College Blvd Off-ramp	E	E	E	F	F	F
West of SR-57 Connector Off-ramp	F	F	F	F	F	F
West of NB SR-57 Connector On-ramp	C	C	D	F	D	F
West of Glassell St Off-ramp	B	B	B	F	B	F
West of Tustin Ave Off-ramp	F	F	F	F	F	F
West of Tustin Ave On-ramp	C	F	C	F	D	F
West of SB SR-55 Connector Off-ramp	D	E	C	F	D	F
West of SR-55 Connector On-ramp	B	B	B	E	C	E
West of Lakeview Ave Off-ramp	B	B	B	B	B	B
West of NB Lakeview Ave On-ramp	C	C	B	B	C	B
West of Imperial Highway Off-ramp	B	B	C	C	C	C
West of NB Imperial Highway On-ramp	C	B	C	C	C	C
East of Imperial Highway On-ramp	C	C	D	C	D	C

Shaded entry = unacceptable LOS; NB = northbound; SB = southbound; w/o = west of; e/o = east of

[5] The ability of a highway to accommodate traffic is typically measured in terms of LOS. Traffic flow is classified by LOS, ranging from LOS A (traffic is free flowing, with low volumes and high speeds) to LOS F (traffic volume exceeds design capacity, with forced flow and substantial delays). The LOS for signalized and unsignalized intersections is based on delay time per vehicle. See Figure 1-3 for further detail.

Table 1-2. Westbound State Route 91 (Mainline) Level of Service

Location	Existing (2014)		Opening Year (2030)		Design Year (2050)	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
East of Imperial Hwy Off-ramp	C	C	F	F	F	F
East of NB Imperial Hwy On-ramp	C	C	F	F	F	F
East of SB Imperial Hwy On-ramp	C	C	F	F	F	F
East of Lakeview Ave Off-ramp	F	F	F	F	F	F
East of NB Lakeview Ave On-ramp	F	F	F	F	F	F
East of SB Lakeview Ave On-ramp	F	F	F	F	F	F
East of SR-91/SR-55 Split and Lakeview Ave On-ramps	F	F	F	F	F	F
East of SR-55 Connector On-ramp	D	C	F	F	F	F
East of Tustin Ave Off-ramp	F	F	F	F	F	F
East of Tustin Ave On-ramp	D	B	C	C	B	C
East of Kraemer Blvd Off-ramp	C	C	D	D	D	C
East of Kraemer Blvd On-ramps	C	C	F	F	F	F
East of SR-57 Off-ramp	D	C	F	F	F	F
East of NB SR-57 On-ramp	F	F	F	F	F	F
East of State College Blvd Off-ramp	F	F	F	F	F	F
East of State College Blvd On-ramp	F	F	F	F	F	F
East of Raymond Ave/East St Off-ramp	F	F	E	E	E	E

Shaded entry = unacceptable LOS; NB = northbound; SB = southbound; e/o = east of

Levels of service for freeways are shown in Figure 1-3.

As shown in Table 1-1, eastbound SR-91 currently operates at an unacceptable LOS (i.e., LOS E or F) during the AM and/or PM peak hour at five of 13 locations; this is projected to increase to eight of 13 locations by 2030 and 2050. Westbound SR-91 (Table 1-2) currently operates at an unacceptable LOS during the AM and/or PM peak hour at nine of 17 locations; this is projected to increase to 15 of 17 locations by 2030 and 2050.

Figure 1-3. Levels of Service for Freeways

LEVELS OF SERVICE
for Freeways

Level of Service	Flow Conditions	Operating Speed (mph)	Technical Descriptions
A		70	Highest quality of service. Traffic flows freely with little or no restrictions on speed or maneuverability. **No delays**
B		70	Traffic is stable and flows freely. The ability to maneuver in traffic is only slightly restricted. **No delays**
C		67	Few restrictions on speed. Freedom to maneuver is restricted. Drivers must be more careful making lane changes. **Minimal delays**
D		62	Speeds decline slightly and density increases. Freedom to maneuver is noticeably limited. **Minimal delays**
E		53	Vehicles are closely spaced, with little room to maneuver. Driver comfort is poor. **Significant delays**
F		<53	Very congested traffic with traffic jams, especially in areas where vehicles have to merge. **Considerable delays**

Table 1-3 presents vehicle miles traveled (VMT),[6] vehicle hours of delay (VHD),[7] and travel times along the corridor under existing-year (2014) conditions, along with the projected VMT, VHD, and travel times under opening-year (2030), and design-year (2050) conditions. Table 1-4 presents the same information for westbound SR-91.

Table 1-3. Eastbound State Route 91 VMT, VHD, and Travel Time

Location	Existing (2014)		Opening Year (2030)		Design Year (2050)	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Raymond Ave/East St to Imperial Hwy – Vehicle Miles Traveled (VMT)	288,000	365,000	353,000	367,000	422,300	370,000
Raymond Ave/East St to Imperial Hwy – Vehicle Hours of Delay (VHD)	260	780	3,190	5,800	6,270	11,080
Raymond Ave/East St to Imperial Hwy – Peak Average Travel Time (minutes)	10.2	11.7	17.7	23.4	n/a	n/a

n/a = Not Available. 2050 travel times could not be reasonably projected or estimated.

Table 1-4. Westbound State Route 91 VMT, VHD, and Travel Time

Location	Existing (2014)		Opening Year (2030)		Design Year (2050)	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Imperial Hwy to Raymond Ave/East St – Vehicle Miles Traveled (VMT)	336,800	308,700	381,000	376,000	427,400	447,500
Imperial Hwy to Raymond Ave/East St – Vehicle Hours of Delay (VHD)	4,050	2,290	6,070	7,770	8,210	13,530
Imperial Hwy to Raymond Ave/East St – Peak Average Travel Time (minutes)	19.6	17.6	24.7	29.4	n/a	n/a

n/a = Not Available. 2050 travel times could not be reasonably projected or estimated.

As shown in Tables 1-3 and 1-4, VMT is projected to increase substantially in both the eastbound and westbound directions from the existing year (2014) through the design year (2050). VHD, which is comparably lower in the eastbound condition under existing-year (2014) conditions, is projected to increase substantially by the design year (2050), from 260 hours per year to 6,270 hours per year in the AM peak and from 780 hours per year to 11,080 hours per year in the PM peak. VHD, which is already much higher in the westbound condition under existing-year (2014) conditions, at 4,050 hours per year during the AM peak and 2,290 hours per year during the PM peak, is expected to increase to 8,210 hours per year and 13,530 hours per year in the AM and PM peaks, respectively, by the design year (2050). Travel times are also projected to be negatively affected between the existing year (2014) and opening year (2030) in both the eastbound and westbound directions, with increases expected to range from a low of 26 percent in the westbound direction during the AM peak to 100 percent in the eastbound direction during the PM peak.

[6] Vehicle miles traveled (VMT) is the total number of miles that all the vehicles have traveled over a certain section of freeway/roadway over a certain period of time.

[7] Vehicle hours of delay (VHD) is the annual total hours that vehicles spend on the roadway due to congestion at 35 miles per hour (mph).

Accidents and Safety

Table 1-5 below presents the 3-year collision data between July 1, 2013 and June 30, 2016 for the SR-91 freeway. As shown in the table, the actual total collision rates for eastbound SR-91 are lower than the statewide average for similar facilities in all 12 segments, while rates for four of the 12 segments are moderately higher than the statewide average for westbound SR-91. In one out of 12 segments for eastbound SR-91, the fatality collision rate is higher than the statewide average, while rates for five of the 12 segments for westbound SR-91 are higher than the statewide average. These locations are shown in boldface in the table.

Table 1-5. SR-91 Eastbound Mainline Collision Data

	Collision Rate (accidents per million vehicle miles)					
	Actual Rate			Average Rate		
Segment	Fatalities	Injuries & Fatalities	Total	Fatalities	Fatalities & Injuries	Total
SR-91 Eastbound						
East of State College	**0.010**	0.12	0.45	0.005	0.39	1.25
East of State College to East of SR-57	0.000	0.15	0.79	0.003	0.32	1.04
East of SR-57 to SR-91/SR-57 IC	0.000	0.12	0.37	0.003	0.28	0.92
SR-91/SR-57 IC to La Palma	0.000	0.16	0.60	0.003	0.31	1.00
La Palma to East of Kraemer/ Glassell	0.000	0.12	0.35	0.003	0.26	0.85
East of Kraemer/Glassell to Kraemer	0.000	0.25	0.66	0.004	0.30	0.95
Kraemer/Glassell to East of Tustin	0.000	0.10	0.31	0.003	0.29	0.94
East of Tustin to Tustin	0.000	0.29	1.56	0.003	0.30	0.99
Tustin to SR-91/ SR-55 IC	0.000	0.10	0.53	0.003	0.32	1.02
SR-91/SR-55 IC to East of Lakeview	0.000	0.06	0.34	0.006	0.44	1.40
East of Lakeview to Lakeview	0.000	0.12	0.30	0.003	0.32	1.05
Lakeview to West of Lakeview	0.000	0.26	0.60	0.003	0.35	1.14
SR-91 Westbound						
East of State College	0.000	0.32	1.05	0.005	0.39	1.25
East of State College to East of SR-57	0.000	**0.39**	**1.36**	0.003	0.32	1.04
East of SR-57 to SR-91/SR-57 IC	0.000	0.21	0.79	0.003	0.28	0.92
SR-91/SR-57 IC to La Palma	0.000	**0.58**	**2.08**	0.003	0.31	1.00
La Palma to East of Kraemer/ Glassell	0.000	0.25	0.83	0.003	0.26	0.85
East of Kraemer/ Glassell to Kraemer	**0.017**	**0.45**	**1.48**	0.004	0.30	0.95

Segment	Collision Rate (accidents per million vehicle miles)					
	Actual Rate			Average Rate		
	Fatalities	Injuries & Fatalities	Total	Fatalities	Fatalities & Injuries	Total
Kraemer/Glassell to East of Tustin	0.000	0.17	0.40	0.003	0.29	0.94
East of Tustin to Tustin	0.000	0.15	0.49	0.003	0.30	0.99
Tustin to SR-91/SR-55 IC	0.000	0.27	0.85	0.003	0.32	1.02
SR-91/SR-55 IC to East of Lakeview	0.000	0.13	0.85	0.006	0.44	1.40
East of Lakeview to Lakeview	0.000	0.16	0.77	0.003	0.32	1.05
Lakeview to West of Lakeview	0.000	**0.67**	**2.07**	0.003	0.35	1.14

Boldface indicates that the actual collision rate is higher than the statewide average.

It was determined from a review of the accident data that the predominant type of collisions along the SR-91 mainline is rear end collisions, followed by sideswipes. The collision data above suggests that the prevalent cause of collisions along the SR-91 mainline is traffic congestion, resulting in these types of collisions. The SR-91 Widening Project would add one general purpose lane in the eastbound direction to increase capacity, as well as provide additional auxiliary lanes, where warranted, to improve lane continuity and traffic flow. These operational improvements are anticipated to reduce congestion and may lead to a decrease in the collision rates on the freeway mainline. None of the proposed improvements are anticipated to result in an increase in collision potential or compromise safety along the corridor.

ROADWAY DEFICIENCIES

There are two main areas along westbound SR-91 that are currently operating with oversaturated conditions (i.e., where the amount of traffic exceeds the capacity of the roadway). The first area, east of the SR-91/SR-55 split, is a primary westbound bottleneck at the SR-91/SR-55 interchange that queues back to the Lakeview Avenue off-ramp. The second area, east of the State College Boulevard on-ramp, is a bottleneck that queues back to the SR-57 interchange. The traffic demand either exceeds capacity or is at capacity at these bottleneck locations, resulting in traffic queuing upstream. Weaving operations are also deficient in the segment from northbound SR-55 to Tustin Avenue because of high entry volumes from the northbound SR-55 connector on-ramp. In the eastbound direction of SR-91, the segment from State College Boulevard to the SR-57 connector off-ramp currently operates with oversaturated conditions. Weaving analyses for the project indicate that operations are also deficient from the Glassell Street on-ramp to the Tustin Avenue off-ramp because of insufficient through lane traffic capacity. Traffic operations are projected to continue to degrade at these locations under opening-year (2030) and design-year (2050) conditions, as shown in Tables 1-1 and 1-2.

SOCIAL DEMANDS OR ECONOMIC DEVELOPMENT

A review of the growth projections adopted by SCAG indicates continuing growth in the region. The population in Orange County is expected to increase from just over 3 million people to almost 3.5 million people between 2012 and 2040, an increase of over 13 percent (SCAG 2016). In addition, the population of Riverside County is anticipated to increase by almost 42 percent during that same time period. Many of these residents will use SR-91 to

commute to jobs in Orange and Los Angeles Counties. This growth will result in additional demand on SR-91.

LEGISLATION

In 1990, Orange County voters approved Measure M1, a half-cent sales tax that would go on to deliver $4 billion worth of transportation improvements between 1990 and 2011. In 2006, after the success of Measure M1, nearly 70 percent of Orange County voters renewed the half-cent sales tax for another 30 years, through 2040, and launched Measure M2 for additional transportation improvements. The SR-91 Improvement Project between SR-57 and SR-55 has been identified for early delivery of Measure M2 funds.

In November 2016, the Next 10 Delivery Plan was approved by the OCTA Board of Directors (Board), providing a blueprint for continued advancement of Measure M2 projects and programs through 2026. The project is included as Project I in the plan. The Surface Transportation Block Grant funded part of the preliminary engineering for the project, and the agency fund (Measure M2) is programmed for fiscal year 2023/24. The Board also directed staff to set aside net excess 91 Express Lanes revenue, which advances this project into final design and construction ahead of the original schedule.

MODAL INTERRELATIONSHIPS AND SYSTEM LINKAGES

SR-91, a major east–west regional facility in Orange County, provides the city of Anaheim with direct access to the cities of Buena Park, Fullerton, Placentia, Orange, and Yorba Linda as well as the counties of Los Angeles, Riverside, and San Bernardino. SR-91 also connects to major north–south transportation corridors, such as Interstate (I-) 5, SR-57, SR-55, and SR-241. SR-91 is a key route for the movement of goods and people between the Inland Empire and the ports of Long Beach and Los Angeles, Los Angeles International Airport, John Wayne Airport, and Ontario International Airport.

The project area is served by OCTA and Metrolink. OCTA operates local bus routes throughout the study area. In addition, OCTA has a shared-ride service for people who are unable to use the regular fixed-route bus service because of functional limitations caused by disability. It also operates a Senior Mobility Program and an American with Disabilities Act–compliant paratransit service.

Metrolink is a commuter rail line that provides service to and from the city of Anaheim and other areas, including downtown Los Angeles, Riverside, and several other locations in Orange County. Metrolink is operated by the Southern California Regional Rail Authority (SCRRA), which provides transit services to Orange, San Bernardino, Ventura, Riverside, San Diego, and Los Angeles Counties. The Fullerton Metrolink station is less than two miles away from the project corridor.

The Anaheim Regional Transportation Intermodal Center (ARTIC) serves as a station for Amtrak, Metrolink, OCTA, as well as other rail, bus, and taxi services. ARTIC is located along the Santa Ana River Trail/Bicycle Path in the city of Anaheim and is approximately three miles away from the project corridor.

AIR QUALITY IMPROVEMENTS

The proposed project improvements would widen the SR-91 freeway mainline and modify various interchanges, connectors, ramps, and intersections. These improvements would contribute to emissions reductions during operation of the project because they are projected to relieve congestion along the project corridor. In addition, transportation control measures would include the addition of 6-foot bike lanes along northbound Glassell Street, southbound Kraemer Boulevard, and along both directions of the replaced Kraemer Boulevard/Glassell Street overcrossing bridge.

1.2.3 Independent Utility and Logical Termini

The proposed project would have both independent utility and logical termini.[9] SR-91 is a major east–west commuter highway in southern Los Angeles, Orange, and Riverside Counties. It starts at I-110 in the city of Compton, passes through Anaheim and Corona, and then terminates in downtown Riverside at SR-60.

The Build Alternative (Preferred Alternative) provides logical termini for the proposed SR-91 improvements because the termini at the east and west ends of the project provide for direct connections to other major transportation facilities (SR-57 and SR-55). The improvements associated with the Build Alternative (Preferred Alternative) terminate near the system interchanges within the SR-91 project corridor (SR-91/SR-57 to the west and SR-91/SR-55 to the east). The westerly terminus of the Build Alternative (Preferred Alternative) is located just west of the SR-91/SR-57 system interchange at State College Boulevard. Improvements to the west of the SR-91/SR-57 system interchange are included to ensure a smooth transition to the east of SR-57. The easterly terminus is located just east of the SR-91/SR-55 system Interchange (to the east of the SR-91/Lakeview Avenue Interchange) for the westbound improvement direction. This is needed to alleviate westbound weaving-related congestion at the existing SR-91/SR-55 traffic bottleneck, which is exacerbated by traffic entering the freeway from the SR-91/Lakeview Avenue Interchange. The project limits are SR-91 from PM 4.7 to PM R10.8 (from west of State College Boulevard to east of Lakeview Avenue), SR-57 from PM 15.5 to PM 16.2 (from just south of SR-91 to just north of SR-91), and SR-55 from PM 17.4 to PM R17.9 (from south of SR-91 to SR-91) in the cities of Anaheim, Fullerton, Orange, and Placentia in Orange County, California, a distance of approximately 6 miles. The length of the project would address environmental matters in the vicinity on a broad scope and would be usable and a reasonable expenditure even if no additional transportation improvements are made in the project area.

The Build Alternative (Preferred Alternative) would widen SR-91 and improve four existing interchanges as well as connectors to and from SR-55 and SR-57. These improvements would create benefits for those who drive to work, shopping centers, or other destinations by improving travel times; however, no new on- or off-ramps to employment centers or commercial amenities are proposed. The proposed project would improve highway deficiencies along SR-91, even without further transportation improvements in the vicinity. However, it would not preclude other reasonably foreseeable transportation improvements in the area.

[9] *Independent utility* means that the proposed project would meet the purpose and need of the project on its own and not require another project to fully achieve its purpose and need. *Logical termini* means that the project limits from one end of the roadway to the other are the logical limits and not an arbitrary segment of the roadway.

1.3 Project Description

SR-91 is a major corridor in the east–west direction, connecting Riverside County with Los Angeles and Orange Counties. Through the project area, SR-91 generally consists of an eight-lane freeway facility with three general purpose lanes and one HOV lane in each direction. There is an additional lane that begins in the eastbound direction and terminates in the westbound direction just west of the SR-91/SR-55 interchange that serves as the beginning and end of the 91 Express Lanes, respectively. During Design Phase, borings (drilling operations) may be needed at various locations in state's right of way, within project limits. This section describes the proposed action as well as the project alternatives that were developed to meet the identified purpose and need of the project while avoiding or minimizing environmental impacts. The alternatives are the Build Alternative (Preferred Alternative) and the No-Build Alternative. The project limits are SR-91 from PM 4.7 to PM R10.8 (from west of State College Boulevard to east of Lakeview Avenue), SR-57 from PM 15.5 to PM 16.22 (from just south of SR-91 to just north of SR-91), and SR-55 from PM 17.4 to PM R17.9 (from south of SR-91 to SR-91) in the cities of Anaheim, Fullerton, Orange, and Placentia in Orange County, California, a distance of approximately 6 miles.

1.4 Project Alternatives

1.4.1 Proposed Build Alternative (Preferred Alternative)

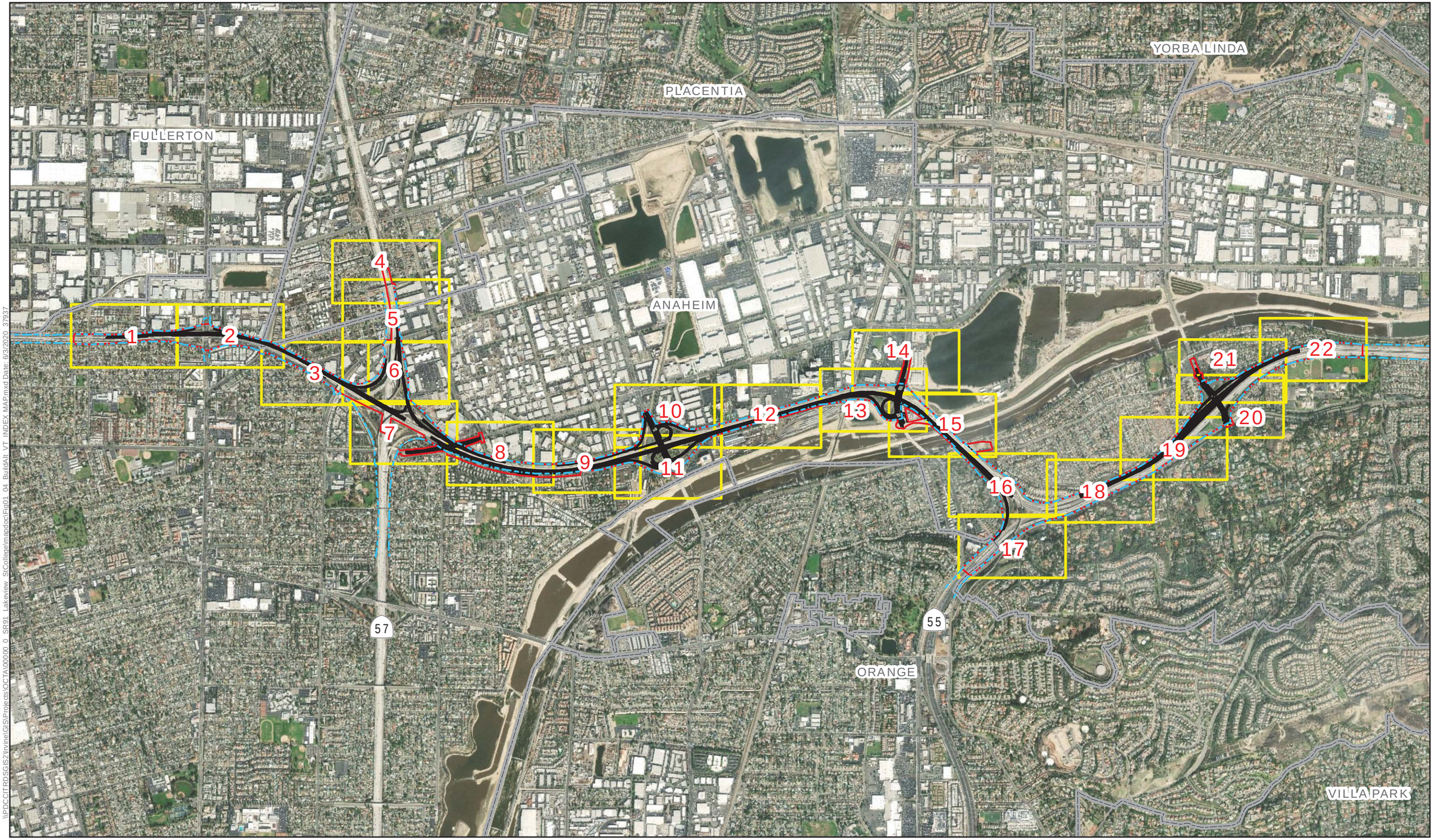
MAINLINE, RAMP, AND BRIDGE IMPROVEMENTS

The Build Alternative (Preferred Alternative) would include improvements along SR-91, primarily in the eastbound direction, from west of State College Boulevard to east of Lakeview Avenue. As mentioned previously, the project limits are SR-91 between PM 4.7 and PM R10.8 (from west of State College Boulevard to east of Lakeview Avenue), SR-57 from PM 15.5 to PM 16.2 (from just south of SR-91 to just north of SR-91), and SR-55 from PM 17.4 to PM R17.9 (from south of SR-91 to SR-91) in the cities of Anaheim, Fullerton, Orange, and Placentia in Orange County; refer to Figure 1-4, Build Alternative (Preferred Alternative) Map, and Appendix H, Project Plans – Build Alternative. Project improvements are discussed below for each type of project feature.

Improvements along eastbound SR-91 would include construction of one 12-foot general purpose lane and one 10-foot outside shoulder between SR-57 and SR-55. The improvements would also restore auxiliary lanes.[10] Eastbound SR-91 would be widened over the Santa Ana River (south side of the bridge).

[10] An auxiliary lane is an extra lane between interchanges, giving drivers more time to merge in or out; the lane is created when an entrance ramp becomes a lane on the freeway and then that lane becomes the off-ramp at the next exit (so the lane begins at one interchange and ends at the next successive interchange).

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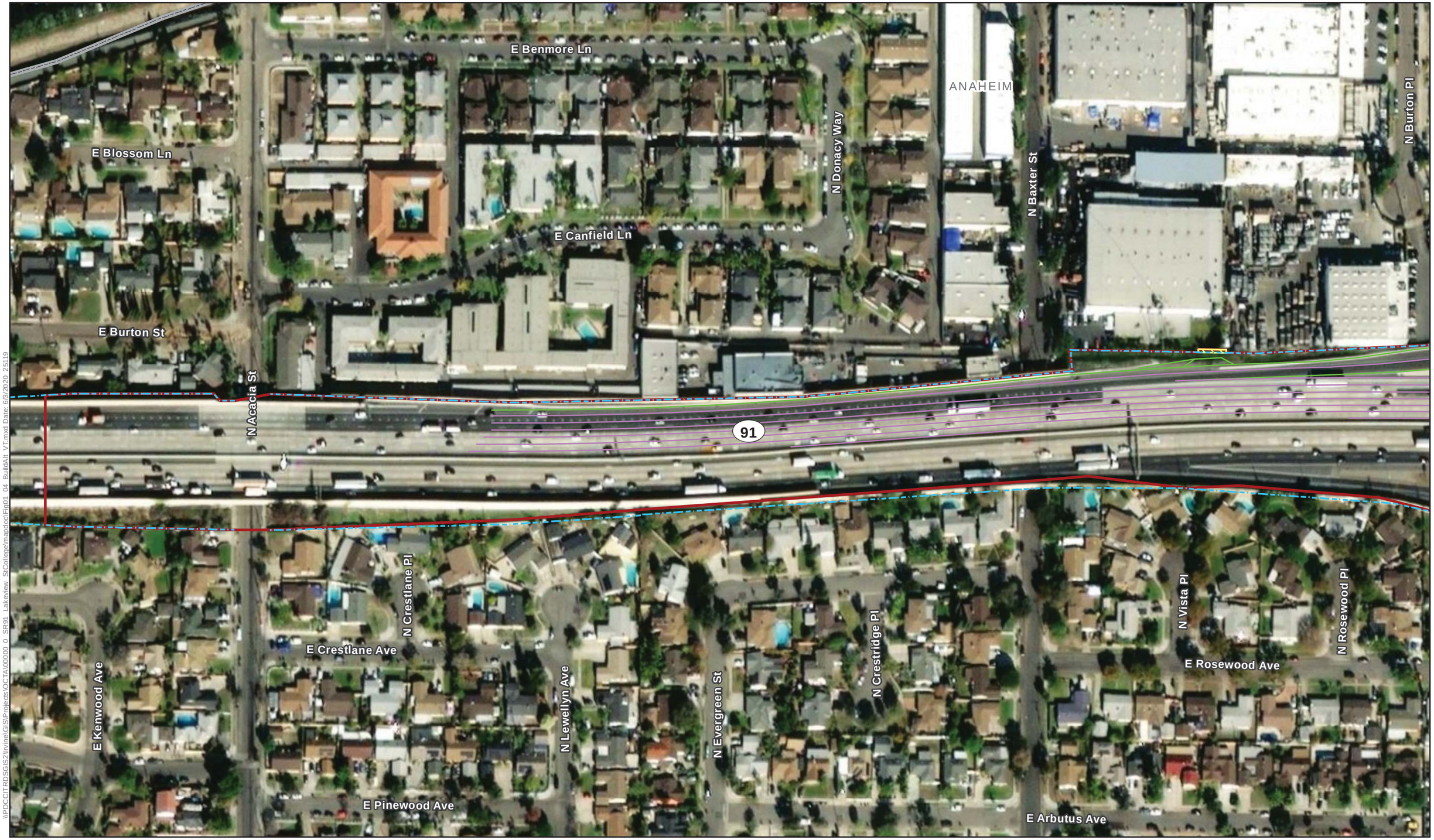
Source: ESRI Imagery (2016)

Legend

- Existing Right-of-Way
- Limits of Disturbance
- Project Improvements
- City Boundary
- Map Index

Figure 1-4 - Index Map
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Source: ESRI Imagery (2018)

Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 1 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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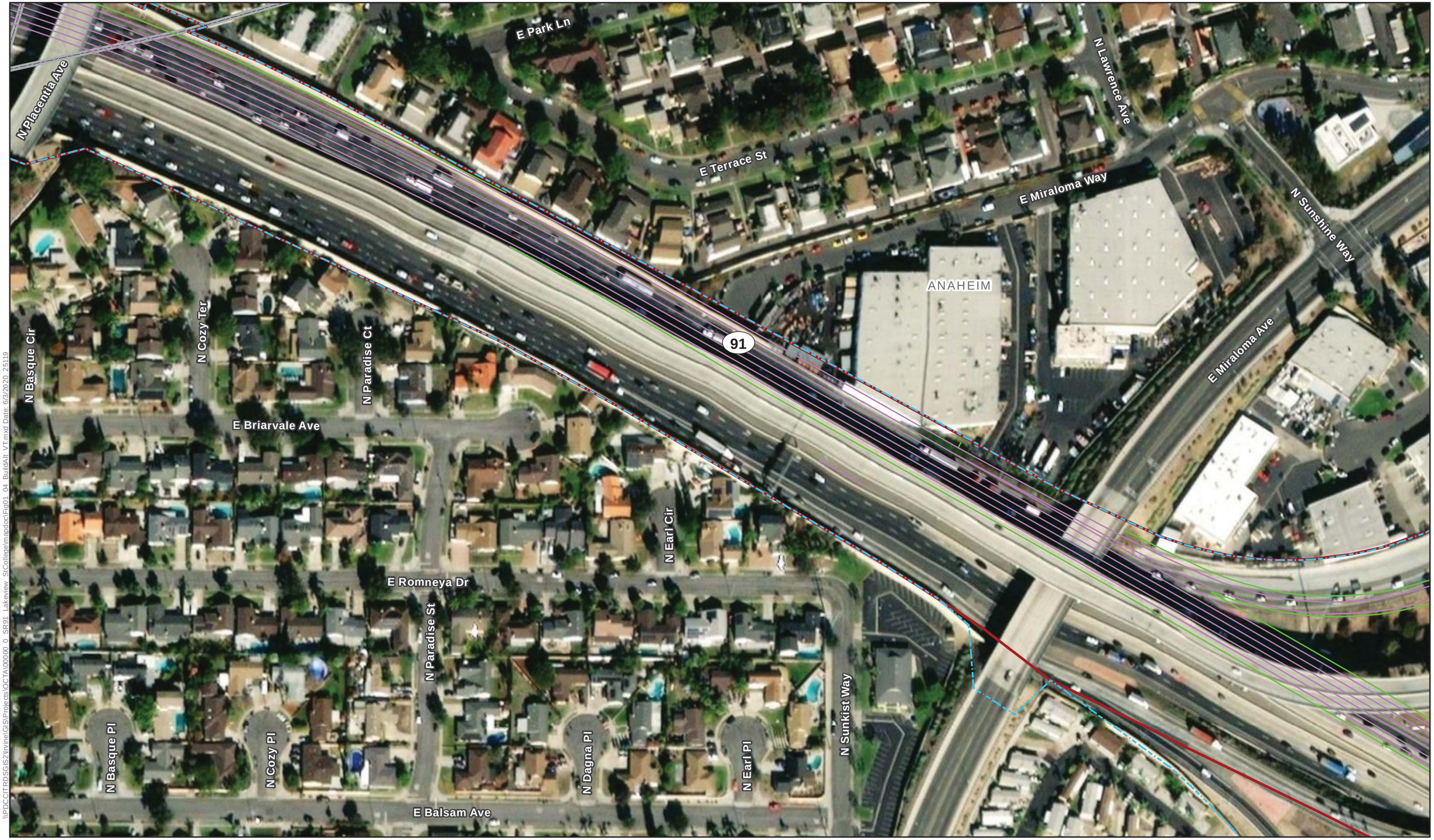
Source: ESRI Imagery (2018)

Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 2 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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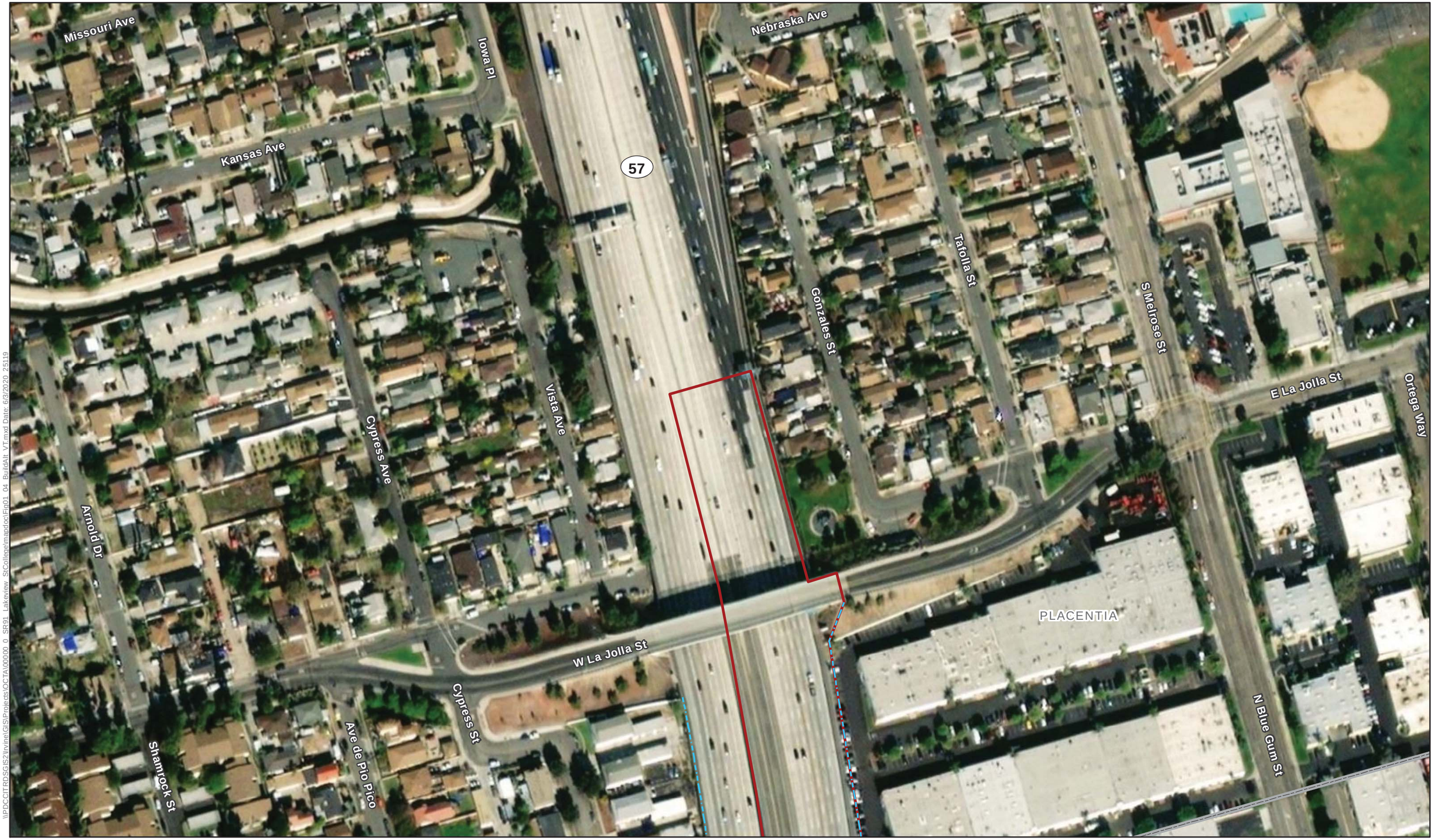
Source: ESRI Imagery (2018)

Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 3 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Source: ESRI Imagery (2018)

Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 4 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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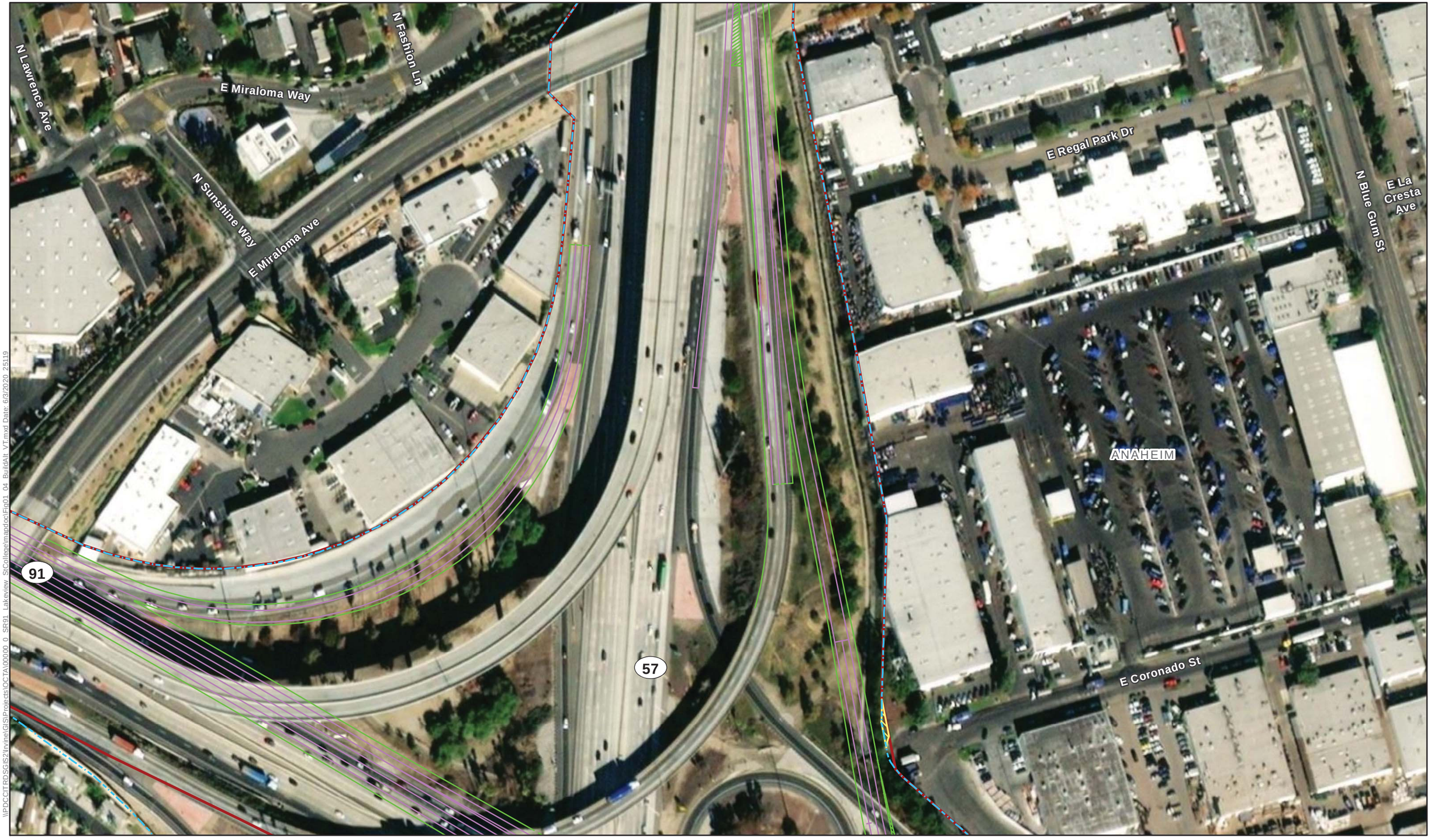
Source: ESRI Imagery (2018)

Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 5 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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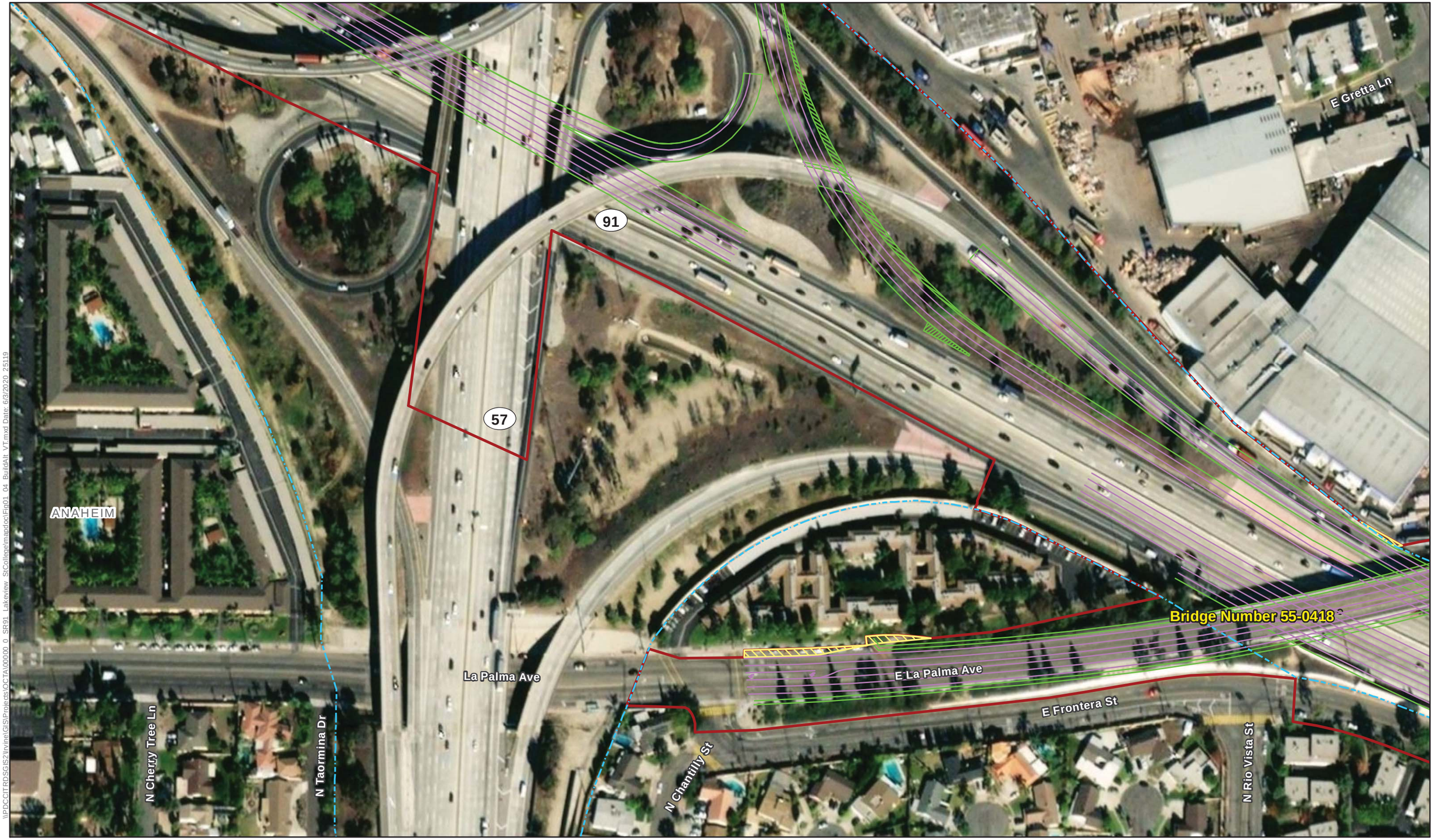
Source: ESRI Imagery (2018)

Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 6 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Source: ESRI Imagery (2018)

Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 7 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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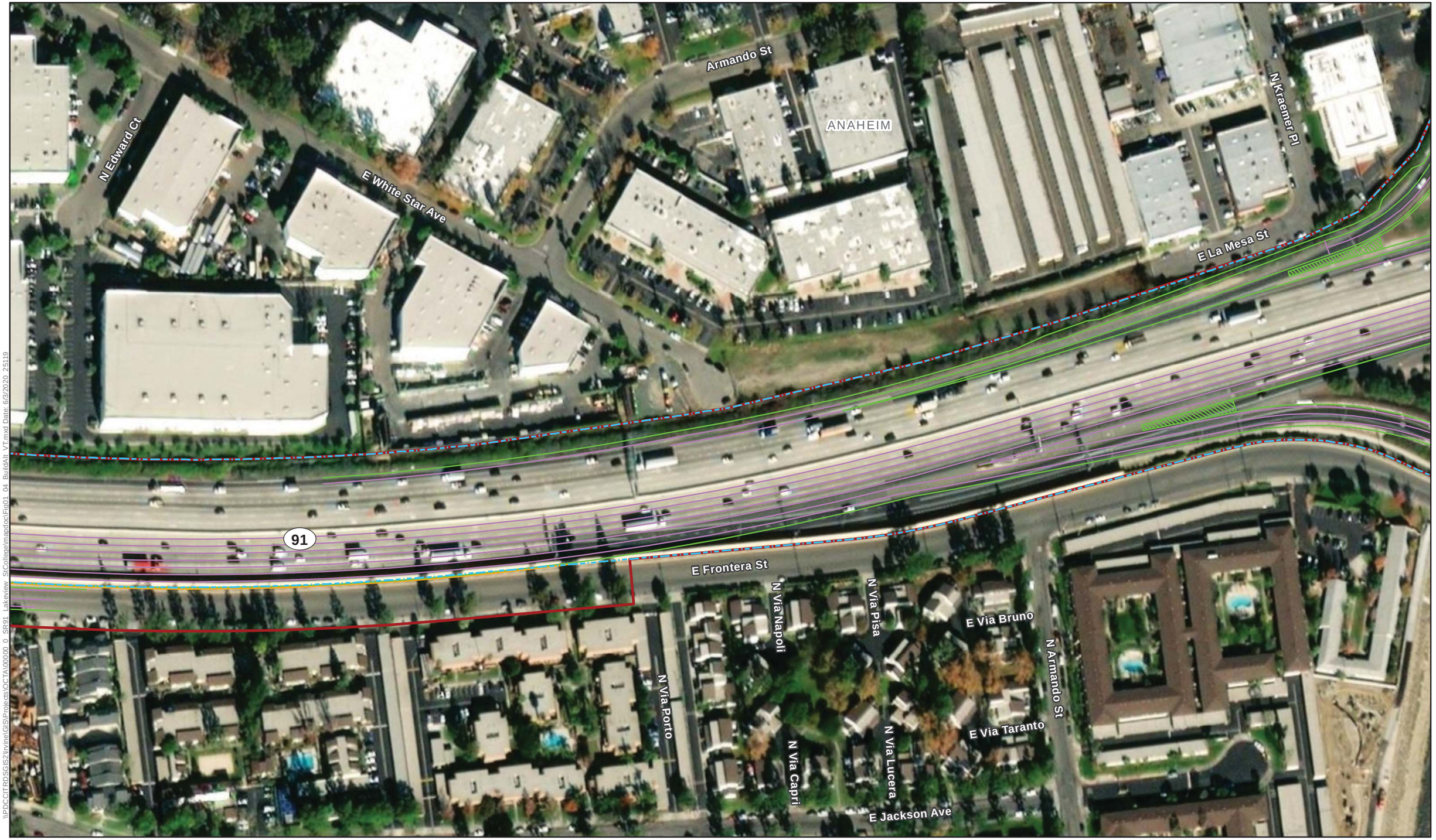
Source: ESRI Imagery (2018)

Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 8 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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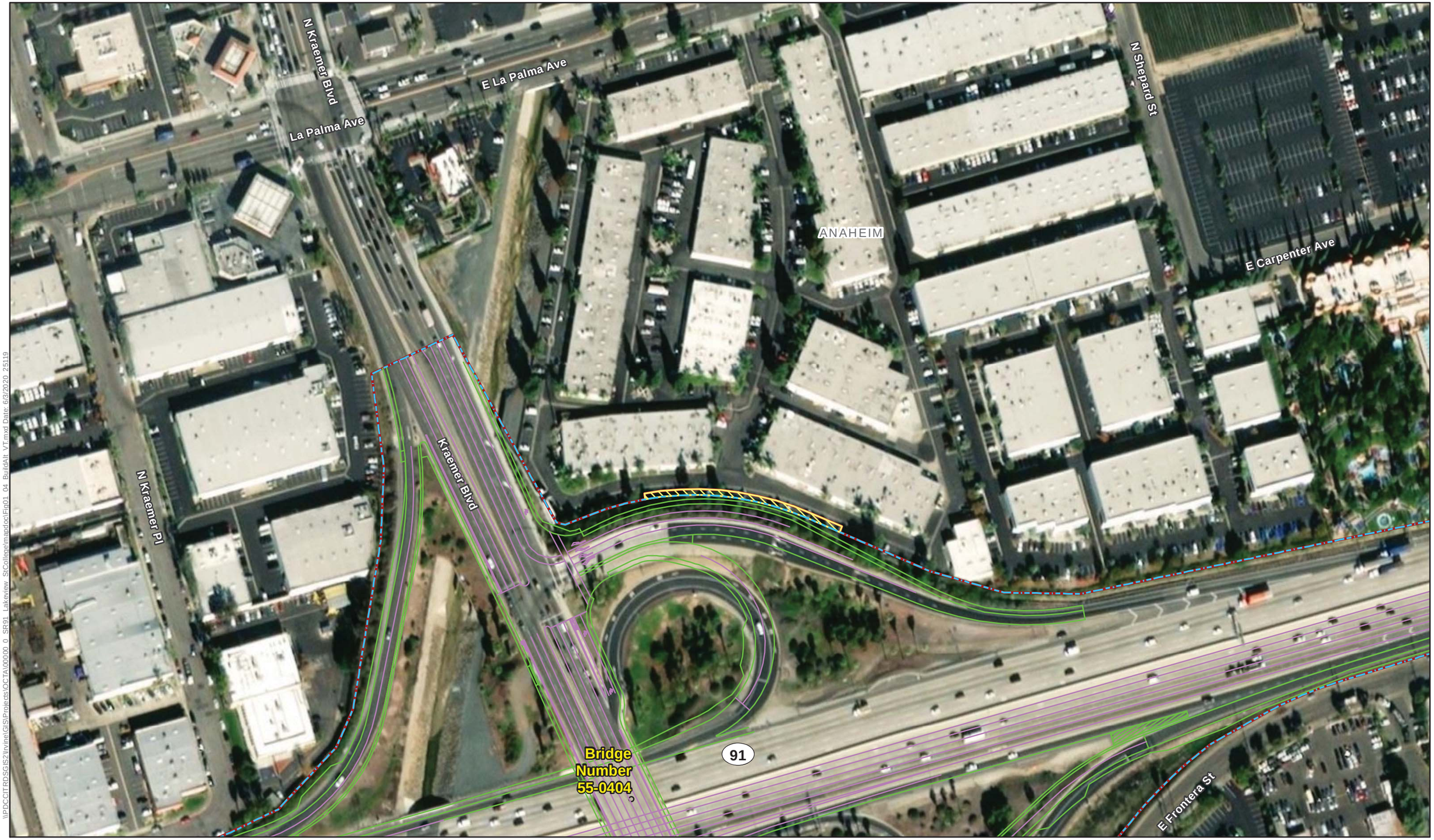
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Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 9 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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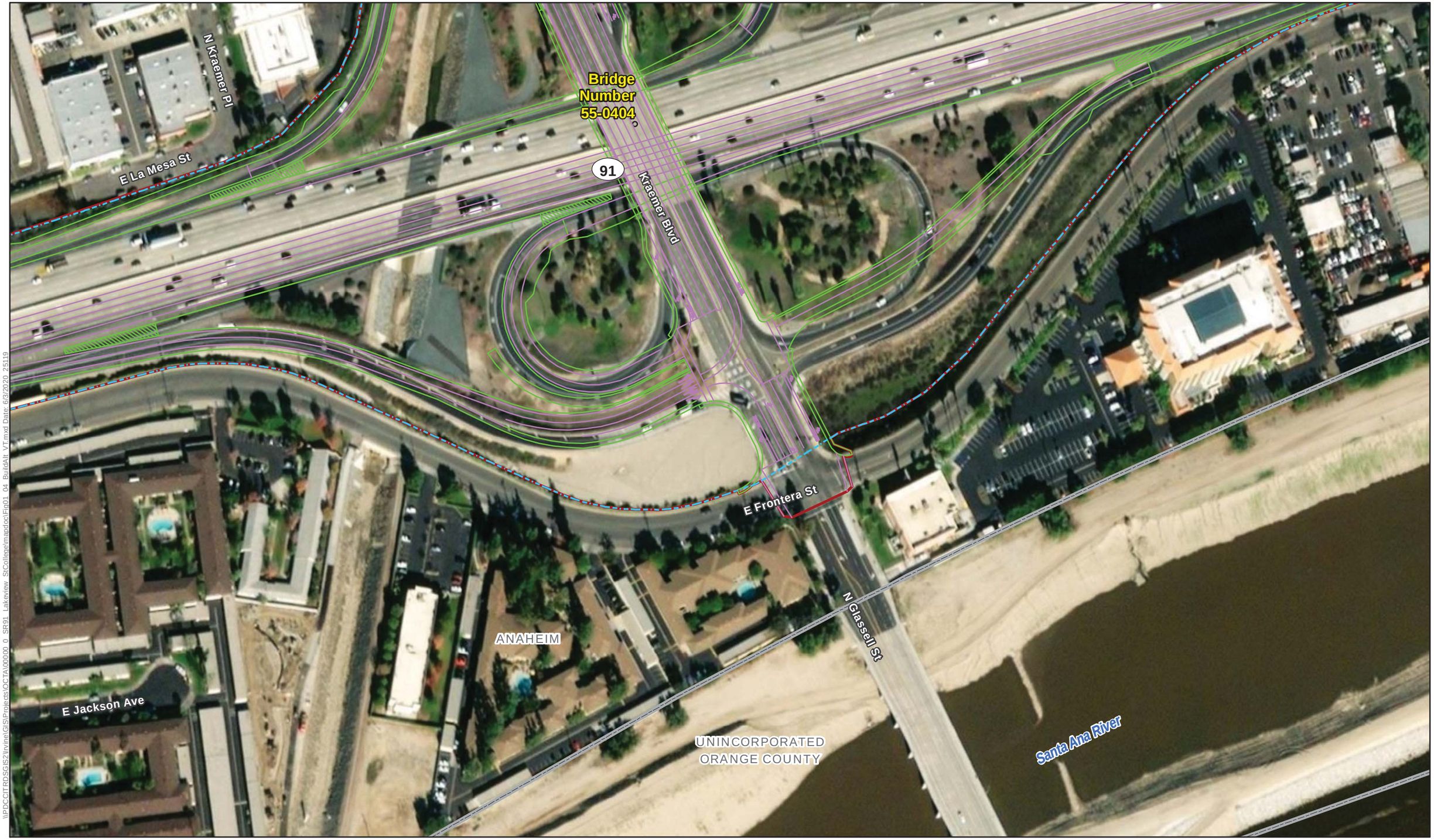
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Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 10 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Source: ESRI Imagery (2018)

Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 11 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Source: ESRI Imagery (2018)

Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 12 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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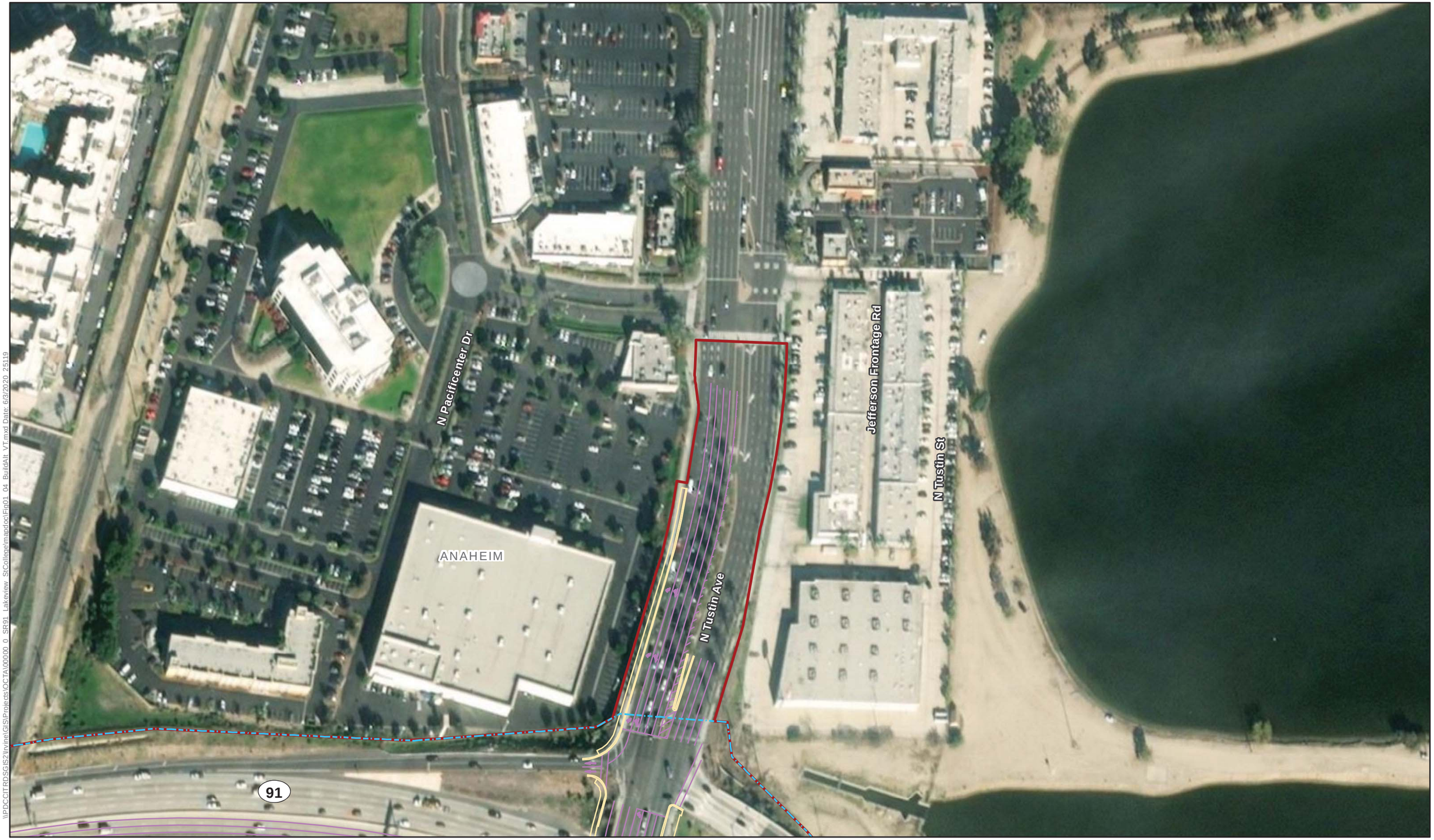
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Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
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- Temporary Construction Easement

Figure 1-4 - Sheet 13 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Source: ESRI Imagery (2018)

Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 14 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
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Source: ESRI Imagery (2018)

Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 15 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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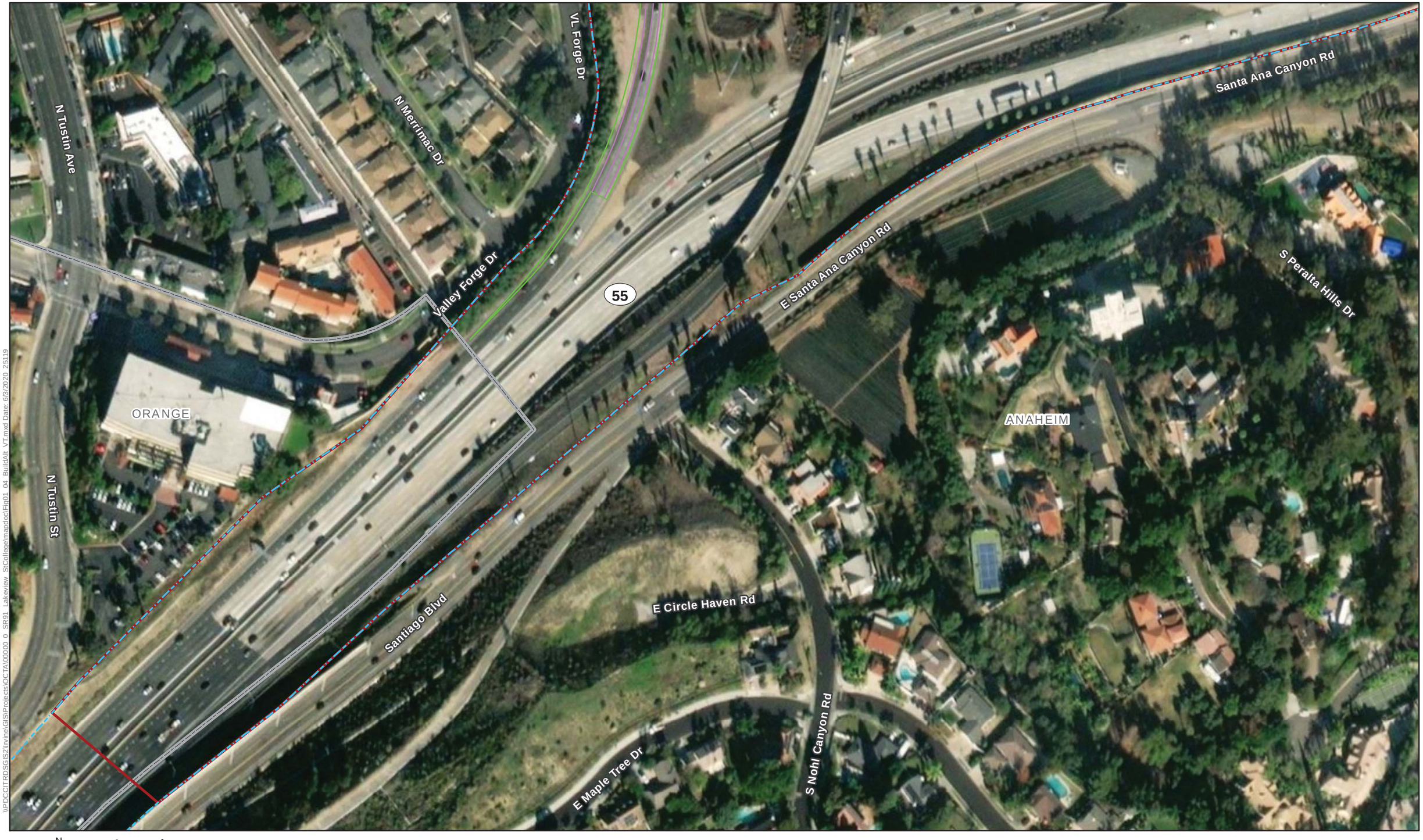
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Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 16 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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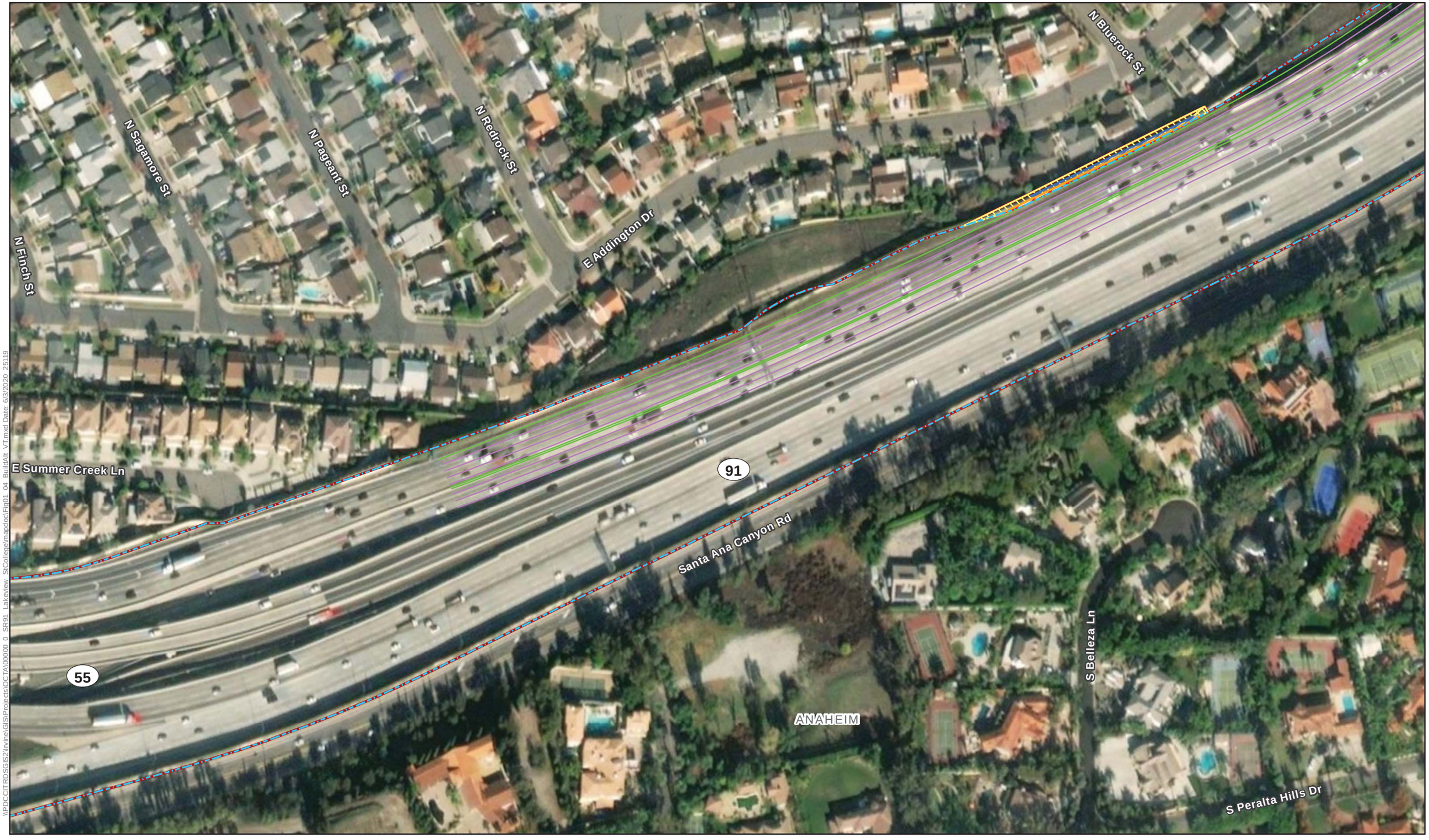
Source: ESRI Imagery (2018)

Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 17 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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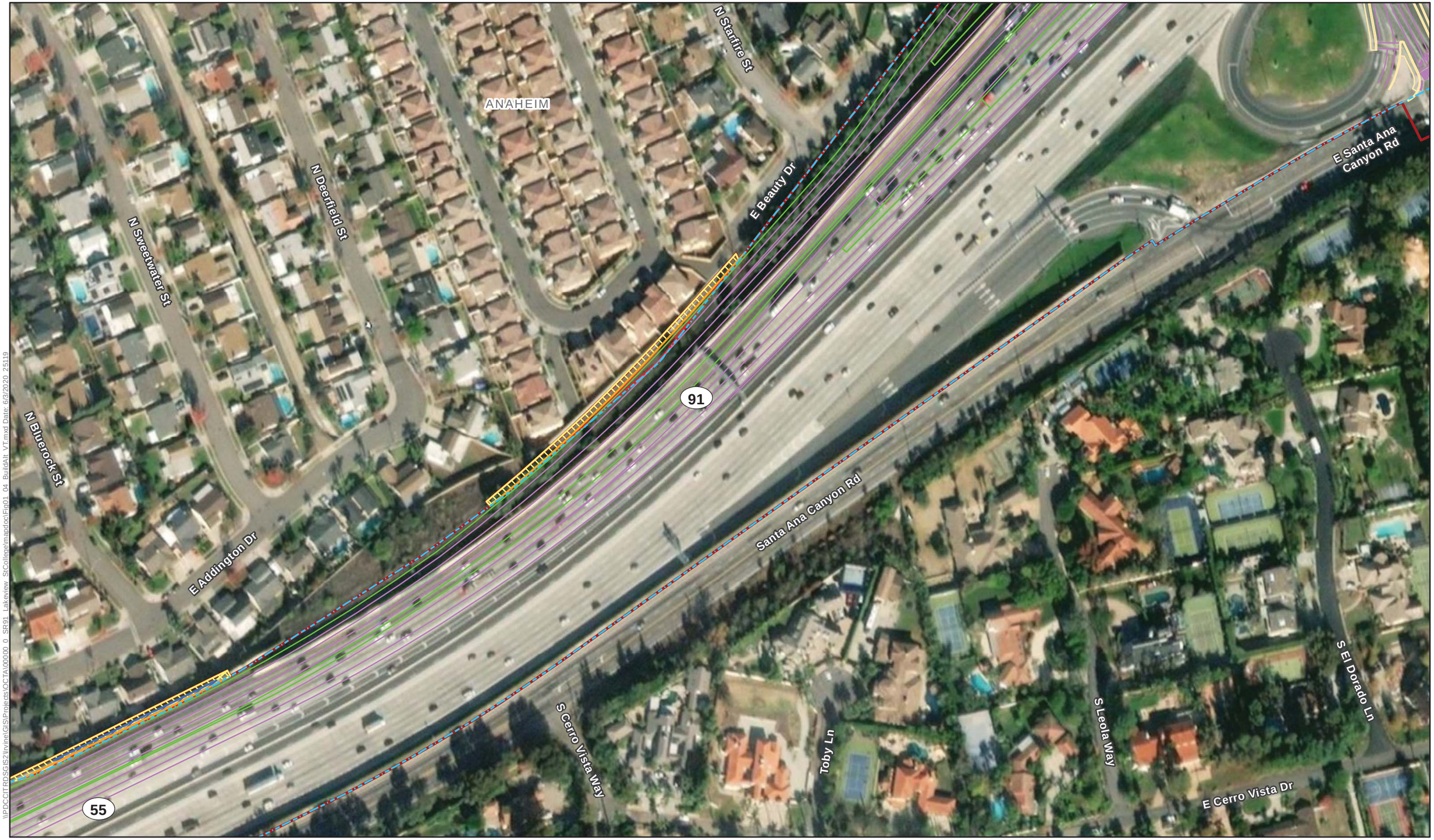
Source: ESRI Imagery (2018)

Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 18 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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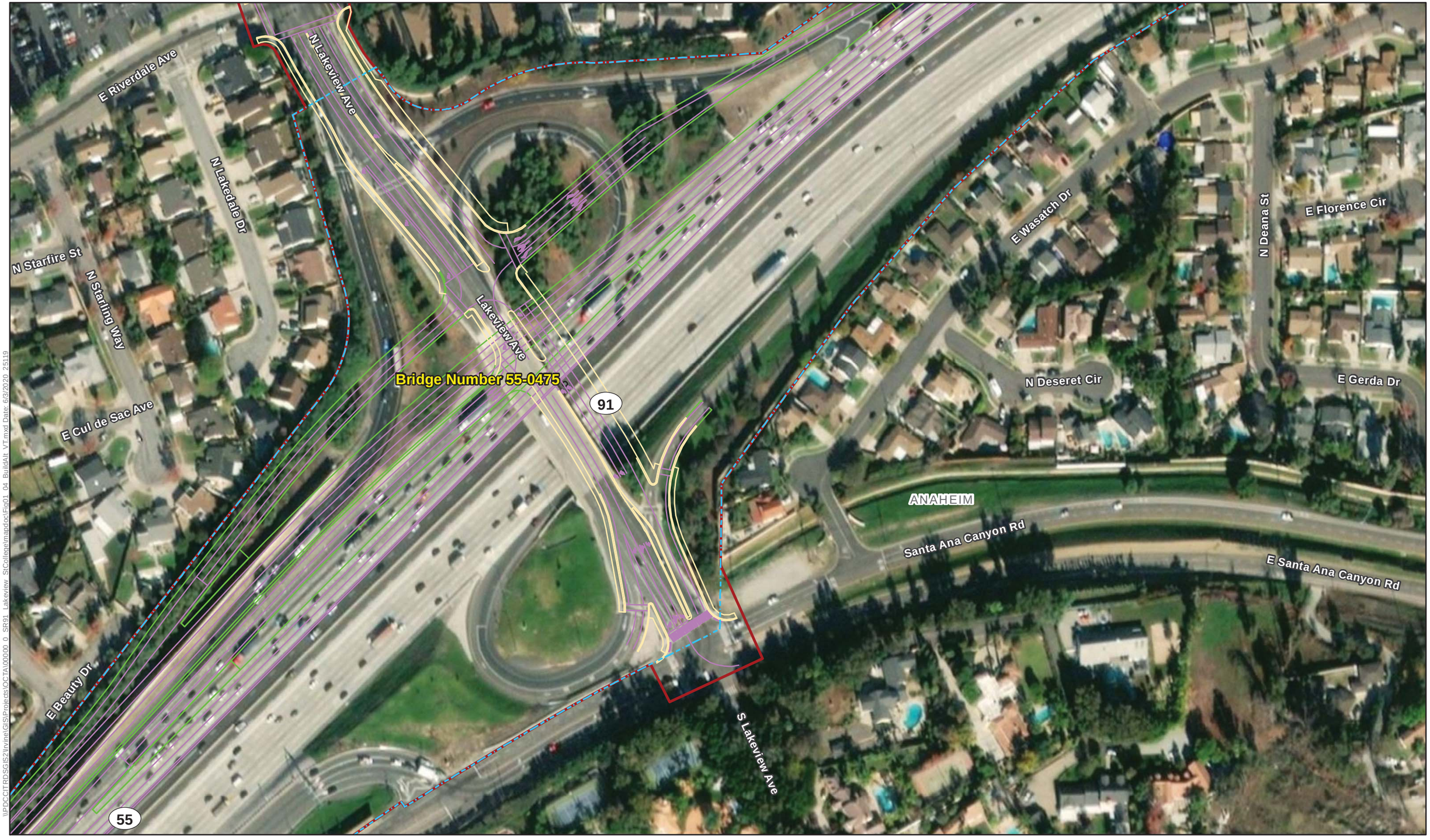
Source: ESRI Imagery (2018)

Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 19 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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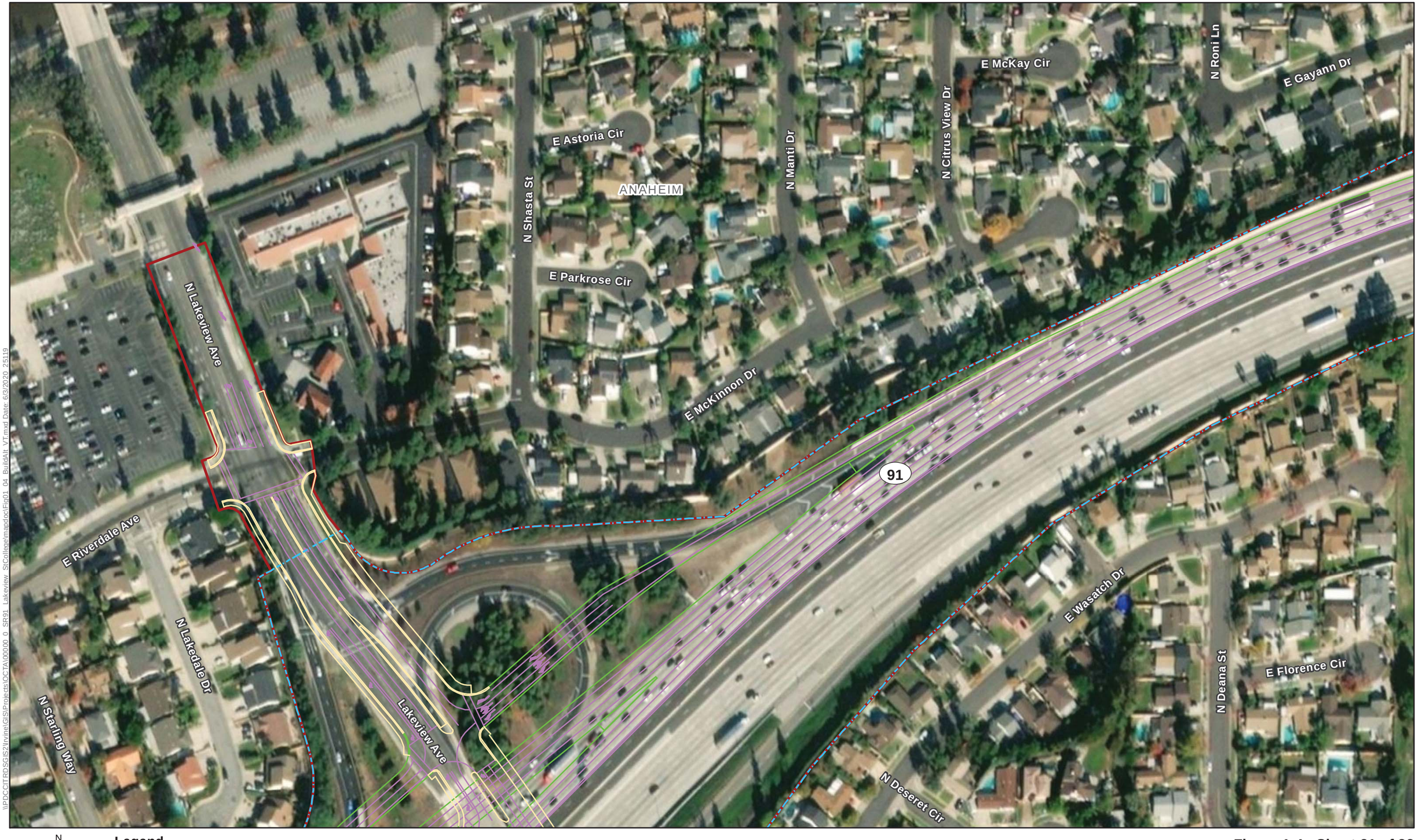
Source: ESRI Imagery (2018)

Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 20 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Feet

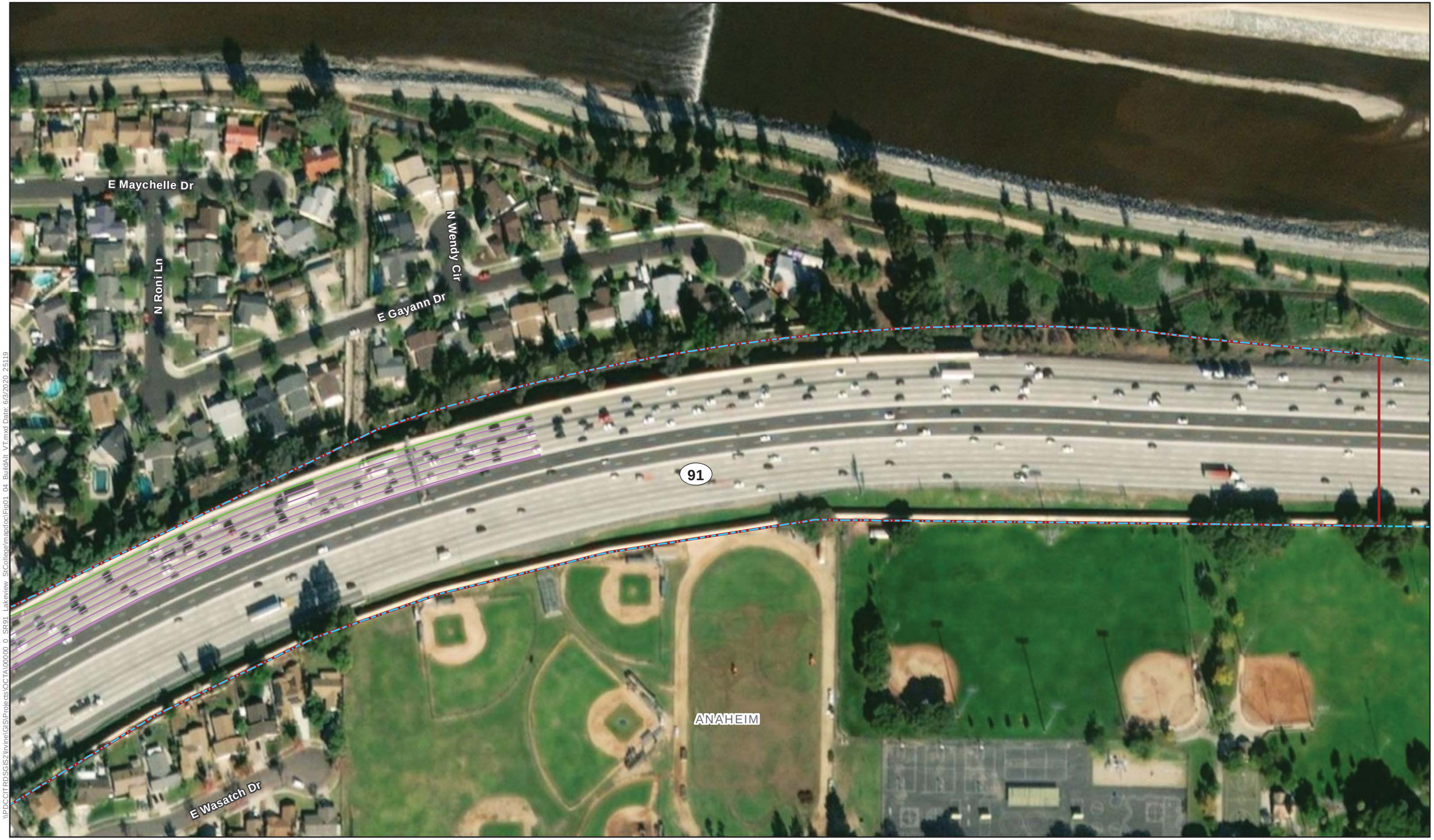
Source: ESRI Imagery (2018)

Legend

- City Boundary
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 1-4 - Sheet 21 of 22
Build Alternative Map (Preferred Alternative)
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Feet

Source: ESRI Imagery (2018)

Legend

- City Boundary
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Figure 1-4 - Sheet 22 of 22
Build Alternative Map (Preferred Alternative)
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Proposed engineering features of the Build Alternative (Preferred Alternative) are as follows:

Build Alternative (Preferred Alternative) Mainline Improvements

- Add one general purpose lane and shoulder on eastbound SR-91 between SR-57 and SR-55.
- Restore auxiliary lanes as needed throughout the project limits.
- Add a fourth general purpose lane along westbound SR-91 from the northbound SR-57 to westbound SR-91 connector.
- Extend the southbound SR-57 to westbound SR-91 connector auxiliary lane through the State College Boulevard interchange, tying into the existing westbound SR-91 auxiliary lane west of State College Boulevard that ends at the Raymond Boulevard/East Street off-ramp.
- Reconfigure the westbound SR-91 to northbound/southbound SR-57 connector to provide dedicated exits to northbound SR-57 and southbound SR-57.

SR-91/Lakeview Avenue Interchange Reconstruction

At the SR-91/Lakeview Avenue Interchange, the existing SR-91 westbound on- and off-ramps would be replaced with tight diamond ramps. The new westbound SR-91 on-ramp would include two lanes that would taper to one lane before joining westbound SR-91 (access to southbound SR-55 would be precluded from this ramp). The new westbound SR-91 off-ramp would include one lane that would widen to three lanes at the intersection with Lakeview Avenue (one dedicated left turn lane, one shared left/right turn lane, and one dedicated right turn lane). The project would also include the construction of a drop ramp for dedicated access to southbound SR-55 (access to westbound SR-91 would not be provided on this ramp). The proposed drop ramp would include two lanes that would taper to one lane prior to joining the SR-55 mainline. Because of the introduction of this drop ramp, the diverge point for westbound SR-91 and southbound SR-55 would be moved to the east of the Lakeview Avenue interchange. To accommodate the drop ramp, the outside lanes along SR-91 would be shifted to the north through the Lakeview Avenue interchange. The intersections of Lakeview Avenue with both the westbound SR-91 on-ramp and the SR-55 drop ramp would be signalized and would operate as a single intersection.

Improvements on Lakeview Avenue would extend from just north of the intersection with Riverdale Avenue to the intersection with Santa Ana Canyon Road. In the southbound direction, Lakeview Avenue would consist of three through lanes and an 8-foot sidewalk, with a dedicated right turn lane at the westbound SR-91 on-ramp. At the SR-55 drop ramp, one of the through lanes would become a dedicated right turn lane with two through lanes continuing across the bridge. At the intersection with Santa Ana Canyon Road, there would be three lanes with one dedicated right turn lane, one shared through/left turn lane, and one dedicated left turn lane. In the northbound direction on Lakeview Avenue, there would be two through lanes and a 15-foot shared pedestrian/bicycle facility, with two dedicated left turn lanes on the bridge. An additional through lane would be added north of the westbound SR-91 ramps/Lakeview Avenue intersection. No planter wells or landscaping elements are proposed along the 15-foot sidewalk. The area for potential best management practices (BMPs) will be further considered in the Plans, Specifications, and Estimate (PS&E) phase.

SR-91/Kraemer Boulevard/Glassell Street Interchange Reconstruction

For the SR-91/Kraemer Boulevard/Glassell Street interchange, in the eastbound direction, the existing Glassell Street on- and off-ramps and the loop on-ramp would be replaced. The loop off-ramp is proposed to be removed. The new eastbound off-ramp would consist of one

dedicated exit lane and one optional exit lane (matching the existing two-lane exit configuration) at the diverge, which would widen to four lanes at the intersection with Glassell Street (two dedicated left turn lanes, one shared left/right turn lane, and one dedicated right turn lane). The eastbound direct on-ramp would consist of two lanes that would taper to a single lane prior to merging with eastbound SR-91. The eastbound loop on-ramp would consist of two lanes that would taper to a single lane prior to joining eastbound SR-91 as an auxiliary lane.

In the westbound direction, the existing off- and on-ramps would be replaced and reconfigured. The westbound off-ramp would consist of one lane that would widen to four lanes at the intersection with Kraemer Boulevard (one dedicated left turn lane and three dedicated right turn lanes). The westbound loop on-ramp would be two lanes that would taper to a single lane prior to merging with westbound SR-91. The westbound direct on-ramp would consist of two 12-foot lanes that would taper to a single 12-foot lane prior to merging with westbound SR-91. Both new ramp intersections with Kraemer Boulevard-Glassell Street would be signalized.

Improvements along Kraemer Boulevard would include reconstruction of the overcrossing, and improvements would extend approximately 400 feet north of the new westbound SR-91 off-ramp intersection. Improvements on Glassell Street would extend south to the intersection with Frontera Street. Northbound Glassell Street would consist of three lanes with a 6-foot bike lane, 6.5-foot sidewalk, and dedicated right turn lane at the eastbound SR-91 on-ramp and the westbound SR-91 loop on-ramp. Southbound Kraemer Boulevard would consist of three lanes with a 6-foot bike lane, 6.5-foot sidewalk, and a dedicated right turn lane at the eastbound loop on-ramp transitioning to two southbound through lanes and a dedicated right turn lane and dedicated left turn lane south of the eastbound SR-91 ramps at the intersection with Frontera Street. A replacement access easement would be provided for the existing maintenance access used by the County of Orange (via an existing access easement) for the Carbon Canyon Diversion Channel located between the eastbound loop on-ramp and off-ramp. The access to the channel on the north side of the interchange would not be affected.

Build Alternative (Preferred Alternative) Ramp Improvements

The Build Alternative (Preferred Alternative) would require reconstruction of several system and local interchange ramps to accommodate the SR-91 widening. Table 1-6 provides a summary of ramp improvements that are included in the Build Alternative (Preferred Alternative).

Table 1-6. Build Alternative (Preferred Alternative) Ramp Improvements

Interchange	Ramp Type	Line	Proposed Ramp Work
Westbound			
State College Blvd	WB Off Direct	"ST-1"	Reconstruct (partial)
	WB On Direct	"ST-2"	Reconstruct (partial)
SR-57	WB On Direct	"57-5"	Reconstruct
	WB On Loop	"57-3"	Reconstruct (partial)
	WB Off Direct (to NB SR-57)	"57-2"	Reconstruct
	WB Off Direct (to SB SR-57)	"57-1"	Reconstruct (partial)
Kraemer Blvd/Glassell St	*See description of "SR-91/Kraemer Boulevard/Glassell Street Interchange Reconstruction" above*		
Tustin Ave	WB Off Direct	N/A	No work
	WB On Direct	N/A	No work
SR-55	*See description of "SR-91/Lakeview Avenue Interchange Reconstruction" above*		
Lakeview Ave	*See description of "SR-91/Lakeview Avenue Interchange Reconstruction" above*		

Interchange	Ramp Type	Line	Proposed Ramp Work
Eastbound			
State College Blvd	EB Off Direct	N/A	No work
	EB On Direct	N/A	No work
SR-57	EB Off Direct (to NB/SB SR-57)	N/A	No work
	EB On Direct (from SB SR-57)	N/A	No work
	EB On Direct (from NB SR-57)	N/A	No work
Kraemer Blvd/Glassell St	*See description of "SR-91/Kraemer Boulevard/Glassell Street Interchange Reconstruction" above*		
Tustin Ave	EB Off Direct	"TU-3"	Reconstruction
	EB On Loop	"TU-4"	Reconstruction
SR-55	*See description of "SR-91/Lakeview Avenue Interchange Reconstruction" above.*		
Lakeview Avenue	*See description of "SR-91/Lakeview Avenue Interchange Reconstruction" above.*		

NB = northbound; SB = southbound; EB = eastbound; WB= westbound

Build Alternative (Preferred Alternative) Bridges/Structure Improvements

The Build Alternative (Preferred Alternative) would necessitate several structure improvements, as summarized in Table 1-7 below.

Table 1-7. Build Alternative (Preferred Alternative) Bridges/Structure Improvements

No.	PM	Structure Name	Bridge No.	Proposed Work
1	4.76	Acacia Street UC	55-0218	No work
2	5.26	State College UC	55-0852	Widen WB side (870 ft^2)
3	5.53	Placentia Avenue OC	55-0853	Construct ground anchor wall (668 ft^2)
4	5.60	91-57 HOV Connector Separation	55-0849E	No work
5	5.89	Sunkist Street OC	55-0854	No work
6	5.95	N57-W91/91 Connector Separation	55-0446G	No work
7	5.96	Route 57/91 Separation	55-0446	No work
8	5.96	E91-N57/91&57 Connector Separation	55-0447G	No work
9	5.96	SR-91W/SR-57 Connector Tunnel	55-0448Y	Construct connector tunnel
10	5.96	Miraloma Avenue OC	55-0855	Construct ground anchor wall (510 ft^2)
11	5.97	S57-E91/91 Connector Separation	55-0446F	No work
12	6.16	W91-S57 Connector OC	55-0448F	No work
13	6.42	La Palma Avenue OC	55-0418	Replace structure
14	7.27	Carbon Canyon Diversion Channel	55-0396, 55-0396S	Widen WB side (221 ft^2)
15	7.37	Kraemer Blvd OC	55-0404	Replace structure
16	8.19	North Olive UP	55-0195	No work
17	8.39	Tustin Avenue OC	55-0414	Replace structure
18	8.57	Santa Ana River	55-0106	Widen EB side (10,415 ft^2)
19	8.80	Riverdale Avenue OC	55-0427	No work
20	R9.09	N55-W91/91 Connector Separation	55-0713R	No work
21	R9.19	E91/91-55 Fasttrack Separation	55-0493R	No work
22	R9.91	91-55FT/W91-S55 Connector Separation	55-0714	No work
23	R10.09	Lakeview Avenue OC	55-0475	Replace structure
24	R10.09	Lakeview Ave/SB SR-55 On-Ramp	55-XXXX	New drop ramp structure
25	R10.50	Roadside Ditch Drain 'A'	55-0604	No work

OC = Overcrossing; UC = Undercrossing; HOV = high-occupancy vehicle; NB = northbound; SB = southbound; EB = eastbound; WB= westbound

Additionally, four bridges are proposed to be replaced as part of the project, which are described below.

- **La Palma Avenue Overcrossing (Bridge No. 55-0418).** The La Palma Avenue Overcrossing is proposed to be replaced to accommodate the widening of the westbound SR-91 and the modifications to the westbound SR-91 to SR-57 connectors. The new 390-foot-long, two-span bridge would include four 12-foot lanes (two lanes in each direction), 9-foot median, a 6-foot shoulder on each side, a 6.67-foot sidewalk on each side, and a 1-foot barrier on each side, for a total width of 84.4 feet.
- **Kraemer Boulevard Overcrossing (Bridge No. 55-0404).** The Kraemer Boulevard Overcrossing will be replaced to accommodate the eastbound widening and interchange reconstruction, as described under "SR-91/Kraemer Boulevard/Glassell Street Interchange Reconstruction" above.
- **Tustin Avenue Overcrossing (Bridge No. 55-0414).** The Tustin Avenue Overcrossing is proposed to be replaced to accommodate the widening of the eastbound SR-91 and the modifications to the eastbound loop on-ramp from Tustin Avenue. The new 215-foot long, two-span bridge would include three through lanes and a dedicated left turn lane in the northbound direction, four through lanes and a dedicated right turn lane in the southbound direction, an 8-foot sidewalk on the west side of the bridge, and a 15-foot sidewalk on the east side of the bridge (to accommodate a future bicycle and pedestrian facility), for a total width of 135 feet.
- **Lakeview Avenue Overcrossing (Bridge No. 55-0475).** The Lakeview Avenue Overcrossing will be replaced to accommodate the interchange reconstruction, as described under "SR-91/Lakeview Avenue Interchange Reconstruction" above.

Build Alternative (Preferred Alternative) Drainage Improvements

The proposed freeway widening would result in an increase in onsite runoff. It is anticipated that existing inlets and drainage pipes would have to be upgraded to accommodate higher discharges and/or additional inlets added. The roadway widening would also require relocation of existing inlets to the new edge of pavement. In addition, some major drainage structures along the project corridor are anticipated to require modifications/improvements as summarized in Table 1-8.

Table 1-8. Build Alternative (Preferred Alternative) Proposed Offsite Drainage Improvements

No.	Channel Name	Type of Existing Facility	Proposed Improvements
1	Carbon Canyon Diversion Channel	Bridge No. 55-0396	Widen bridge (WB side)
2	Unnamed culvert (east of Lakeview Ave)	Triple 8'x4' RCB	Protect in place

WB= westbound; RCB=reinforced concrete box

Santa Ana River Bridge

The existing bridge (bridge number 550106) over the Santa Ana River would be widened to the south to accommodate eastbound improvements on SR-91. The eastbound SR-91 to southbound SR-55 connector would be improved with two new 12-foot lanes.

Retaining Walls

Due to changes in elevation that cannot be accommodated by grading, 24 new retaining walls would be constructed. The existing retaining wall located along eastbound SR-91 at the

Lakeview interchange would be replaced in-kind; aesthetic treatments applied to the existing wall would also be replaced.

Sound Walls

A Noise Study Report (NSR) was prepared for the project (July 2018) to evaluate impacts of the proposed project on noise-sensitive receivers in the project vicinity and identify noise abatement measures. Subsequently, a Noise Abatement Decision Report (NADR) was prepared (September 2018) to provide a reasonableness analysis to determine whether noise abatement measures identified in the NSR would be reasonable from a cost perspective. A Supplemental NSR and NADR were completed in June 2019. These two reports provided reasonableness for two additional barriers that were not analyzed in the original NSR.

A Noise Barrier Survey Report was prepared in February 2020 which outlines the results of the barrier survey conducted for benefited receptors regarding two noise barriers (S-457 and S-520) recommended in the draft environmental document. Based on the results of the soundwall survey, soundwall S-520 was supported at a height of 16 feet and is proposed as abatement as part of the project. Soundwall S-457 was not supported by the surveyed owner and is not proposed to be incorporated into the project. Other noise barriers located along the alignments are proposed to remain in place or replaced in kind under the projects. Existing noise barriers are at the following locations:

- Eastbound SR-91 from Raymond Avenue/East Street (west of State College Boulevard) to Glassell Street
- Westbound SR-91 from Raymond Avenue/East Street to Baxter Street (west of State College Boulevard)
- Westbound SR-91 between Placentia Avenue and Miraloma Avenue
- Southbound SR-57 between Miraloma Avenue and Orangethorpe Avenue
- Eastbound SR-91 between Riverdale Avenue Overcrossing and southbound SR-55 connector merge with southbound SR-55 mainline
- Westbound/eastbound SR-91 from SR-91/SR-55 system interchange to east of Lakeview Avenue
- Eastbound SR-91 between Placentia Avenue and Miraloma Avenue
- Eastbound SR-91 connector to southbound SR-57 between Miraloma Avenue and La Palma Avenue

Noise barriers S-103 (along westbound SR-91 west of Lakeview Avenue), S-403 (along eastbound SR-91 east of La Palma Avenue), and S-223 (along Lakeview Avenue westbound off-ramp from SR-91) would be affected by the proposed improvements and are proposed to be replaced in-kind.

Following public circulation, a portion of the existing wall on eastbound SR-91 between the Riverdale Overcrossing and the southbound SR-55 connector was determined to be in conflict with the proposed widening and, therefore, needed to be replaced at the new widened edge of shoulder. A Supplemental NSR (June 2019) and Supplemental NADR (June 2019) were prepared to analyze the replacement and determine if a higher wall would meet required feasible and reasonable criteria. Soundwall surveys were distributed for this wall in August,

September, and October 2019. Based on the results of this survey, this noise barrier (S-520) is proposed to be incorporated into the project.

UTILITIES

Approximately 106 utility facilities exist within the project limits, including overhead and underground electrical, natural gas, telephone and communication, cable TV, water, and sewer facilities. Utilities would be protected in place, adjusted, or relocated, as needed, to accommodate the proposed improvements. Utility coordination and verification will continue through the development of the final design phase of the project. The utilities that could be affected by the project are listed in Table 1-9.

Table 1-9. Affected Utilities

Utility	City (Utility Location)	Utility Owner
Water Line (12 inch)	Anaheim/Placentia	City of Anaheim
Water Line (36 inch)	Anaheim	City of Anaheim
Water Line (10 inch)	Anaheim	City of Anaheim
Sewer (10 inch)	Anaheim/Placentia	City of Anaheim
Gas (6 inch)	Anaheim	Southern California Gas
Underground Electric (12.5 kV)	Anaheim	City of Anaheim
Underground Electric (69 kV)	Anaheim	City of Anaheim
Underground Electric (69 kV)	Anaheim	City of Anaheim
Underground Electric (12 kV)	Anaheim	City of Anaheim
Overhead Electric (12 kV)	Anaheim	City of Anaheim
Fiber Optic UG	Anaheim	Level 3 Communications
Fiber Optic UG (3 Quad 4-1 ¼ inch)	Anaheim	Level 3 Communications
Fiber Optic UG (2 Hex 6-1 ¼ inch)	Anaheim	Level 3 Communications
Fiber Optic UG (FO in AT&T conduit)	Anaheim	Wilshire Connection
Fiber Optic UG (2 Quad 4-1 ¼ inch)	Anaheim	Century Link
Fiber Optic UG (2 Quad 4-1 ¼ inch)	Anaheim	Century Link
Telephone UG	Anaheim	AT&T CA
Telephone UG	Anaheim	AT&T CA
Telephone UG	Anaheim	AT&T CA
Telephone UG (4 inch)	Anaheim/Placentia	AT&T CA
Telephone UG	Anaheim	AT&T CA
Telephone UG	Anaheim	AT&T CA
Telephone UG	Anaheim	AT&T CA
Telephone UG	Anaheim	AT&T CA
Telephone UG	Anaheim	AT&T CA
Fiber Optic UG (26 conduit)	Anaheim	AT&T Legacy T
Fiber Optic UG	Anaheim	Sunesys LLC

kV = kilovolts; UG = underground; FO = fiber optic

WATER QUALITY BEST MANAGEMENT PRACTICES

The proposed project would result in approximately 49.2 acres of disturbed soil area and add approximately 16.2 acres of new impervious area. BMPs for water quality treatment would be

provided as part of the proposed project, where feasible, and located within the identified project limits of disturbance.[11] BMPs may include biofiltration strips, swales, and an infiltration basin.

RIGHT OF WAY ACQUISITIONS AND TEMPORARY CONSTRUCTION EASEMENTS

A parcel is defined as assessor's parcel numbers (APNs) having the same ownership and the same use. In addition, the APNs are contiguous to each other. Acquisition of partial fee acquisitions, permanent easements, and temporary construction easements (TCEs) along SR-91 would be required for 16 parcels to accommodate the proposed improvements. Partial fee acquisitions are expected to be required at five parcels totaling approximately 0.12 acre. Permanent easements are also anticipated at two parcels, totaling approximately 0.36 acre. TCEs are expected to be required at 16 parcels, totaling approximately 4.91 acres (see Table 1-10).

Table 1-10. Permanent Right of Way and Temporary Construction Easements

City	Assessor's Parcel Number (APN)	Property Type (Residential/ Commercial/Industrial/Other)[1]	Action Type (TCE, Permanent Highway Easement, and/or Partial Fee Acquisition)
Anaheim	073-132-11	Industrial	TCE
Anaheim	073-132-12	Industrial	TCE
Anaheim	268-313-01	Residential	TCE
Anaheim	338-191-27	Industrial	TCE, Partial Fee Acquisition
Anaheim	338-192-05	Industrial	TCE
Anaheim	344-394-23	Vacant	TCE
Anaheim	344-401-18	Industrial	TCE
Anaheim	345-111-03 345-111-04	Industrial	TCE
Anaheim	359-011-83	Residential	TCE, Partial Fee Acquisition
Anaheim	360-071-14 360-071-24 360-071-28	Industrial	TCE, Permanent Easements[2]
Anaheim	359-084-13	Vacant	TCE, Partial Fee Acquisition, Permanent Easement
Anaheim	360-211-01 360-211-02	Vacant	TCE, Partial Fee Acquisition
Anaheim	360-212-01	Vacant	TCE
Anaheim	360-212-06	Commercial	TCE
Anaheim	361-243-05	Commercial	TCE, Partial Fee Acquisition
Anaheim	360-184-01	Vacant	TCE

[1] City of Anaheim. 2005. *City of Anaheim General Plan*. Land Use Map. Available: http://www.anaheim.net/DocumentCenter/View/9522. Accessed: September 18, 2018.

[2] Two types of easements are needed at this property: (1) Permanent Highway Easement and (2) Permanent Utility Easement. Throughout this document these easements will be referred to as a single permanent easement since both would occur within the same parcel.

TCE = temporary construction easement; PE = permanent easement

[11] The limits of disturbance represent the total physical area needed to construct the project and are composed of areas that would be physically affected either temporarily or permanently.

SAFETY FEATURES

Two high-mast stadium lights (HMSLs) within the Caltrans right of way (approximately 10 to 20 feet to the east and west) would be relocated within the state's existing right of way to allow proposed improvements to the SR-91/SR-57 interchange.

Some modifications of ramp termini locations may warrant an amendment to the existing freeway agreement. The ramp geometry improvements proposed at the Kraemer Boulevard/ Glassell Street, Tustin Avenue, and Lakeview Boulevard interchanges are considered modifications to the existing freeway access. The existing freeway agreement may require revision or replacement.

ADDITIONAL MISCELLANEOUS IMPROVEMENTS

Limited hardscape and/or landscaping and irrigation in the median islands would be included at several of the affected interchanges within the Caltrans right of way. Signage would be incorporated within the project's limits of disturbance, where necessary. Both new and reconstructed pedestrian facilities would be compliant with Americans with Disabilities Act standards.

Geotechnical borings would be conducted within the project's limits of disturbance, as needed.

Temporary Freeway and Ramp Closures

Construction of the project is anticipated to require 30 temporary, short-term full freeway closures to demolish/reconstruct the La Palma Avenue overcrossing, Kraemer/Glassell overcrossing, Tustin Avenue overcrossing, and Lakeview Avenue overcrossing. In addition, the Build Alternative (Preferred Alternative) would require temporary ramp closures. Long-term closures are not expected to occur at any given ramp. Refer to Table 1-11 for the estimated ramp closure duration and interchange location.

Table 1-11. Anticipated Temporary Ramp and Connector Closures

Interchange	Direction	On/Off	Construction Impact				
			Short Term	Closure Required	Split Construction	Weekend Closure	Duration
State College Blvd	WB	Off	Yes	No	Yes	No	1 day
	WB	On	Yes	No	Yes	No	1 day
	EB	Off	N/A	N/A	N/A	N/A	N/A
	EB	On	N/A	N/A	N/A	N/A	N/A
Route 57/91 Interchange	91 EB TO 57 NB	Connector	Yes	No	Yes	No	1 day
	91 EB TO 57 SB	Connector	No	No	N/A	No	N/A
	57 SB TO 91 EB	Connector	No	No	N/A	No	N/A
	91/57 DIRECT HOV Connector	Connector	No	No	N/A	No	N/A
	57 NB TO 91 WB	Connector	Yes	No	Yes	No	1 day
	57 SB TO 91 WB	Connector	No	No	N/A	No	N/A
	57 NB TO 91 EB	Connector	No	No	N/A	No	N/A
	91 WB TO 57 SB	Connector	Yes	No	Yes	No	1 day

Interchange	Direction	On/Off	Construction Impact				
			Short Term	Closure Required	Split Construction	Weekend Closure	Duration
	91 WB TO 57 NB	Connector	Yes	Yes	Yes	Yes	2 days
Kraemer Blvd/ Glassell St	EB	Off	Yes	Yes	No	Yes	2 days (shift to EB loop off-ramp)
	EB Loop	On	Yes	Yes	No	Yes	2 days (shift to new EB on-ramp)
	EB	On	Yes	No	Yes	No	1 day
	EB Loop	Off	No	No	No	No	Close Stage 2 permanently
	WB	Off	Yes	Yes	Yes	Yes	2 days
	WB Loop	On	Yes	Yes	Yes	Yes	2 days
	WB	On	Yes	Yes	Yes	Yes	2 days
Tustin Ave	EB	Off	Yes	Yes	Yes	Yes	2 days
	EB Loop	On	Yes	Yes	Yes	Yes	2 days
	WB	Off	Yes	Yes	Yes	Yes	2 days
	WB	On	Yes	Yes	Yes	Yes	2 days
Route 55/91 Interchange	91 EB TO 55 SB	Connector	Yes	No	Yes	No	1 day
	55 NB TO WB 91	Connector	N/A	N/A	N/A	N/A	
	WB 91TO 55 NB	Connector	Yes	Yes	No	No	1 day
Lakeview Ave	EB	Off	NA	N/A	N/A	N/A	
	EB Loop	On	Yes	Yes	No	Yes	2 days
	EB	On	Yes	Yes	No	Yes	2 days
	WB	Off	Yes	Yes	Yes	Yes	2 days
	WB Loop	On	No	No	No	No	Close Stage 2 permanently
	WB	On	Yes	Yes	No	Yes	4 days

SHORT TERM: Temporary closure (overnight/weekend)
IMPACT: Open = Ramp kept open during construction, Closed = Ramp closure anticipated for at least a weekend
SPLIT: Ramp can be kept open with split construction
WEEKEND: Minimum duration of closure
NB = northbound; SB = southbound; EB = eastbound; WB= westbound

As previously stated, during the construction period, temporary closures of the SR-91 mainline would be required and detours around the closed segments would be provided on local arterials in the vicinity of the closures. Temporary closures of the SR-57 and SR-55 mainline are not anticipated under the proposed project.

PROJECT COSTS

The SR-91 Improvement Project would cost between approximately $300 and $352 million, based on current year costs and escalated cost estimates, respectively. The road, structure, right of way, and total costs for the Build Alternative (Preferred Alternative) are provided in Table 1-12. As noted earlier, this project is anticipated to be constructed with M2 funds. In addition,

the proposed project is also approved for $7 million in federal funds and eligible for future state and federal funds.

Table 1-12. Summary of Project Cost Estimate

	Current Year Cost ($)	Escalated Cost ($)
Total Roadway Cost	$142,448,000	$170,170,000
Total Structures Cost	$72,829,000	$87,003,000
Total Right of Way Cost	$24,433,000	$27,484,000
Total Support Costs	$60,275,000	$67,729,000
Total Cost	**$299,985,000**	**$352,386,000**

Source: Draft PA/ED Cost Estimate, Caltrans 2019.

CONSTRUCTION SCHEDULE

Construction of the project, including temporary advanced signage and short-term lane or ramp closures, which may be required during construction, is expected to begin in August 2026 and extend for a duration of approximately 3.5 years. Construction activities within the Santa Ana River would be permitted only between April 15 and October 15, unless permission is obtained from the appropriate agencies to construct within the river outside of this date range.

TRANSPORTATION SYSTEM MANAGEMENT AND TRANSPORTATION DEMAND MANAGEMENT

Alternative Transportation system management (TSM) provides cost-effective improvements that increase transportation system performance without the major expense of capital expansion projects. These programs include minor geometric improvements, bicycle and pedestrian improvements, and other measures such as signal synchronization, motorist information, bus signal priority, and freeway ramp metering. Transportation demand management (TDM) provides cost-effective improvements that reduce system demand by eliminating trips or shifting trips out of the peak periods to other less congested time periods during the day and thus increase transportation system performance without implementing travel restrictions. TDM programs include rideshare programs, employer flex-time, parking pricing, and intermodal improvements that support TDM programs and transfers between modes at key locations. TDM programs are devised to change the behavior of travelers. Some TDM approaches are voluntary, and they motivate participants with incentives. Other TDM approaches apply disincentives to drive single-occupancy vehicles (SOVs), such as fees and constraints. A TSM/TDM alternative is not considered a viable stand-alone option because it does not fulfill the project purpose. A TSM/TDM alternative on its own would:

- Provide minimal congestion reduction.
- Provide minimal enhancement of operations and improvement in trip reliability.
- Not increase mobility significantly because it would have limited effect on congestion.
- Not maximize throughput because no additional through lanes are provided.

TSM and TDM are similar in a number of ways, because they may:

- Lessen the number of trips.
- Lessen peak hour travel.

- Conserve energy.
- Reduce emissions.
- Provide more travel alternatives.

Although TSM and TDM measures alone do not satisfy the purpose and need of the project, the following TSM and TDM measures are beneficial and will be incorporated into the Build Alternative (Preferred Alternative) for the proposed project:

- Improved ramp metering hardware and software and closed-circuit television system for viewing ramps and nearby arterials.
- Upgraded traffic signals interconnected and coordinated with adjacent signals and ramp meters at locations of interchange improvements.
- Additional way-finding signs on freeways and arterials.
- On- and off-ramps designed to limit impacts to non-motorized travel and preserve access to bike lanes and trails.
- ITS elements including fiber-optic and other communication systems for improved connectivity and remote management; changeable message signs, closed-circuit television coverage of the entire freeway mainline, ramps, and adjacent arterials, video detection systems, and vehicle detection systems for volume, speed, and vehicle classification.
- Advanced traffic management system improvements to the hardware and software systems at the Caltrans District 12 Traffic Management Center (TMC).
- Traveler information management system improvements to enhance dissemination of real-time information for roadway conditions.

STANDARD PROJECT FEATURES

Each project alternative includes the following standardized measures that are included as part of the project description. Standardized measures (such as Best Management Practices [BMPs]) are those measures that are generally applied to most or all Department projects. These standardized or pre-existing measures allow little discretion regarding their implementation and are not specific to the circumstances of a particular project. More information on each measure can be found in the applicable sections of Chapter 2.

- **PF CI-2** addresses Caltrans' standard special provision (SSP) 7-1.03, regarding maintenance of business access during construction.
- **PF CR-1** and **PF CR-2** address SSP 14-2.03A, regarding the discovery of unanticipated cultural materials or human remains.
- **PF BIO-16** addresses SSP 14-6.03B regarding nesting and migratory birds.
- **PF HAZ-3** addresses SSP 84-9.03 regarding the removal of yellow traffic striping and pavement markings. **PH HAZ-6** addresses SSP 13-4.03E(2), which addresses potentially affected soil (as evidenced by staining and/or odors).
- **PF WQ-1** addresses SSP 13-1.01D(2) for compliance with Caltrans' general permit issued by the State Water Resources Control Board (SWRCB) for Order No. 2012-0011-DWQ, NPDES No. CAS000003, National Pollutant Discharge Elimination System (NPDES) Statewide Storm Water Permit and Waste Discharge Requirements (WDRS) for State of

California, Department of Transportation. Caltrans' general permit governs stormwater and nonstormwater discharges from Caltrans' properties, facilities, and activities.

- **PF WQ-2 and PF BIO-3** address SSP 13-1.01 for preventing, controlling, and abating water pollution within waters of the State.
- **PF WQ-3** addresses SSP 13-4.03G for dewatering activities.
- **PF WQ-4** addresses SSP 13-3.01A for construction site BMPs.
- **PF WQ-5** addresses SSP 13-3.01A for construction site BMPs.
- **PF AQ-2** addresses SSP 14-9.02 requires compliance with air-pollution-control rules, regulations, ordinances, and statutes that apply to work performed under the Contract, including those provided in Govt. Code § 11017 (Pub. Cont. Code § 10231).
- **PF AQ-1** and **PF AQ-2** addresses SSP Section 10-5, which includes general specifications for controlling dust resulting from the work.
- **PF BIO-4** addresses SSP Section 21, which includes specifications for applying permanent erosion control measures.

Furthermore:

- **PF BIO-9** requires the contractor to inspect and clean all construction equipment prior to transporting equipment from one location to another to avoid the introduction and spread of invasive plant species.
- **PF T-1** requires that a Traffic Management Plan be developed by Caltrans prior to construction to minimize potential impacts on emergency services and commuters during construction.
- **PF NOI-1** requires construction be conducted in accordance with Caltrans provisions in Section 14-8.02, Noise Control, of the 2018 Standard Specifications and Special Provisions.
- **PF CI-4** requires adherence to the provisions of the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 and the 1987 amendments, as implemented by the Uniform Relocation Assistance and Real Property Acquisition Regulations for Federal and Federally Assisted Programs adopted by USDOT (March 2, 1989).

1.4.2 No-Build Alternative

Under the No-Build Alternative, the SR-91 freeway mainline widening and modifications to various interchanges, ramps, and intersections would not be implemented at this time. This alternative, however, does not preclude the construction of future improvements. No other proposed projects along SR-91 have been identified within the limits of the proposed SR-91 Improvement project. The No-Build Alternative would not address the project purpose and need identified in Section 1.2 of this IS/EA. It is expected that congestion on SR-91 would continue to worsen in the future, as shown in Tables 1-1 and 1-2. The No-Build Alternative serves as a basis of comparison for the Build Alternative (Preferred Alternative) and helps decision-makers compare the impacts of approving the proposed project with the impacts of not approving the proposed project.

1.4.3 Comparison of Alternatives

Table 1-13 provides a comparison of the alternatives, including the potential environmental impacts for each alternative. For more detail regarding the potential environmental impacts, please refer to Chapter 2 of this document.

After the public circulation period, all comments were considered. Caltrans and OCTA selected a preferred alternative and made the final determination of the project's effect on the environment. Under CEQA, no unmitigable significant adverse impacts were identified; therefore, Caltrans has prepared a Mitigated Negative Declaration. Similarly, Caltrans, as assigned by FHWA, determined the NEPA action would not result in a significantly impact on the environment and issued a Finding of No Significant Impact (FONSI).

Table 1-13. Comparison of Alternatives and Impacts

Project Features and Design Standards		
Engineering Evaluation Criteria	**No-Build Alternative**	**Build Alternative (Preferred Alternative)**
Number of Lanes	1 HOV, 3 general purpose	1 HOV, 4 general purpose, and auxiliary
Travel Lanes consistent with the Caltrans Highway Design Manual?	Nonstandard lane and shoulder widths	Nonstandard lane and shoulder widths
Shoulders consistent with the Caltrans Highway Design Manual?	Nonstandard	Nonstandard
Horizontal clearances consistent with the Caltrans Highway Design Manual?	Nonstandard	Nonstandard
Vertical clearances consistent with the Caltrans Highway Design Manual?	Minimum vertical clearance for North Olive Railroad Bridge is non-standard;	Minimum vertical clearance for North Olive Railroad Bridge would remain non-standard.
Eastbound/Westbound SR-91 mainline travel times in 2030 (in minutes)	Eastbound (AM/PM) 18/24 Westbound (AM/PM) 25/29	Eastbound (AM/PM) 12/16 Westbound (AM/PM) 20/25
AM/PM peak-hour mainline LOS in 2050	F/F	F/F
Temporary construction easements	None	16
Project Cost	None	$300 to $352 million
Construction Duration	None	3.5 years
Potential Environmental Impacts		
Environmental Resource Topic	**No-Build Alternative**	**Build Alternative (Preferred Alternative)**
Land Use	Not consistent with applicable transportation and land use plans	Consistent with local, regional, and State plans. Permanent loss of one parking space.
Growth	No impact	Would not result in unplanned growth.
Farmlands and Timberlands	No impact	No impact on agricultural resources or forest lands.

Potential Environmental Impacts			
Environmental Resource Topic		**No-Build Alternative**	**Build Alternative (Preferred Alternative)**
Community Impacts	Community Character and Cohesion	No impact	Temporary impacts during construction, such as road detours, ramp closures, and access restrictions for drivers, bicyclists, or pedestrians who live in, commute through, or access the study area. No substantial adverse long-term impacts.
	Relocation	No impact	The Build Alternative (Preferred Alternative) would not require full fee acquisition of any property, nor would the relocation or displacement of households or businesses occur. Construction would require TCEs on 16 residential, commercial, industrial, and vacant parcels, totaling 4.91 acres. Permanent easements are required at two parcels, totaling 0.36 acre. Partial fee acquisition of five parcels, totaling 0.12 acre.
	Environmental Justice	No impact	Low-income and minority (environmental justice) populations would not be adversely affected.
Utilities and Emergency Services		No impact	No substantial adverse long-term impacts.
Traffic and Transportation		Long-term adverse impact	Construction activities would result in temporary impacts on traffic circulation and bicycle access. Improved traffic operations and reduced congestion in the long-term
Visual and Aesthetics		No impact	Temporary impacts during construction. Potential permanent wall and landscaping enhancements, resulting in moderate visual impacts.
Cultural Resources		No impact	Unanticipated cultural resources may be encountered during construction.
Hydrology and Floodplains		No impact	Minimal change to base flood flow volume and rates.
Water Quality and Storm Water Runoff		No impact	Construction activities have the potential to transport chemical and concrete-related waste via storm runoff and increase water temperatures if water is detained at the construction site. Permanent increase in impervious surface area of 16 ac, thereby increasing the volume of runoff.

Potential Environmental Impacts		
Environmental Resource Topic	**No-Build Alternative**	**Build Alternative (Preferred Alternative)**
Geology, Soils, Seismic, and Topography	No impact	Temporary impacts during construction, totaling 49.2 ac. No substantial adverse long-term impacts.
Paleontology	No impact	Potential to encounter paleontological resources during construction if activities extend below 10 feet.
Hazardous Wastes and Materials	No impact	Potential to encounter soil contaminants during construction activities. Based on the Initial Site Assessment (ISA), a private industrial parcel (APNs 360-071-14, 360-071-24, 360-071-28) was known to have previously contained hazardous materials. Subsequently, a Phase II environmental site assessment was completed at this high-risk property, which identified hazardous material that would be affected during construction of the project. Handling of the materials will be conducted according to the recommendations of the assessment (see ECR measures HAZ-1, HAZ-2, and HAZ-7). Implementation of the site-specific recommended actions would result in no adverse impacts during project implementation.
Air Quality	Daily VMT would increase, vehicle emissions of PM_{10} and $PM_{2.5}$ would increase, vehicle emissions of ROG, NO_X, and CO would decrease, and MSAT emissions would decrease	Construction activities would result in temporary emissions of ROG, CO, NO_X, PM_{10}, and $PM_{2.5}$. No substantial adverse long-term impacts.
Noise	No impact	Temporary impacts during construction. Project-related noise increases would not exceed the 12 dB criteria for a substantial increase. Twelve soundwalls were determined to be feasible and meet the design goal (7 dB insertion loss); however, only four of these noise barriers are included as part of the project as the rest were either voted down or were not reasonable from a cost perspective. These four noise barriers include three noise barriers that will be replaced-in-kind (S-103, S-223, and S-403) and one noise barrier (S-520) that would be redesigned and included as abatement as part of the project.
Wetlands and Other Waters	No impact	Temporary impacts during construction, including 4.82 ac of non-wetland, 0.49 ac of wetland USACE/RWQCB features, 6.28 ac of streambed, and 0.84 ac of riparian CDFW resources.

Potential Environmental Impacts		
Environmental Resource Topic	**No-Build Alternative**	**Build Alternative (Preferred Alternative)**
		Permanent impacts on 0.03 ac of non-wetland, <0.01 ac of wetland USACE features, 0.01 ac of streambed, and 0.01 ac of riparian CDFW resources.
Natural Communities	No impact	Temporary direct impacts of 2.89 ac on riverine habitat and potential temporary indirect impacts on coastal sage scrub through spread of invasive weeds or fugitive dust. Permanent impacts on up to 1.69 ac of isolated coastal sage scrub habitat and 0.01 ac of riverine habitat.
Plant Species	No impact	No impact.
Animal Species	No impact	Temporary impacts during construction, such as disturbance of special-status species and hindrance of wildlife movement. Permanent impacts on bat species that may be present within the BSA have the potential to occur.
Threatened and Endangered Species	No impact	No substantial adverse long-term impacts.
Invasive Species	No impact	No substantial adverse long-term impacts.
Cumulative Impacts	No impact	No substantial adverse long-term impacts.
Climate Change	No temporary impact	Temporary impacts during construction. Increase in CO_2e emissions of 3,780 tons/year compared to the No-Build Alternative.

Note: Long-term impacts are equivalent to permanent impacts.
ac = acres
HOV = high-occupancy vehicle
TCE = temporary construction easement
PE = permanent easement
ROG = reactive organic gases
CO = carbon monoxide
NO_X = nitrogen oxide
PM_{10} = particulate matter, 10 micrometers or less in diameter
$PM_{2.5}$ = particulate matter, 2.5 micrometers or less in diameter
USACE= United States Army Corps of Engineers
RWQCB = Regional Water Quality Control Board
CDFW = California Department of Fish and Wildlife
BSA = Biologically Sensitive Area

1.4.4 Identification of a Preferred Alternative

A Preferred Alternative was identified after considering all information in the Draft IS/EA and technical studies. It was also based on extensive input from the PDT members, public, stakeholders, and federal, state, regional, and local agencies during the project development process. Public outreach and coordination resulted in comments from the public and governmental agencies, all of which were carefully considered during the Preferred Alternative identification process. Consideration was given to all issues raised during the public circulation period.

On March 21, 2019, the PDT evaluated the alternatives under consideration and identified the Build Alternative as the Preferred Alternative for the SR-91 Improvement Project between SR-57 and SR-55. As part of the evaluation, seven evaluation criteria were established to compare the alternatives, as shown in Table 1-14. A weight factor, which was agreed to by the PDT, was also given to each of the evaluation criteria based on the relative importance. The alternatives were then compared and ranked for their relative performance, and the scores were calculated.

Table 1-14. Alternative Evaluation

Evaluation Criteria		W[1]	Performance Ranking		Score	
			Alternative			
			No-Build	Build	No-Build	Build
1	Improve Capacity Eastbound from SR-57 to SR-55 *Year 2050 eastbound SR-92 mainline annual vehicle hours delay* No-Build: 4,337,500 annual VHD Build: 787,500 annual VHD *Year 2050 eastbound SR-91 mainline average daily traffic (ADT) volume at Glassell St/Kraemer Blvd interchange* No-Build: 96,500 ADT Build: 103,400 ADT *Year 2050 eastbound SR-91 mainline level of service (LOS) at west of SR-55 interchange* No-Build: AM LOS F, PM LOS F Build: AM LOS C, PM LOS D	3	1	2	3	6
2	Reduce Congestion *Year 2050 westbound SR-91 mainline annual VHD* No-Build: 5,435,000 annual VHD Build: 3,925,000 annual VHD *Year 2050 eastbound SR-91 mainline annual VHD* No-Build: 4,337,500 annual VHD Build: 787,500 annual VHD	3	1	2	3	6
3	Improve Mobility *Year 2030 westbound SR-91 mainline travel times (from microsimulation model).* No-Build: Travel time (AM/PM in minutes): 25/29 Build: Travel time (AM/PM in minutes): 20/25 *Year 2030 eastbound SR-91 mainline travel times (from microsimulation model).*	3	1	2	3	6

Evaluation Criteria		W[1]	Performance Ranking		Score	
			Alternative			
			No-Build	Build	No-Build	Build
	No-Build: Travel time (AM/PM in minutes): 18/24 Build: Travel time (AM/PM in minutes): 12/16					
4	Improve Weaving and Merging *Year 2050 westbound SR-91 mainline AM and PM peak hour* No-Build: 15 out of 17 segments along corridor are LOS E or F Build: 13 out of 17 segments along corridor are LOS E or F *Year 2050 eastbound SR-91 mainline AM and PM peak hour* No-Build: Three segments in AM peak hour and eight segments in PM peak hour out of 17 along corridor are LOS E or F Build: Three segments in AM peak hour and three segments in PM peak hour out of 17 along corridor are LOS E or F	3	1	2	3	6
5	Consistency with Regional Plans No-Build: Not consistent with adopted plans. Build: Consistent with adopted plans (including STIP, RTP/SCS, and SCAG FTIP)	2	1	2	2	4
6	Public Comment No-Build: No written comments of support vs no comments in opposition Build: Five written comments of support vs no comments in opposition	3	1	2	3	6
7	Cost Effective *Year 2050 westbound SR-91 annual delay cost* No-Build: Delay cost $81,900,000 Build: Delay cost $59,150,000 *Year 2050 Eastbound SR-91 annual delay cost* No-Build: Delay cost $65,350,000 Build: Delay cost $11,900,000	2	1	2	2	4
Weighted Total Score					19	38

W1=a weight factor between 1 and 3 was given to each of the criteria based on its relative importance.

Each alternative was scored based on the weighted criteria above. The Build Alternative had a score of 38, and the No-Build Alternative had a score of 19. Based on the scoring, the PDT identified the Build Alternative as the Preferred Alternative to move forward for implementation.

1.5 Alternatives Considered but Eliminated from Further Discussion prior to the Draft Initial Study/Environmental Assessment

During the project initiation/planning phase and early in the preliminary engineering phase of the project, several project alternatives and/or potential design modifications were considered. However, for various reasons, as documented in this section, these were eliminated from further consideration by the PDT.

The alternatives and/or design considerations below from the planning phase of the project were eliminated by the PDT.

- **Standard Build Alternative 2B:** This alternative included constructing standard lane and shoulder widths along SR-91 for the entire length of the proposed project. This alternative was dismissed from further consideration because of increased environmental impacts and right-of-way impacts to freeway-adjacent development, including full acquisitions of residential and commercial property. In addition, it required widening westbound SR-91 to improve the existing nonstandard left shoulder width without providing any additional capacity along the freeway to minimize traffic. It should be noted that standard lane and shoulder widths have been incorporated into the proposed Build Alternative (Preferred Alternative) where it can be accommodated largely within existing right of way.
- **Build Alternatives 2A/2B:** The build alternatives developed during the planning phase of the project included building a viaduct (bridge) for the Tustin Avenue eastbound SR-91 off-ramp to avoid affecting the North Olive Railroad Bridge. This specific design element was dismissed from further review because the PDT team developed a design that could avoid affecting the North Olive Railroad Bridge without the need for a viaduct. Therefore, the viaduct was eliminated from the project.
- **Build Alternatives 2A/2B:** The build alternatives developed during the planning phase of the project included extending a proposed westbound auxiliary lane from the Kraemer Boulevard westbound on-ramp and dropping the auxiliary lane to the SR-57 connector exit. It also included changing the existing design at the SR-57 diverge to extend a proposed lane through the SR-57/SR-91 interchange and dropping the proposed lane addition at the State College Boulevard westbound off-ramp. This alternative design element was eliminated from further review because it essentially replaced the westbound lane drop to State College Boulevard that was corrected by the recently constructed westbound SR-91 improvement project from SR-57 to I-5 (EA 12-0C5704) and caused an additional westbound weaving lane between the closely spaced interchanges from the Kraemer Boulevard westbound on-ramp and the SR-57 connector exit. Subsequent traffic analysis showed that four westbound general purpose lanes through the SR-57/SR-91 interchange are not required to meet the anticipated future traffic demand, and does not address the high traffic volumes and slow-moving truck traffic from the northbound SR-57 to westbound SR-91 connector (loop configuration).

The following and/or design considerations below that were considered early in the preliminary engineering phase of the project were eliminated from further consideration by the PDT.

- **Reversible Lanes:** Assembly Bill 2542 amended the California Streets and Highways code to require, effective January 1, 2017, that Caltrans or a regional transportation planning agency demonstrate that reversible lanes were considered when submitting a capacity-increasing project or a major street or highway lane realignment project to the California Transportation Commission for approval (California Streets and Highways Code, Section 100.015). Reversible lanes were considered but eliminated from further consideration since there is not adequate right-of-way to implement a reversible lane facility; a reversible lane facility would physically conflict with the 91 Express Lanes (toll) facility and operations; would require reconstruction of the SR-57/SR-91 and SR-55/SR-91 system interchanges; and would require reconstruction and raising of the North Olive Railroad Bridge, which would require reconstruction of the following facilities:
    - Anaheim Canyon Metrolink Station platform,
    - Railroad crossing at La Palma Avenue,

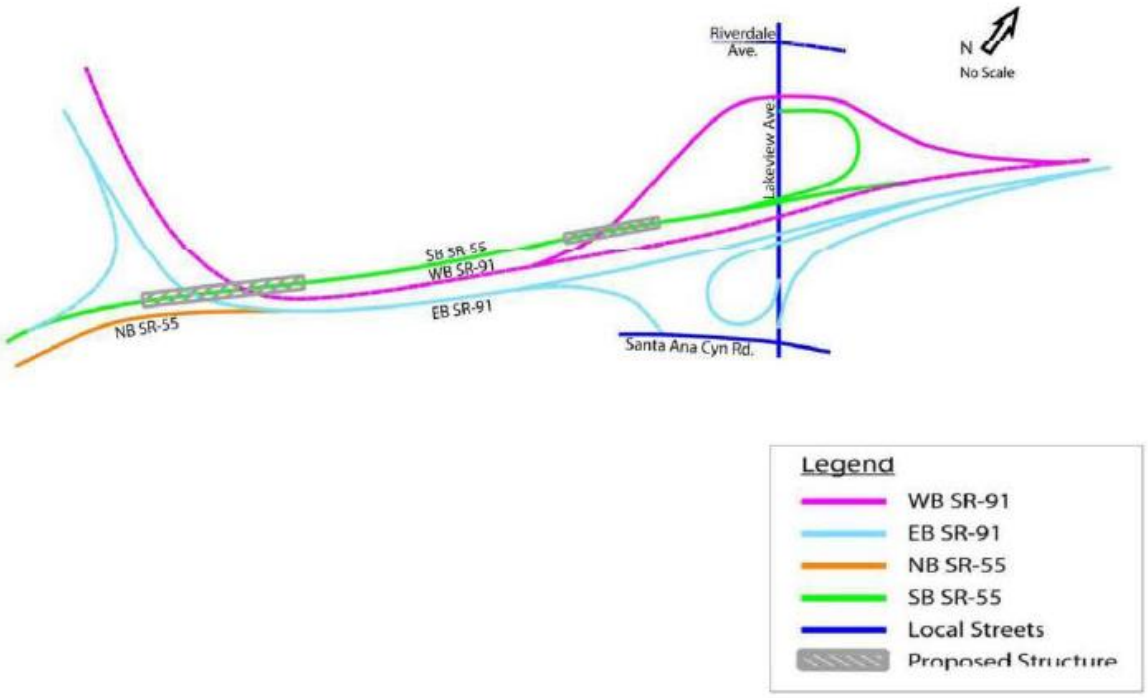
  - Santa Ana River railroad bridge,
  - Yard track and the railroad spur to the metals recycling center (DBW Metals Recycling and SA Recycling), and
  - Railroad crossing and East Riverdale Avenue/North Orange Olive Road intersection.
- **Connector Metering.** A design option was considered that included connector metering for the SR-57 to westbound SR-91 connectors. This option was removed from further consideration because the traffic analysis showed that SR-57 to SR-91 connector metering would not improve traffic on SR-91 and would actually result in worse traffic conditions for SR-57.
- **Bypass to Orangethorpe Avenue.** A design option was considered that included a northbound SR-57 bypass to Orangethorpe Avenue. It was initially thought that this option would alleviate traffic on westbound SR-91 by improving the traffic operations on the westbound SR-91 to SR-57 connectors. However, when the traffic analysis was performed, it did not show an improvement in traffic congestion on westbound SR-91. Based on this information, this option was dropped from further consideration.
- **State College Boulevard Braid.** A design option was considered that would braid the westbound SR-91 exit to State College Boulevard with the SR-57 interchange connectors, which would be intended to improve traffic merging onto and diverging from SR-91 in this location. However, this would require reconstruction of various SR-57/SR-91 interchange structures/bridges and was therefore eliminated from further consideration.

While considering stakeholders' input regarding scoping for a feasibility study regarding improvements to the SR-55/SR-91 system interchange and the Lakeview Avenue interchange, three preliminary options were developed and presented to the PDT during the May 20, 2015, PDT meeting. These options were evaluated in the *SR-91/SR-55 System Interchange and Lakeview Interchange Feasibility Study* (September 2015). Two of the three preliminary options that were developed within the feasibility study were eliminated from further discussion by the PDT (presented in Sections 1.5.1 and 1.5.2; the third, Option 3L, was incorporated into the Build Alternative).

1.5.1 Option 1A

Option 1A shifts westbound SR-91 traffic to the left side of the freeway, while shifting the traffic wanting to exit to southbound SR-55 to the right to conform to a typical mainline/connector system interchange configuration, with a standard exit on the right side of the freeway. Option 1A would include a loop on-ramp to the southbound SR-55 connector from Lakeview Avenue and a direct on-ramp to westbound SR-91 from Lakeview Avenue. Widening of the existing Lakeview Avenue bridge over SR-91 would be required (see Figure 1-5). Under Option 1A the proposed roadway and ramp elevations would be raised from six to 58 feet compared to existing conditions, which would affect 20 properties along the north side of SR-91. Under this option soundwalls ranging from 10 to 16 feet tall would need to be placed along the outside edge of the freeway and/or ramp shoulder, in addition to the six- to 58-foot elevation change mentioned previously. Of the options considered, Option 3L, which has been incorporated into the Build Alternative (Preferred Alternative), was determined to provide the greatest traffic benefit with the least cost and impact on the surrounding community. Therefore, Option 1A was eliminated from further consideration.

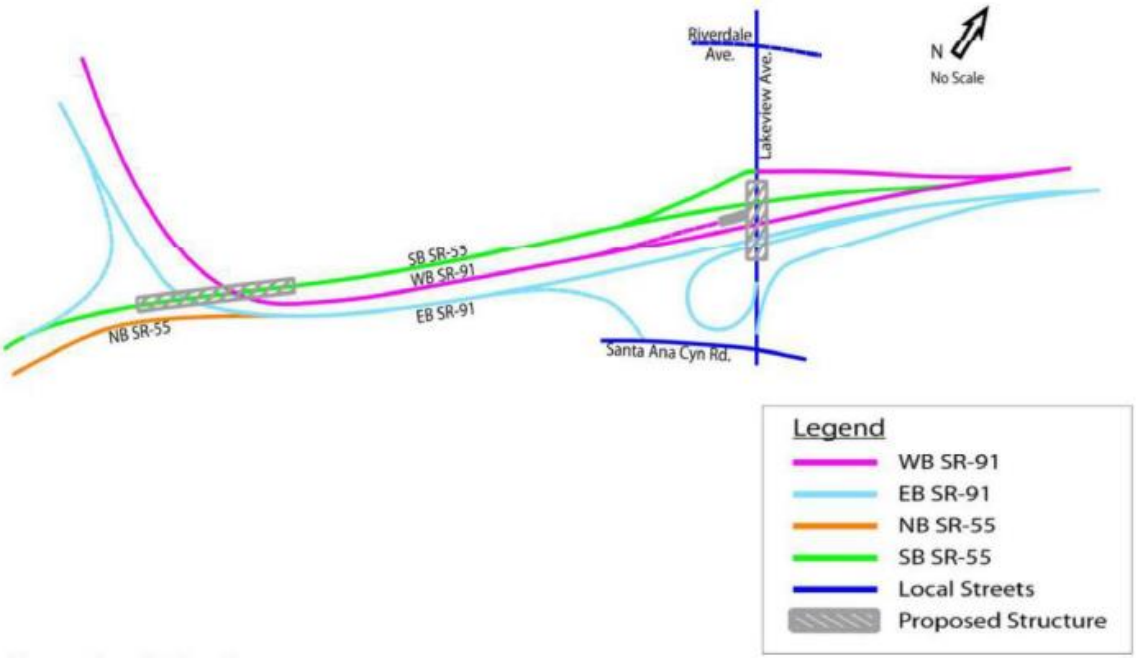
Figure 1-5. Lakeview Option 1A (eliminated from further consideration)



1.5.2 Option 3

Similar to Option 1A, Option 3 would shift the westbound SR-91 traffic to the left side of the freeway, while shifting the traffic wanting to exit to southbound SR-55 to the right to conform to a typical mainline/connector system interchange configuration, with a standard exit on the right side of the freeway This option would include a ramp (drop on-ramp) that would connect directly to westbound SR-91 from the Lakeview Avenue bridge over SR-91 and would include a direct on-ramp to the SR-55 connector from Lakeview Avenue. The existing westbound SR-91 on- and off-ramps at Lakeview Avenue would be reconfigured from a partial cloverleaf configuration to a diamond layout, allowing maximization of the intersection spacing between the westbound on- and off-ramps and Riverdale Avenue (first local roadway to the north of SR-91). The existing Lakeview Avenue bridge would be replaced to accommodate this option. Under Option 3 the proposed roadway and ramp elevations would be raised from eight to 58 feet compared to existing conditions, which would affect 17 properties along the north side of SR-91. Under this option soundwalls ranging from 10 to 16 feet tall would need to be placed along the outside edge of the freeway and/or ramp shoulder, in addition to the six- to 58-foot elevation change mentioned previously (see Figure 1-6). Of the options considered, Option 3L, which has been incorporated into the Build Alternative (Preferred Alternative), was determined to provide the greatest traffic benefit with the least cost and impact on the surrounding community. Therefore, Option 3 was eliminated from further consideration.

Figure 1-6. Lakeview Option 3 (eliminated)



1.5.3 Transportation System Management and Transportation Demand Management Alternatives

Transportation system management (TSM) provides cost-effective improvements that increase transportation system performance without the major expense of capital expansion projects. These programs include minor geometric improvements, bicycle and pedestrian improvements, and other measures such as signal synchronization, motorist information, bus signal priority, and freeway ramp metering. Transportation demand management (TDM) provides cost-effective improvements that reduce system demand by eliminating trips or shifting trips out of the peak periods to other less congested time periods during the day and thus increase transportation system performance without implementing travel restrictions. TDM programs include rideshare programs, employer flex-time, parking pricing, and intermodal improvements that support TDM programs and transfers between modes at key locations. TDM programs are devised to change the behavior of travelers. Some TDM approaches are voluntary, and they motivate participants with incentives. Other TDM approaches apply disincentives to drive single-occupancy vehicles (SOVs), such as fees and constraints.

A TSM/TDM alternative is not considered a viable stand-alone option because it does not fulfill the project purpose. A TSM/TDM alternative on its own would:

- Provide minimal congestion reduction.
- Provide minimal enhancement of operations and improvement in trip reliability.
- Not increase mobility significantly because it would have limited effect on congestion.
- Not maximize throughput because no additional through lanes are provided.

TSM and TDM are similar in a number of ways, because they may have the potential to lessen the number of trips, lessen peak hour travel, conserve energy, reduce emissions, and provide more travel alternatives. Although TSM and TDM measures alone could not satisfy the purpose and need of the project, the following TSM and TDM measures are beneficial and may be incorporated into the Build Alternative (Preferred Alternative) for the proposed project:

- Improved ramp metering hardware and software and closed-circuit television system for viewing ramps and nearby arterials.
- Upgraded traffic signals interconnected and coordinated with adjacent signals and ramp meters at locations of interchange improvements.
- Additional way-finding signs on freeways and arterials.
- On- and off-ramps designed to limit impacts to non-motorized travel and preserve access to bike lanes and trails.
- ITS elements including fiber-optic and other communication systems for improved connectivity and remote management; changeable message signs, closed-circuit television coverage of the entire freeway mainline, ramps, and adjacent arterials, video detection systems, and vehicle detection systems for volume, speed, and vehicle classification.
- Advanced traffic management system improvements to the hardware and software systems at the Caltrans District 12 Traffic Management Center (TMC).
- Traveler information management system improvements to enhance dissemination of real-time information for roadway conditions.

1.6 Permits and Approvals Needed

Table 1-15 lists the permits, reviews, and approvals that would be required for project construction.

Table 1-15. Permits, Licenses, Agreements, and Certifications

Agency	Permit, Licenses, Agreements, and Certifications	Status
United States Army Corps of Engineers (USACE)	Section 404 nationwide permit or letter of permission	Caltrans and OCTA to obtain permit jointly.
	Section 408 approval process	Caltrans and OCTA to obtain permit jointly.
California Transportation Commission	California Transportation Commission vote to approve funds	Following the approval of the FED, the California Transportation Commission will be required to vote to approve funding for the project.

Agency	Permit, Licenses, Agreements, and Certifications	Status
Federal Highway Administration (FHWA)	Air Quality Conformity Approval Letter	Obtained August 8, 2019.
State Water Resources Control Board (SWRCB)	Section 401 water quality certification	Caltrans and OCTA to obtain certification jointly prior to construction.
	Section 402 NPDES (construction activity)/Caltrans NPDES permit CAS000003 and CAS000002 (general permit)	Caltrans District 12, as the applicant for the NOI, to obtain permit prior to construction.
	Caltrans NPDES Statewide Stormwater Permit (Order No. 2012-0011-DWQ, as amended by Order WQ 2014-0006-EXEC, Order WQ 2014- 0077-DWQ, and Order WQ 2015-0036-EXEC, NPDES No. CAS000003)	Amended permit issued to Caltrans on May 20, 2014, for discharges from state right of way.
	NPDES General Permit for Stormwater Discharges of Stormwater Runoff Associated with Construction Activities (Order No. 2009-0009-DWQ, as amended by 2012-0006- DWQ)	The permit registration documents, including the NOI, will be submitted to the SWRCB and the WDID prior to any project construction.
California Department of Fish and Wildlife (CDFW)	Section 1602 Approval Process	Caltrans and OCTA to obtain permit jointly prior to construction.
Orange County Flood Control District (OCFCD)	Encroachment permit	Application for OCFCD construction encroachment permit for temporary access to the Santa Ana River would be obtained during design.
OC Parks	Section 4(f) Letter of Concurrence	Caltrans obtained letter of concurrence of Section 4(f) *De Minimis* findings on July 22, 2019.
City of Anaheim	Construction Encroachment Permit	Application for a City of Anaheim construction encroachment permit for temporary access onto public rights-of-way will be submitted prior to construction.
City of Fullerton	Construction Encroachment Permit	Application for a City of Fullerton construction encroachment permit for temporary access onto public rights-of-way will be submitted prior to construction.
City of Orange	Construction Encroachment Permit	Application for a City of Orange construction encroachment permit for temporary access onto public rights-of-way will be submitted prior to construction.
City of Placentia	Construction Encroachment Permit	Application for a City of Placentia construction encroachment permit for temporary access onto public rights-of-way will be submitted prior to construction.
Southern California Regional Rail Authority	Service Contract	Need for a service contract will be determined during the PS&E phase. OCTA to obtain during the project design, if needed.
California Public Utilities Commission (CPUC)	GO 88-B request	During the project design phase, a GO 88-B request will be required to be submitted to the CPUC because an additional lane will be added under the North Olive Underpass structure.

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Chapter 2 Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures

As part of the scoping and environmental analysis carried out for the project, the following environmental issues were considered, but no adverse impacts were identified. As a result, there is no further discussion about these issues in this document.

Coastal Zone: The proposed project is within Orange County and not within or in the vicinity of the coastal zone. No coastal zone impacts would occur as a result of the project.

Wild and Scenic Rivers: According to the Bureau of Land Management, there are no wild and scenic rivers in the project area.

Farmlands: According to the California Department of Conservation (DOC) Farmland Mapping and Monitoring Program (FMMP), there is no land designated as prime farmland, farmland of statewide importance, unique farmland, or grazing land within or immediately adjacent to the project area (DOC 2014). The project area and surrounding environment is largely urban and built-up land. The nearest determined important farmland is a 20-acre nursery classified as unique farmland in the city of Anaheim that is 0.25 mile east of the eastern terminus of the project area. The next nearest determined important farmland is a 10-acre parcel of vacant land (as of May 2018) classified as prime farmland, located 0.70 mile northeast of the northernmost part of the project area along North Tustin Avenue in the city of Anaheim. Therefore, there would be no impacts on farmlands.

Timberlands: No land within or adjacent to the project area is designated as a Timber Production Zone (TPZ). Therefore, there would be no impacts on timberland resources.

In January 2020, a Technical Studies Errata was prepared to provide an update to the postmiles of the project. The original postmiles for the project were 12-ORA-91 PM 4.8/R10.4; 12-ORA-57 PM 15.6/16.1; and 12-ORA-55 PM 17.5/R17.9. These postmiles were based on a preliminary, generally conservative, identification of the anticipated start and end points for the project along each affected freeway. Since then, the project design has progressed, and the project limits have been refined. The updated postmiles are 12-ORA-91, PM 4.7/R10.8; 12-ORA-57, PM 15.5/16.2; and 12-ORA-55, PM 17.4/R17.9. The updates to the postmiles did not change any of the analysis, findings, or conclusions to technical studies that informed the following sections in this environmental document: Land Use, Growth, Community Impacts, Utilities/Emergency Services, Traffic and Transportation/Pedestrian and Bicycle Facilities, Visual/Aesthetics, Hydrology, Water Quality and Stormwater Runoff, Geology/Soils/Seismicity/Topography, Paleontology, Air Quality, Noise and Vibration, Natural Communities, Wetlands and Other Waters, Plant Species, Animal Species, Threatened and Endangered Species, and Invasive Species. There was no change in the analysis, findings, or conclusions to these sections based upon the updates to the postmiles. The Initial Site Assessment and Historic Property Survey Report were found to require supplemental studies based on the updates to the postmiles. These supplemental studies are referenced in the Hazardous Waste/Materials and Cultural Resources sections in this IS/EA.

The proposed project would require that geotechnical borings be conducted during final design. Any avoidance and/or minimizations Measures that would apply to the geotechnical boring work are identified in the Environmental Commitments Record (Appendix D).

2.1 Human Environment

2.1.1 Land Use

This section discusses impacts on land use as a result of implementation of the proposed project. The discussions in this section related to land use are provided in the following three subsections:

- Existing and Future Land Use
- Consistency with State, Regional, and Local Plans and Programs
- Parks and Recreational Facilities

The section concludes with an analysis of the Environmental Consequences of the project and recommended Avoidance, Minimization, and Mitigation Measures.

2.1.1.1 EXISTING AND FUTURE LAND USE

This section addresses potential impacts on existing and planned land uses in the project area that could result from implementation of the project.

Affected Environment

The 5.6-mile-long project corridor traverses through the cities of Anaheim, Placentia, Orange, and Fullerton in Orange County, California.

Utilizing the Southern California Association of Government's (SCAG's) 2012 existing land use data set, existing land uses within the 0.5-mile study area around the project footprint were identified and verified with appropriate municipal general plans, as shown in Figure 2.1.1-1 and summarized in Table 2.1.1-1. Within the study area, the SR-91 corridor is an urban setting with distinct residential, commercial, and industrial land uses adjacent to the freeway. The project corridor also crosses the Santa Ana River and features several water-related land uses owned by the Orange County Water and Flood Control Districts.

Table 2.1.1-1. Existing Land Use in Study Area

Land Use	Acres	Percentage of 0.5-mile Study Area
Commercial	371.59	9.0%
Industrial	844.32	20.6%
Institutional	224.00	5.5%
Multi-family Residential	302.30	7.4%
Office	107.50	2.6%
Open Space and Recreation	162.41	4.0%
Single-family Residential	1305.74	31.8%
Transportation and Utilities	88.59	2.2%
Vacant	87.64	2.1%
Water	613.66	14.9%
Total	**4107.75**	**100.0%**

\\PDCCITRDSGIS2\Irvine\GIS\Projects\OCTA\00000_0_SR91_Lakeview_StCollege\mapdocs\IS_EA\Figure 2.1.1-1 LandUse.mxd Date: 4/17/2020 25119

Figure 2.1.1-1
Existing Land Use
SR-91 Improvement Project Between SR-57 to SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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City of Anaheim

A majority of the study area is within the City of Anaheim. Much like the study area, the City of Anaheim as a whole is highly developed. The 2018 General Plan Land Use Element for the City of Anaheim states that very little land remains that is not already developed or entitled for future development (City of Anaheim 2018a).

South of SR-91, the predominant land use is single-family residential, along with multi-family residential, open space and recreation, and institutional uses to lesser degrees. North of SR-91 and west of SR-55 in the study area, industrial and commercial land uses are predominant. North of SR-91 and east of SR-55, the land use composition consists of single-family residential, office space, industrial, commercial, and water-related land uses associated with the Santa Ana River.

City of Placentia

The northwestern portion of the study area, approximately 8 percent of the total land area, also includes a small portion of the City of Placentia, which consists of a variety of land uses, with no single land use type that is particularly predominant. Land uses include both single- and multi-family residential, commercial, office, institutional, industrial, and open-space and recreational uses. (City of Placentia 2009).

City of Orange

The City of Orange, located south of the proposed project alignment, accounts for approximately 7 percent of the study area and is highly developed as well. Based on a land use inventory completed in 2004 by the City of Orange, housing accounts covers approximately 46 percent of the city's land area (City of Orange 2010). Other Commercial and industrial uses represent about 14 percent of the city's land area, while natural hillsides, parks, and open space represent 32 percent. Within the study area, land uses in the City of Orange are predominantly single- and multi-family residential.

City of Fullerton

The northwestern portion study area, approximately 6 percent, encompasses a small part of the City of Fullerton that is designated primarily as industrial land uses.

Orange County Water District

The study area includes a small portion of the Orange County Water District that is designated as other uses, such as water district facilities and structures other than buildings.

Orange County Flood Control District

The study area includes a small portion of the Orange County Flood Control District, typically used for purposes of flood control regulations and structures other than buildings.

Development Trends

According to SCAG estimates for Orange County, from 2012 to 2040 population is expected to increase by 12.7 percent, households are expected to increase by 15.3 percent, and employment is expected to increase 24.4 percent, representing fairly moderate growth (SCAG 2016a). The City of Anaheim expects smaller population growth and larger household and employment growth, as SCAG estimates a 16.8 percent increase in population, a 23.6 percent increase in households, and a 38.1 percent increase in employment (SCAG 2016b). Table 2.1.1-2 summarizes the growth forecasts for all study area cities.

Table 2.1.1-2. Forecasted Growth

Jurisdiction	Population (%)	Household (%)	Employment (%)
Orange County	12.7%	15.3%	24.4%
Anaheim	16.8%	23.6%	38.1%
Placentia	13.4%	13.9%	23.7%
Orange	10.9%	13.1%	12.1%
Fullerton	16.3%	21.3%	54.8%

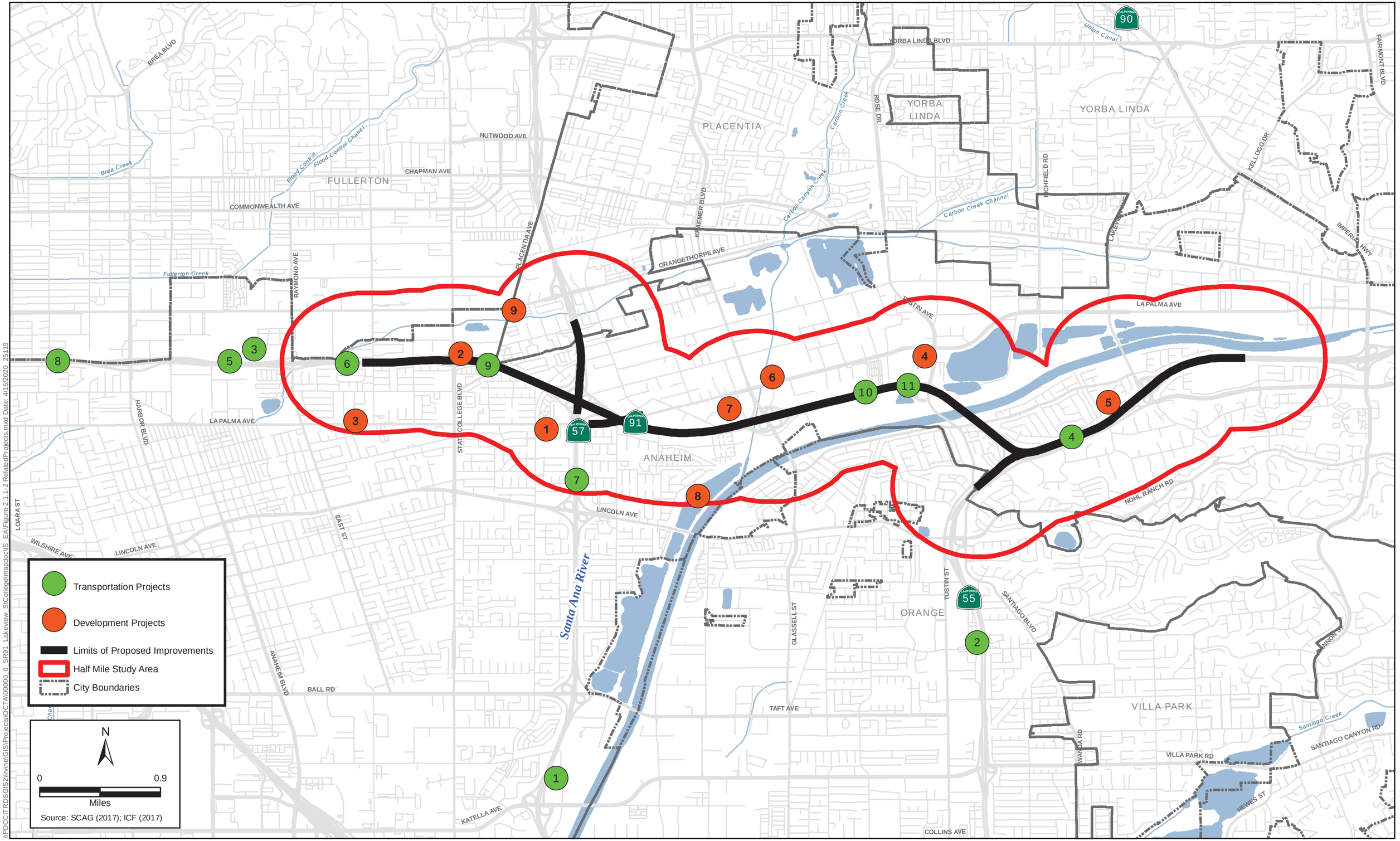
Table 2.1.1-3 and Figure 2.1.1-2 identify all reasonably foreseeable transportation projects located within 5 miles of the proposed project footprint and all other land development projects located within 0.5 mile of the proposed project footprint. The projects listed were also used to analyze cumulative impacts of the proposed project.

Table 2.1.1-3. Related Projects

ID	Name	Location	Proposed Uses	Status
Development Projects				
1.	La Palma House	1431 E La Palma Avenue, Anaheim	Permit a bed and breakfast inn with indoor entertainment and dining for guests within an existing historic home.	Plan Check
2.	Riverdale Anaheim Residential Project	4540 E Riverdale Avenue, Anaheim	Development of a 75-unit small-lot single-family residential project. Amend the General Plan land use designation from school to low-density residential.	Under Construction
3.	Bottle Logic 2	1070 N Armando Street, Anaheim	To permit fewer parking spaces than required by code to allow a new restaurant in an existing brewery.	Approved
4.	Anaheim Five Coves (Northern Extension) Park Project	Lincoln Avenue to Frontera Street east of N Rio Vista Street, Anaheim, CA	Develop a 9-acre linear urban nature park. Would include a 0.9-mile Class 1 permeable asphalt bike path parallel to a stabilized decomposed granite multi-use trail. The park would also include a demonstration garden/children's education/nature play area as well as native vegetation and earthen swales for stormwater capture.	Under Construction
5.	950 S&E LLC - Elec Readerboard	950 N Tustin Avenue, Anaheim, CA	Install two new freestanding electronic readerboard signs along the Tustin Avenue street frontage	Under Review
Transportation Projects				
1.	SR-57 Improvement Project Orangewood to Katella	SR-57	Improve SR-57 from Orangewood Avenue to Katella Avenue.	Environmental review complete
2.	SR-55 Improvements (I-5 to SR-91)	SR-55	Project would add new lanes between SR-22 and I-5, including merging lanes between interchanges to smooth traffic low. Operational improvements between SR-22 and SR-91 would also be incorporated.	Environmental Review Phase
3.	Los Angeles to Anaheim Project Section	Los Angeles Union Station to ARTIC on LOSSAN rail corridor	Enhance existing 30-mile rail corridor with high speed rail capabilities	Environmental Review Phase; anticipated completion by 2029
4.	SR-91 Pavement Rehabilitation	SR-91	Rehabilitate approximately 9 miles of pavement on SR-91 between SR-55 and the Riverside County Line.	Approved; construction to begin in 2019
5.	SR-91 Overhead Signage	SR-91	Construct overhead signage on approximately 1.5 miles on SR-91 between Euclid Street and Harbor Boulevard	Approved; construction to begin in 2020
6.	SR-91 Resurface Ramps and Shoulders	SR-91	Resurface ramps and shoulders over approximately 5 miles on SR-91 between Brookhurst Street and SR-57	Approved; construction to begin in 2018
7.	SR-57 Install Cantilever Signage	SR-57	Install cantilever signage over approximately 0.3 mile on SR-57 between Lincoln Avenue and SR-91	Approved; construction to begin in 2019
8.	SR-91 Ramp Resurfacing	SR-91	Ramp resurfacing on the EB SR-91 on-ramp from NB 39	Approved; construction to begin in 2018

ID	Name	Location	Proposed Uses	Status
9.	SR-91 Install New Guide Sign Structures	SR-91	Install new guide sign structures on SR-91 between S. State College Boulevard and Sunkist Street	Approved; construction to begin in 2020
10.	SR-91 Multi-asset Management Program	SR-91	Implement a multi-asset management project over approximately 19 miles, which is the entirety of SR-91 within Orange County	Approved; construction to begin in 2020
11.	SR-91 Operational Mobility, TMS, and Sign Panel Replacement	SR-91	Implement operational mobility, TMS, and sign panel replacement over approximately 19 miles, which is the entirety of SR-91 within Orange County	Approved; construction to begin in 2024
12.	Sidewalk Gap Closure Project	Acacia Street, La Palma Avenue, Frontera Street and Santa Ana Canyon Road in Anaheim, CA	Sidewalk Gap Closures on Acacia Street, La Palma Avenue, Frontera Street, and Santa Ana Canyon Road, K955	Design Phase; construction to begin in 2021

Source: California Department of Transportation 2018; City of Anaheim 2020; California High Speed Rail Authority 2018; Orange County Transportation Authority 2020.



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Figure 2.1.1-2
Related Projects
SR-91 Improvement Project Between SR-57 to SR-55
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2.1.1.2 CONSISTENCY WITH STATE, REGIONAL, AND LOCAL PLANS AND PROGRAMS

The following discussion describes the adopted plans within the project study area and goals, policies, or objectives that are applicable to this project.

Affected Environment

This section provides an analysis of the consistency of the Build Alternative (Preferred Alternative) with transportation and land use plans and policies included in the general and specific plans for the various jurisdictions within the project limits. Specific goals and policies are identified in Table 2.1.1-5.

Regional Plans

Caltrans Scenic Highway Program

Caltrans manages the State Scenic Highway Program, provides guidance, and assists local government agencies, community organizations, and citizens with the process to officially designate scenic highways. In 1963, the state legislature established the California Scenic Highway Program through Senate Bill 1467. The portion of SR-91 from SR-55 to the eastern end of the alignment is designated as a State Scenic Highway.

Southern California Association of Governments Federal Transportation Improvement Program

SCAG Federal Transportation Improvement Program (FTIP) is a capital listing of all transportation projects proposed over a 6-year period for the SCAG region. The projects include highway improvements, transit, rail and bus facilities, high occupancy vehicle lanes, signal synchronization, intersection improvements, freeway ramps, etc.

The FTIP is prepared to implement projects and programs listed in the Regional Transportation Plan (RTP) and is developed in compliance with state and federal requirements. The most recent FTIP is the 2019 FTIP, which was approved by the SCAG Board of Directors in September 2016, by Caltrans in November 2016, and by the Federal Highway Administration (FHWA) and Federal Transportation Administration (FTA) in December 2016. The proposed project is consistent with the scope included in the 2019 FTIP under ID ORA150110.

Southern California Association of Governments 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy

The Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) is a long-range transportation plan that is developed and updated by SCAG every 4 years. The RTP/SCS provides a vision for transportation investments throughout the region. Using growth forecasts and economic trends that project out over a 20-year period, the RTP/SCS considers the role of transportation in the broader context of economic, environmental, and quality-of-life goals for the future, identifying regional transportation strategies to address our mobility needs. The proposed project is listed in the RTP/SCS under project ID 2M0736.

OCTA Strategic Plan

The 2014–2019 OCTA Strategic Plan addresses Orange County's transportation needs and sets principles and goals that guide OCTA's decisions for a 5 year period. The Strategic Plan sets a vision to provide an integrated and balanced transportation system that supports the diverse travel needs and reflects the character of Orange County. The description of this project is consistent with what is presented in the OCTA Strategic Plan.

OCTA Long Range Transportation Plan (2014)

The OCTA Long Range Transportation Plan (LRTP) assesses the performance of Orange County's transportation system for the next 20 years, identifying transportation needs based on projected indicators such as population, housing, and employment growth. The 2014 LRTP forecasts needs for the 2035 horizon year, prioritizes planned projects, and identifies additional strategies that address those needs, thereby providing safe and efficient mobility for the 2035 horizon. This project is identified as M2 Project I in the 2014 LRTP.

OCTA Measure M2 (OC GO)

In November 2006, nearly 70 percent of Orange County voters renewed the half-cent sales tax for transportation improvements in the county for another 30 years to launch Measure M2. In 2017, Measure M2 was rebranded as OC Go. By the year 2041, the OC Go Transportation Investment Plan program plans to deliver approximately $13.5 billion worth of transportation improvements, including freeway, street and roads, transit, and environmental programs, to Orange County.

OCTA M2020 Plan

The M2020 Plan, adopted by OCTA in September 2012, outlines the delivery of the majority of the OCTA freeway program by the year 2020 through strategic use of bonding. In addition, the plan expands rail, funded fixed-guideway connections to Metrolink, and improved streets and road conditions.

State Route 91 Implementation Plan 2017

Senate Bill 1316 (SB 1316) signed into law in September 2008, requires OCTA, in consultation with Caltrans and the Riverside County Transportation Commission, to issue an annual SR-91 Implementation Plan and proposed completion schedule for SR-91 improvements from SR-57 to I-15. The Plan establishes a program of projects eligible for funding by the use of potential excess toll revenue and other funds.

General Plans

State law requires every city and county to adopt a comprehensive, long-term general plan. A general plan represents the community's view of its future and is often referred to as a blueprint for growth and development. General plans provide goals, policies, and implementation measures that are meant to help influence physical growth and change in a manner consistent with this vision.

Orange County General Plan

The Orange County Board of Supervisors adopted the 2010 General Plan on March 9, 2010; it was last amended in 2015. The General Plan serves as a blueprint for growth and development for unincorporated areas of Orange County, and addresses regional services and facilities provided by the County such as regional parks, roads, and flood control facilities.

The City of Anaheim General Plan

The most recent complete update of the City's General Plan was approved by the City Council in 2004, but has been amended numerous times since then to address changes in the direction of development, as well as to meet statutory and regulatory requirements.

City of Placentia General Plan

As of 2018, the City of Placentia is in the process of updating its General Plan, which will include goals, policies, and implementation actions for addressing land use, mobility, public safety, and many other needs.

The City of Orange General Plan

The 2010 General Plan better defines Orange's image and position within the region, allows the city's commercial districts to better compete in the local and regional marketplace, maintains existing neighborhood values, and addresses local and regional environmental issues. Most recent updates to the General Plan were adopted in 2014 when the Housing Element was updated

The City of Fullerton General Plan (The Fullerton Plan) (2012)

The Fullerton Plan serves as a City governance tool and views the City as a built place, a local economy, a community of people, and a part of the natural environment. The Fullerton Plan sets a comprehensive decision-making framework, and serves as a "yard-stick" by which actions are taken and measured. Most recent updates to the General Plan were adopted in 2015 when the Housing Element was updated

2.1.1.3 PARKS AND RECREATIONAL FACILITIES

Regulatory Setting

The Park Preservation Act (California Public Resources Code [PRC] Sections 5400-5409) prohibits local and state agencies from acquiring any property that is in use as a public park at the time of acquisition unless the acquiring agency pays sufficient compensation or land, or both, to enable the operator of the park to replace the park land and any park facilities on that land.

Affected Environment

There are 10 publicly owned lands that contain parks and/or recreational resources within 0.5 mile of the project corridor, as shown in Figure 2.1.1-3. These are all public parks or recreational facilities operated by the City of Anaheim, City of Orange, City of Placentia, Orange County (OC) Parks, and Orange County Water District; therefore, they are protected by the Park Preservation Act. These 10 properties include outdoor parks and trails and are summarized alphabetically in Table 2.1.1-4.

Table 2.1.1-4. Parks and Recreational Facilities within the Study Area

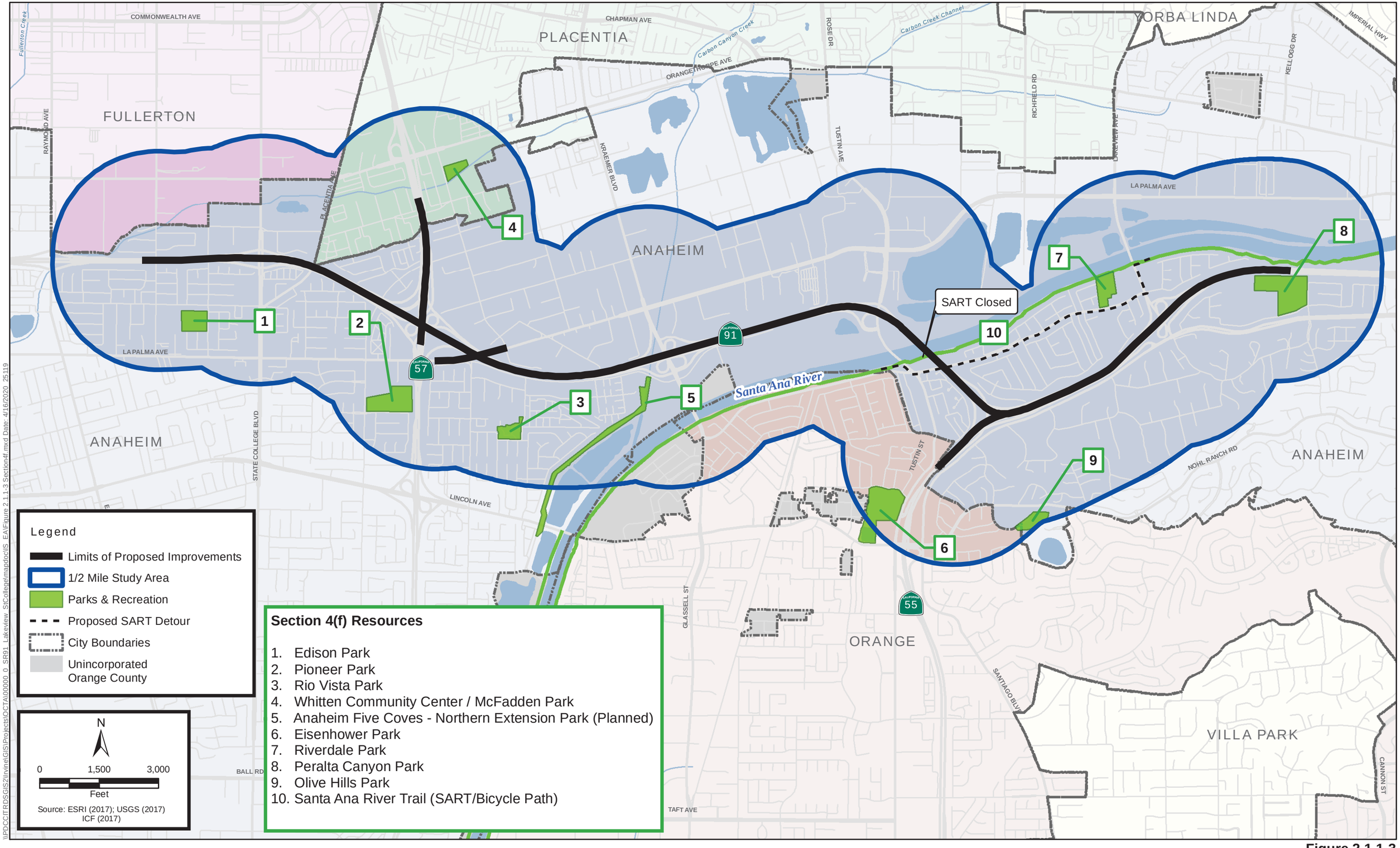
Park/Recreational Resource Name	Location	Owner/Operator	Resource Features	Subject to Section 4(f) Protection?	Build Alternative (Preferred Alternative) Use Status	Location Relative to the Project
Edison Park	1145 North Baxter Street, Anaheim, CA 92805	City of Anaheim	A 7.5-acre park that features barbecues, a basketball court, a children's play area, exercise stations, an open play area, an unlighted softball field, a volleyball court, and restrooms.	Yes	No Use	0.2 mile south
Pioneer Park	2565 East Underhill Avenue, Anaheim, CA 92805	City of Anaheim	A 13.7-acre park that features barbecues, a children's play area, a ball field, a group picnic shelter, an open play area, an unlighted softball field, and restrooms.	Yes	No Use	0.14 mile southwest
Whitten Community Center/McFadden Park	900 South Melrose Street, Placentia, CA 92870	City of Placentia	A 2.7-acre park with basketball courts, open play areas, and a pool.	Yes	No Use	0.18 mile northeast
Rio Vista Park	310 North Park Vista Street, Anaheim, CA 92805	City of Anaheim	A 4.7-acre park that features barbecues, a children's play area, an open play area, and restrooms.	Yes	No Use	0.2 mile south
Anaheim Five Coves-Northern Extension (planned)	Along the Santa Ana River from Lincoln Avenue to Frontera Street	City of Anaheim	A proposed 9-acre linear urban nature park that would extend from Lincoln Street to Frontera Street. The project is the second phase of the existing 14-acre Anaheim Coves Nature Park and a continuation of that park's 1.5-mile multi-use trail.	Yes	No Use	Adjacent*

Park/Recreational Resource Name	Location	Owner/Operator	Resource Features	Subject to Section 4(f) Protection?	Build Alternative (Preferred Alternative) Use Status	Location Relative to the Project
Santa Ana River Trail/Bicycle Path	The regional portion extends 29 miles, from Green River Golf Club to Yorba Regional Park and Huntington Beach.	Orange County (OC) Parks	Class 1 bicycle path and hiking trail that parallels the Santa Ana River channel from Green River Golf Club to Yorba Regional Park and Huntington Beach. The trail is 12 feet wide and used by walkers with dogs, bike riders, equestrians, in-line skaters, joggers, and strollers. Pedestrian and maintenance vehicle access points are found primarily along the major arterials that cross the trail. Parking is also available at various locations along the path way.	Yes	Temporary Use	Adjacent
Eisenhower Park and Lake	2864 North Tustin Street, Orange, CA 92865	City of Orange	A 20-acre park that features walking paths, picnic tables, a tot lot, sitting benches, barbecue stations, bicycle racks, and restrooms.	Yes	No Use	0.3 mile south
Olive Hills Park	700 South Nohl Canyon Road, Anaheim, CA 92807	City of Anaheim	A 4.8-acre park that features six public tennis courts. Includes a 1-acre dog park with a perimeter walking path, patches of artificial turf, agility equipment, benches, and native plants.	Yes	No Use	0.4 mile south

Park/Recreational Resource Name	Location	Owner/Operator	Resource Features	Subject to Section 4(f) Protection?	Build Alternative (Preferred Alternative) Use Status	Location Relative to the Project
Riverdale Park	4545 East Riverdale Avenue, Anaheim, CA 92805	City of Anaheim	A 7.1-acre park that includes barbecues, a basketball court, a children's play area, a group picnic shelter, lighted softball fields, an open play area, restrooms, and riding and hiking trail access.	Yes	No Use	0.1 mile west
Peralta Canyon Park	115 North Pinney Drive, Anaheim, CA 92805	City of Anaheim	A 20-acre park that includes an activities center, barbecues, a basketball court, a children's play area, a football field, a group picnic shelter, lighted softball fields, an open play area, a soccer field, a volleyball court, and restrooms. Parking and pedestrian access to the park is available off North Deana Street, on the south side of the park. Additional pedestrian access points exist on the east side of the park, along North Pinney Drive.	Yes	No Use	Adjacent*

**No temporary construction easement or partial fee acquisition is required for this parcel.*

Source: ICF 2018.



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Figure 2.1.1-3
Section 4(f) Resources
SR-91 Improvement Project Between SR-57 to SR-55
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2.1.1.4 ENVIRONMENTAL CONSEQUENCES

Permanent Impacts

Build Alternative (Preferred Alternative)

Land Use

The Build Alternative (Preferred Alternative) would mostly be constructed within existing Caltrans right of way (ROW); however, partial permanent acquisitions would be required at six larger parcels,[1] made up of nine assessor's parcel numbers (APNs) along the project corridor totaling approximately 0.28 acre (refer to Table 2.1.3-8 in Section 2.1.3, Community Impacts). These would all be partial fee acquisitions and permanent easements requiring slivers of six larger parcels, including two industrial parcels, two vacant parcels, one commercial parcel, and undeveloped land from a single-family residential parcel, all of which are adjacent to the existing Caltrans ROW limits. The Build Alternative (Preferred Alternative) would result in the conversion of a very small percentage of the existing land use within the study area and would not result in indirect impacts on land use patterns. Some existing landscaping and parking would be permanently affected. One parking space at the commercial center on Tustin Avenue would be removed. The existing commercial lot has 141 spaces, and the proposed improvement would have 140 parking spaces. Per Section 18.42.040 of Anaheim's Municipal Code, the parking requirement for commercial use is four spaces per 1,000 square feet of gross floor area (GFA). The total square footage for the commercial center is 27,874 square feet. Based on this square footage and the parking standard, the site would be required to provide 112 spaces. The parking standard will continue to be met despite the loss of one parking space. Limited hardscape and/or landscaping and irrigation in the median islands would be included at several of the affected interchanges within Caltrans ROW.

Consistency with State, Regional, and Local Plans and Programs

Applicable state, regional, and local programs, plans, and policies are analyzed in relation to the Build and No-Build Alternatives in Table 2.1.1-5. The proposed project is generally consistent with local plans, as long as efforts to minimize effects are included in the project plans. The Build Alternative (Preferred Alternative) would improve capacity and reduce congestion along this segment of SR-91 and would serve as a benefit to the surrounding communities and future land use goals.

Consistency with Regional Plans

The design concept and scope of the proposed project are consistent with the 2016–2040 RTP/SCS and 2019 FTIP and are intended to meet the traffic needs in the area based on local land use plans. The proposed project would be designed in compliance with the requirements of the M2 Ordinance and is consistent with OCTA's 2014 LRTP and M2020 Plan. Thus, the Build Alternative (Preferred Alternative) is consistent with the regional and federal transportation plans.

[1] A "larger parcel" is defined as assessor's parcel numbers (APNs) having the same ownership and the same use. In addition, the APNs are contiguous to each other.

Table 2.1.1-5. Consistency with Plans and Policies

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy No-Build Alternative	Project Consistency with Plan, Goal, Objective, or Policy Build Alternative (Preferred Alternative)	Project Consistency with Plan, Goal, Objective, or Policy Consistency Analysis
California Scenic Highway Program			
The stated intent of the California Scenic Highway Program is to protect and enhance California's natural beauty and to protect the social and economic values provided by the State's scenic resources.	No Conflict	No Conflict	The Build Alternative (Preferred Alternative) would protect the social and economic value of SR-91, which is a designated State Scenic Highway east of SR-55. For more information, refer to Section 2.1.6, *Visual/Aesthetics*. Under the No-Build Alternative, no major changes to SR-91 would occur; therefore, the social and economic value of the portion of SR-91 that is a State Scenic Highway would remain protected.
2019 Federal Transportation Improvement Program (FTIP)			
The FTIP reflects a continued emphasis on properly maintaining the region's transportation system. It also reflects how the region is moving forward in implementing the policies and goals of the 2016–2040 RTP/SCS, SCAG's long-range strategic vision for regional transportation investments and reducing greenhouse gas emissions.	Conflict	No Conflict	The Build Alternative (Preferred Alternative) is consistent with the scope included in the 2019 FTIP under ID ORA150110. Under the No-Build Alternative, no capacity increasing or interchange improvements other than routine maintenance would be implemented along the project limits of the SR-91, therefore conflicting with the 2019 FTIP.
SCAG RTP/SCS 2016			
Goal 2: Maximize mobility and accessibility for all people and goods in the region.	Conflict	No Conflict	The Build Alternative (Preferred Alternative) is consistent with the scope included in the 2016 RTP under ID 2M0736. The Build Alternative (Preferred Alternative) would increase the capacity of SR-91, which would improve mobility and accessibility for people and goods in the region. Under the No-Build Alternative, no capacity increasing or interchange improvements other than routine maintenance would be implemented along the project limits of the SR-91, therefore conflicting with the 2016 RTP.

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy No-Build Alternative	Project Consistency with Plan, Goal, Objective, or Policy Build Alternative (Preferred Alternative)	Project Consistency with Plan, Goal, Objective, or Policy Consistency Analysis
Goal 3: Ensure travel safety and reliability for all people and goods in the region.	Conflict	No Conflict	The Build Alternative (Preferred Alternative) would increase the capacity of SR-91 and would improve several interchanges, improving their ability to accommodate traffic and therefore improving goods movement through the corridor. The project is expected to result in improved travel safety and reliability for all people and goods movement in the region. The No-Build Alternative would not improve the safety or reliability of travel for people and goods movement along the SR-91 project limits because no improvements are proposed.
Goal 4: Preserve and ensure a sustainable regional transportation system.	Conflict	No Conflict	The Build Alternative (Preferred Alternative) would improve existing regional transportation by improving mobility and capacity between SR-55 and SR-57 along SR-91, a key regional travel corridor, while reducing congestion between successive ramps on SR-91 within the project limits. Therefore, the Build Alternative (Preferred Alternative) would help preserve and ensure a sustainable regional transportation system. The No-Build Alternative would not increase the capacity of SR-91 within the project limits, which would not help ensure a sustainable regional transportation system. Under the No-Build Alternative, traffic congestion along the SR-91 project corridor is expected to continue to worsen.
Goal 5: Maximize the productivity of our transportation system	Conflict	No Conflict	The Build Alternative (Preferred Alternative) would increase the capacity of SR-91, which would improve mobility and accessibility for people and goods in the region, which, in turn, would improve upon the productivity of the SR-91 corridor. Under the No-Build Alternative, no improvements to SR-91 would be made; therefore, the productivity of SR-91 would not be improved.

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy No-Build Alternative	Project Consistency with Plan, Goal, Objective, or Policy Build Alternative (Preferred Alternative)	Project Consistency with Plan, Goal, Objective, or Policy Consistency Analysis
OCTA 2014-2019 Strategic Plan			
Goal Area – Mobility: Deliver programs, projects, and services to improve the movement of people and goods throughout Orange County and the region.	Conflict	No Conflict	The Build Alternative (Preferred Alternative) is consistent with existing programs and improves mobility and capacity while reducing congestion between successive ramps on SR-91 within the limits of the project. Under the No-Build Alternative, no capacity increasing or interchange improvements other than routine maintenance would be implemented along the SR-91 project limits, so SR-91 would not contribute to improvements to mobility throughout the region.
Goal Area – Stewardship: Embrace responsible policies and practices designed to promote environmental sustainability and enhance the safety and quality of life in Orange County.	No Conflict	No Conflict	The Build Alternative (Preferred Alternative) would promote environmental sustainability as it must undergo the environmental review process, as mandated by CEQA and NEPA, to identify and address the project's potential environmental impacts, as appropriate. The No-Build Alternative is generally aligned with existing environmental sustainability and enhancement policies and practices.
OCTA Long Range Transportation Plan			
Deliver on Commitments - Prioritize Measure M2 projects - Consistency with M2020 and FTIP	Conflict	No Conflict	The Build Alternative (Preferred Alternative) is consistent with the scope included in the 2019 FTIP and M2020 under ID ORA150110 and Project I, respectively. The No-Build Alternative would be inconsistent with the OCTA Long Range Transportation Plan, as it would not implement projects along the SR-91 project limits identified in the 2019 FTIP and M2020.
Improve System Performance - Increase speeds - Reduce delay - Increase Transit Ridership	Conflict	No Conflict	The Build Alternative (Preferred Alternative) is consistent with existing programs and improves upon mobility and capacity while reducing congestion between successive ramps on SR-91 within the project limits. The No-Build Alternative would not improve system performance along the SR-91 project limits, as no increase in capacity or interchange improvements would be implemented.

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy No-Build Alternative	Project Consistency with Plan, Goal, Objective, or Policy Build Alternative (Preferred Alternative)	Project Consistency with Plan, Goal, Objective, or Policy Consistency Analysis
Expand System Choices - Improve multimodal integration - Invest in new facilities - Expand transit services	Conflict	No Conflict	The Build Alternative (Preferred Alternative) would include bike lane improvements consistent with applicable multi modal plans for the area. The No-Build Alternative would not include upgrades along the SR-91 project limits and therefore would not expand system choices.
Support Sustainability - Deliver a financially constrained plan - Maintain infrastructure - Implement environmental strategies - Support sustainable communities strategies	Conflict	No Conflict	The Build Alternative (Preferred Alternative) would maintain infrastructure through implementation and would support sustainability as it must undergo the environmental review process, as mandated by CEQA and NEPA, to identify and address the project's potential environmental impacts, as appropriate. The No-Build Alternative would not implement improvements to infrastructure, therefore conflicting with the sustainability goal.
OCTA Measure M2 (OC Go)			
By 2041, the OC Go Transportation Investment Plan program plans to deliver approximately $13.5 billion worth of transportation improvements to Orange County.	Conflict	No Conflict	The Build Alternative (Preferred Alternative) is consistent with the investments listed as part of OC Go and is listed as Project I, SR-91 Improvements between SR-57 and SR-55. The No-Build Alternative would not implement investments listed as part of OC Go and Project I.
OCTA M2020 Plan			
Guiding principles were established to set the direction for staff on establishing priorities for freeway project acceleration, including: Project Readiness, Congestion Relief Demand, External Funding Availability, Public Opinion and Support, Project Sequencing and Connectivity, and Project Duration and Cycle.	Conflict	No Conflict	The Build Alternative (Preferred Alternative) is consistent with the investments listed as part of the OCTA M2020 Plan as Project I, SR-91 Improvements between SR-57 and SR-55. The Build Alternative (Preferred Alternative) is projected to provide congestion relief and reduce delay along SR-91. Funds have been approved for initiation of the project, and the project is eligible for future state and federal funds. The No-Build Alternative would not implement any capacity increasing or interchange improvements along the SR-91 project limits under the investments listed as part of the OCTA M2020 Plan. Therefore, none of the actions discussed above would occur and the No-Build would not be consistent with the guiding principles of the OCTA M2020 Plan.

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy No-Build Alternative	Project Consistency with Plan, Goal, Objective, or Policy Build Alternative (Preferred Alternative)	Project Consistency with Plan, Goal, Objective, or Policy Consistency Analysis
SR-91 Implementation Plan 2017			
Provide action list for OCTA, RCTC, and Caltrans to pursue in the project development process or for initiating further study.	Conflict	No Conflict	The SR-91 (SR-57 to SR-55) Widening Project is included as Project No. 6 in the SR-91 Implementation Plan with anticipated completion in 2030. The No-Build Alternative would not construct Project No. 6 listed in the SR-91 Implementation Plan.
Orange County General Plan			
To plan an integrated land use and transportation system that accommodates travel demand.	Conflict	No Conflict	Existing and projected SR-91 mainline peak period traffic exceeds available capacity. The Build Alternative (Preferred Alternative) is projected to accommodate travel demand by improving mobility and capacity while reducing congestion along SR-91 within the project limits. The No-Build Alternative would not construct improvements that would reduce congestion or increase capacity along the SR-91 project limits.
City of Anaheim General Plan			
Circulation Goal 1.1: Provide a comprehensive multimodal transportation system that facilitates current and long-term circulation of people and goods in and through the City.	Conflict	No Conflict	The Build Alternative (Preferred Alternative) would increase the capacity of SR-91, which is projected to improve mobility and accessibility for people and goods in the region. The No-Build Alternative would not increase capacity of SR-91 and mobility and accessibility for people and goods in the region would remain the same and likely worsen as traffic congestion worsens along the corridor.
Circulation Goal 1.2: Support improvements to highways passing near and through the City.	Conflict	No Conflict	The Build Alternative (Preferred Alternative), which is supported by the City, would improve portions of SR-91 within the City of Anaheim. No improvements to the portions of SR-91 that pass near and through the city of Anaheim would be made under the No-Build Alternative.

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy No-Build Alternative	Project Consistency with Plan, Goal, Objective, or Policy Build Alternative (Preferred Alternative)	Project Consistency with Plan, Goal, Objective, or Policy Consistency Analysis
Circulation Policy 1.2.1: Continue working with Caltrans, the Federal Highway Administration and the Federal Transit Administration to address traffic flow along State highways that traverse the City.	Conflict	No Conflict	The Build Alternative (Preferred Alternative) would increase the capacity of SR-91, which is projected to improve traffic flow along this State highway as it travels through the city of Anaheim. Highway capacity of SR-91 would remain the same under the No-Build Alternative; therefore, traffic flow would not be addressed along the portion of SR-91 that travels through the city of Anaheim.
Circulation Policy 1.2.4: Work with Caltrans and adjacent jurisdictions to improve the operational performance of highways within and adjacent to the City.	Conflict	No Conflict	The Build Alternative (Preferred Alternative) would increase the capacity of SR-91, which is projected to improve the operation performance of this State highway as it travels within and adjacent to the city of Anaheim. Operational performance of SR-91 within and adjacent to the city of Anaheim would remain the same under the No-Build Alternative, as no capacity increasing or interchange improvements would occur along the SR-91 project limits. It is projected that operation performance along SR-91 through the city would continue to degrade in the future under the No-Build Alternative.
Circulation Policy 1.2.5: Work with Caltrans in analyzing the performance of freeway interchanges located in the City and seek appropriate improvements.	Conflict	No Conflict	The Build Alternative (Preferred Alternative) proposes improvements to freeway interchanges along the SR-91 project limits that are located in the city of Anaheim. More information can be found in Chapter 1. The performance of these interchanges was evaluated as part of the proposed project and the improvements proposed at the interchanges within the project limits are based on the analyses that were performed. No improvements to freeway interchanges along the SR-91 project limits that are located in the city of Anaheim would occur under the No-Build Alternative.

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy No-Build Alternative	Project Consistency with Plan, Goal, Objective, or Policy Build Alternative (Preferred Alternative)	Project Consistency with Plan, Goal, Objective, or Policy Consistency Analysis
Circulation Goal 2.2: Provide a safe circulation system.	Conflict	No Conflict	Traffic conditions along SR-91 are predicted to continue to degrade. The Build Alternative (Preferred Alternative) is expected to help provide a safe circulation system by improving capacity and reducing congestion along the SR-91 project limits. No capacity increasing or interchange improvements would occur under the No-Build Alternative, and traffic conditions along SR-91 are projected to worsen over time, which is expected to result in a decrease in traffic safety over time.
Circulation Policy 2.2.8: Support freeway improvements that remove through traffic from local and arterial streets.	Conflict	No Conflict	The Build Alternative (Preferred Alternative) supports improvements to SR-91 that are predicted to reduce delays at multiple intersections. For more information, refer to Section 2.1.5, *Traffic*. Under the No-Build Alternative, no capacity increasing or interchange improvements along the SR-91 project limits would occur, which would not improve operations or reduce delays to any local or arterial intersections.
Circulation Goal 4.1: Preserve and enhance uniquely scenic or special visual resource areas along highways and designated State scenic routes for the enjoyment of all travelers.	No Conflict	No Conflict	The Build Alternative (Preferred Alternative) would preserve the uniquely scenic areas along SR-91, which is a designated State Scenic Highway east of SR-55. For more information, refer to Section 2.1.6, *Visual/Aesthetics*. Because no improvements would occur under the No-Build Alternative, the existing uniquely scenic areas along SR-91 would remain the same.
Circulation Policy 4.1.2: Consider the unique natural features of the Hill and Canyon Area when arterial streets and highways are improved or constructed.	No Conflict	No Conflict	Proposed improvements of the Build Alternative (Preferred Alternative) would occur in a primarily urbanized portion of SR-91 and would not impact unique natural features of the Hill and Canyon Area. The No-Build Alternative would not include improvements along the SR-91 project limits that would affect unique natural features of the Hill and Canyon Area.

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy No-Build Alternative	Project Consistency with Plan, Goal, Objective, or Policy Build Alternative (Preferred Alternative)	Project Consistency with Plan, Goal, Objective, or Policy Consistency Analysis
Green Goal 8.1 Reduce locally generated emissions through improved traffic flows and construction management practices.	Conflict	No Conflict	The Build Alternative (Preferred Alternative) would generally reduce locally generated emissions through improved traffic flows along the SR-91 project limits. Construction of the Build Alternative (Preferred Alternative) would include best-management principles in order to reduce the amount of project-generated emissions during construction. For more information, refer to Section 2.2.6, *Air Quality*. No improvements to reduce the amount of locally generated traffic emissions would be implemented under the No-Build Alternative.
Noise Goal 2.1: Encourage the reduction of noise from transportation-related noise sources such as motor vehicles, aircraft operations, and railroad movements.	Conflict	No Conflict	The Build Alternative (Preferred Alternative) would implement noise-related abatement, as appropriate based on applicable regulations, along the project corridor as described in Section 2.2.7, *Noise*. The No-Build Alternative would not implement measures to reduce noise from existing transportation noise sources.
Community Development Policy 18.1.2: Explore opportunities to create enhanced, landscaped entries into East Anaheim from the Orange (SR-57) and the Riverside (SR-91) Freeways.	Conflict	No Conflict	The Build Alternative (Preferred Alternative) would include limited hardscape and/or landscaping in the median islands at several of the affected interchanges along the SR-91 project limits within the Caltrans ROW. No landscape improvements along the SR-91 project limits are proposed under the No-Build Alternative. However, it is expected that routine landscape maintenance would occur.
City of Orange General Plan			
Circulation Goal 2.0: Provide an effective regional transportation network.	Conflict	No Conflict	The Build Alternative (Preferred Alternative) would increase the capacity of SR-91, which is projected to improve the effectiveness of the regional transportation system. Capacity of SR-91 under the No-Build Alternative would remain the same, and no improvements to the regional transportation network would result.

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy No-Build Alternative	Project Consistency with Plan, Goal, Objective, or Policy Build Alternative (Preferred Alternative)	Project Consistency with Plan, Goal, Objective, or Policy Consistency Analysis
Growth Management Goal 1.0: Reduce traffic congestion within the City.	Conflict	No Conflict	The Build Alternative (Preferred Alternative) is projected to improve mobility and capacity while reducing congestion along SR-91 within the project limits, including the city of Orange. Traffic congestion within the city of Orange along the SR-91 project limits would remain the same under the No-Build Alternative, and is projected to deteriorate over time.
Growth Management Goal 2.0: Provide for adequate regional and local transportation facilities.	Conflict	No Conflict	The Build Alternative (Preferred Alternative) would help provide for adequate regional and local transportation facilities by improving mobility and capacity while reducing congestion along the SR-91 project limits. Under the No-Build Alternative, traffic conditions along the SR-91 project limits are expected to continue to worsen, which would not help provide for adequate regional and local transportation facilities.
Growth Management Policy 2.1: Cooperate with other agencies to address regional issues and opportunities related to growth, transportation, infrastructure, and other planning issues.	No Conflict	No Conflict	Caltrans and OCTA have developed an extensive outreach effort to ensure that all potentially affected jurisdictions are involved in the development of the Build Alternative (Preferred Alternative) to improve traffic conditions along the SR-91 project limits through their jurisdiction. Under the No-Build Alternative, current practices to cooperate with other agencies to address regional issues would remain the same.
Noise Goal 2.0: Minimize vehicular traffic noise in residential areas and near noise-sensitive land uses.	Conflict	No Conflict	The Build Alternative (Preferred Alternative) would implement noise-related abatement, as appropriate based on applicable regulations, along the SR-91 project limits as described in Section 2.2.7, *Noise*. The No-Build Alternative would not implement measures to reduce noise from existing transportation noise sources.
Noise Policy 2.4: Continue to work with the California Department of Transportation (Caltrans), the Orange County Transit Authority (OCTA), and Transportation Corridor Agencies (TCA) to install, maintain, and update freeway and highway rights-of-way	Conflict	No Conflict	The Build Alternative (Preferred Alternative) would be designed in cooperation with applicable public agencies to maintain adequate right of way buffers where practicable. Caltrans Traffic Noise Analysis Protocol is being followed to ensure that proper measures are taken to minimize transportation noise. The Build Alternative (Preferred Alternative) would implement

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy No-Build Alternative	Project Consistency with Plan, Goal, Objective, or Policy Build Alternative (Preferred Alternative)	Project Consistency with Plan, Goal, Objective, or Policy Consistency Analysis
buffers and soundwalls.			noise-related abatement, as appropriate based on applicable regulations, along the SR-91 project limits as described in Section 2.2.7, *Noise*. The No-Build Alternative would not implement any additional highway right of way buffers and would not implement measures to reduce noise from existing transportation noise sources.
Cultural Resources Goal 4.0: Identify and preserve archaeological and cultural resources.	No Conflict	No Conflict	All applicable laws and regulations would be followed in identifying and preserving potential historic resources to the greatest extent practicable. No NRHP or CRHR resources are expected to be affected by the Build Alternative (Preferred Alternative). Measures have been included that would minimize impacts in the event that resources are unexpectedly encountered during construction of the project. For more information, refer to Section 2.1.7, *Cultural Resources*. The No-Build Alternative would not include major improvements along the SR-91 project limits; therefore, no impacts on potential archaeological and cultural resources would occur.
City of Fullerton General Plan			
Built Environment Goal 5: A balanced system promoting transportation alternatives that enable mobility and an enhanced quality of life.	No Conflict	No Conflict	The Build Alternative (Preferred Alternative) is projected to improve existing transportation and mobility along the SR-91 project limits, including bike lane improvements, within the study area. Transportation and mobility conditions would remain the same along the SR-91 project limits under the No-Build Alternative.

Goal/Policy	Project Consistency with Plan, Goal, Objective, or Policy No-Build Alternative	Project Consistency with Plan, Goal, Objective, or Policy Build Alternative (Preferred Alternative)	Project Consistency with Plan, Goal, Objective, or Policy Consistency Analysis
Built Environment Policy 5.1: Circulation Between Cities. Support regional and subregional efforts to implement programs that coordinate the multimodal transportation needs and requirements across jurisdictions, including but not limited to the Master Plan of Arterial Highways, the Commuter Bikeways Strategic Plan, the Signal Synchronization Master Plan, the Orange County Congestion Management Plan, and the Growth Management Plan.	No Conflict	No Conflict	The Build Alternative (Preferred Alternative) would support efforts to address multimodal transportation needs by increasing the capacity of SR-91, which would improve mobility and accessibility for people and goods movement in the region. The project would also include bike lane improvements consistent with applicable multimodal plans for the area. The No-Build Alternative would not include capacity increasing or interchange improvements along the project limits of SR-91 and, therefore, would maintain the existing mobility and accessibility levels. No bike lane improvements would occur.
Built Environment Policy 8.1: Noise Reduction Measures. Support regional and subregional efforts to implement projects or programs that abate and/or attenuate noise across jurisdictions, particularly where the source is not under the City's authority.	No Conflict	No Conflict	Consistent with the Caltrans Traffic Noise Analysis Protocol, the Build Alternative (Preferred Alternative) would conduct noise analysis and implement noise-related abatement measures, as appropriate based on applicable regulations, along the SR-91 project limits as described in Section 2.2.7, *Noise*. The No-Build Alternative would not necessitate noise reduction measures as no construction would occur.

Source: SCAG 2016a, 2016b; OCTA 2012, 2014a, 2014b, 2015; City of Anaheim 2004a, 2004b; City of Anaheim 2018a, 2018b, 2018c; City of Orange 2010; City of Fullerton 2012.

Consistency with General Plans

The Build Alternative (Preferred Alternative) would be consistent with the applicable goals, policies, and objectives contained in the General Plans of the cities of Anaheim, Orange, Fullerton, and Placentia. Specifically, the project is consistent with the goals, policies, and objectives to improve regional transportation facilities, maximize the efficiency of the circulation system, and improve access to the city streets. In addition, implementation of the Build Alternative (Preferred Alternative) would not result in changes to existing land use patterns along SR-91 because SR-91 is an existing transportation facility that is located in a highly developed area, and the Build Alternative (Preferred Alternative) would result in a limited number of partial acquisitions. For more information regarding the effects of changes to land use on growth, refer to the discussion in Section 2.1.2, Growth. The Build Alternative (Preferred Alternative) would not require amendment of the affected cities' General Plans.

Parks and Recreation

The Build Alternative (Preferred Alternative) would not result in any permanent impacts on parks, recreational facilities, or resources that are protected by Section 4(f) of the Department of Transportation Act of 1966. All parks, trails, and other recreational facilities within 0.5 mile of the project were evaluated relative to the requirements of Section 4(f). It was determined that the project would not result in permanent use of Section 4(f) resources (see Appendix A). In addition, because no permanent acquisition of park land would occur, no public parks protected under the Park Preservation Act would be affected by the proposed project.

No-Build Alternative

Land Use

The No-Build Alternative would maintain the current configuration of SR-91 in the study area; therefore, no direct or indirect adverse impacts on land use or policies would occur as a result of the No-Build Alternative. The No-Build Alternative is inconsistent with various goals and policies, as identified in Table 2.1.1-5.

Parks and Recreation

The No-Build Alternative would maintain the current configuration of SR-91 in the study area. Under the No-Build Alternative, the project would not be constructed, and no impacts on parks or recreational activities would occur.

Temporary Impacts

Build Alternative (Preferred Alternative)

Land Use

The Build Alternative (Preferred Alternative) would result in temporary impacts in the form of temporary construction easements (TCEs) associated with the 4.91 acres of impacts on 16 larger parcels, made up of 20 APNs along the project corridor (refer to Table 2.1.3-9 in Section 2.1.3, Community Impacts). Temporary construction activities would include activities related to construction access and the construction of soundwalls, retaining walls, and sidewalks. The majority of these impacts would be associated with the 2.19-acre TCE on an Orange County Flood Control District–owned parcel adjacent to the Santa Ana River Trail/Bicycle Path, which may be used for construction staging. These temporarily disturbed areas would be restored to pre-project conditions upon completion of the project.

Table 2.1.1-6. Land Use Impacts in Study Area

	Temporary Impacts (Acres)	Permanent Impacts (Acres)
Single-family Residential	0.14	0.08
Multi-family Residential	0.07	0.00
Commercial	0.10	0.00
Industrial	0.31	0.34
Office	0.43	0.00
Water	1.62	0.01
Vacant	2.24	0.05

Parks and Recreation

The Santa Ana River Trail/Bicycle Path would be closed for approximately 8 months during construction at SR-91 over the trail, during which time falsework would be erected and then removed. A detour route would be provided during the closure period, and vehicular and pedestrian access to the Santa Ana River Trail/Bicycle Path would be maintained at all times during construction and operation of the Build Alternative (Preferred Alternative). The detour would guide trail users along East Riverdale Avenue between Tustin Avenue and Lakeview Avenue. The proposed detour route can be seen in Appendix A, Figure 4-2. Advance notification of temporary closure of the Santa Ana River Trail/Bicycle Path would be provided to all trail users so they can use alternative open trails, if needed. The 50-mile-long trail has numerous access points; therefore, there would be no impacts to accessibility to the trail. The trail would be reopened with full use after the completion of construction activities. Given that accessibility to the Santa Ana River Trail/Bicycle Path would be affected only temporarily, and no public park property would be permanently acquired, no public parks protected under the Park Preservation Act would be affected by the proposed project.

No-Build Alternative

Land Use

The No-Build Alternative would maintain the current configuration of SR-91 in the study area; therefore, no direct or indirect adverse impacts on land use or policies would occur as a result of the No-Build Alternative. The No-Build Alternative is inconsistent with various goals and policies, as identified in Table 2.1.1-5.

Parks and Recreation

The No-Build Alternative would maintain the current configuration of SR-91 in the study area. Under the No-Build Alternative, the project would not be constructed, and no impacts to parks or recreational activities would occur.

2.1.1.5 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The proposed project would not result in substantial permanent effects related to plan consistency and land use compatibility. The following measure would be implemented to address the proposed project's temporary construction impacts related to land use conflicts:

LU-1 The project will return any landscaping within the Caltrans right of way that is temporarily disturbed or removed during construction to pre-project or better conditions.

In addition to **PF T-1**, the following measure would be implemented to address the proposed project's temporary impacts on the Santa Ana River Trail/Bicycle Path:

LU-2 Caltrans and OCTA, in consultation with Cities and OC Parks, will finalize the detours at the Santa Ana River Trail/Bicycle Path in the Transportation Management Plan prior to closure of the trail in the project area. Caltrans/OCTA will coordinate with OC Parks to ensure a notice is posted on the website.

2.1.1.6 REFERENCES

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2.1.2 Growth

The analysis of the potential growth-inducing impacts of the proposed project is based on demographic information from the Southern California Association of Governments (SCAG) 2016–2040 Regional Transportation Plan (RTP) growth forecasts for Orange County and the cities of Anaheim, Orange, Fullerton, and Placentia.

2.1.2.1 REGULATORY SETTING

The Council on Environmental Quality (CEQ) regulations, which established the steps necessary to comply with the National Environmental Policy Act (NEPA) of 1969, require evaluation of the potential environmental effects of all proposed federal activities and programs. This provision includes a requirement to examine indirect effects, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations (40 Code of Federal Regulations [CFR] 1508.8) refer to these consequences as indirect impacts. Indirect impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

The California Environmental Quality Act (CEQA) also requires the analysis of a project's potential to induce growth. The CEQA guidelines (Section 15126.2[d]) require that environmental documents "…discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment…"

2.1.2.2 AFFECTED ENVIRONMENT

Under NEPA and CEQA, growth inducement is not necessarily considered detrimental, beneficial, or environmentally damaging. In general, growth induced by a project is considered a substantial impact if it directly or indirectly affects the ability of agencies to provide needed public services or if it can be demonstrated that the potential growth substantially affects the environment in some other way.

The evaluation of growth-related impacts presented in this section is based on EPA's *Guidance for Preparers of Growth-Related, Indirect Impact Analyses*. The first phase of analysis, called "first-cut screening," is designed to determine if potential growth related effects are likely and whether further analysis of the issue is necessary. If it is determined that the project could result in growth-related effects, then a second phase evaluation is conducted.

Many factors may affect the amount, location, and rate of growth in the region of a project. Such factors include:

- Market demand for housing, employment, and commercial services
- Desirability of the climate and the living or working environment
- Strength in local employment and the commercial economy
- Availability of roadway improvements
- Availability of services and infrastructure (e.g., schools, water)
- Land use and growth management policies of the local jurisdictions

The project study area, as well as all of Southern California, has experienced dramatic growth over the last 30 years, and this trend is expected to continue. Additional population and employment growth within the study area is expected to take place primarily through the redevelopment of existing land uses or infill development on vacant parcels, because the project area is generally considered to be built out. Land uses within the study area are already established, with limited opportunity for a new, unplanned large-scale development because of the general lack of available undeveloped land.

SCAG population, household, and employment estimates as well as annual average growth forecasts for cities within the study area and Orange County are provided in Tables 2.1.2-1 through 2.1.2-3. According to the forecasts, population growth in all project area cities, other than Orange, is projected to increase at a faster rate than Orange County. Housing demand growth in Anaheim and Fullerton is forecast to exceed such growth in the rest of Orange County. Employment growth in Anaheim and Fullerton is expected to exceed such growth in Orange County. The projected growth shown includes approved future development, as discussed in Section 2.1.1, Land Use.

Table 2.1.2-1. Projected Population Growth

Jurisdiction	2012	2040	Percent Change	Percent Average Annual Growth Rate
Orange County	3,071,600	3,461,500	12.7%	0.5%
Anaheim	345,300	403,400	16.8%	0.6%
Fullerton	138,000	160,500	16.3%	0.6%
Orange	138,500	153,600	10.9%	0.4%
Placentia	51,500	58,400	13.4%	0.5%

Source: SCAG 2016

Table 2.1.2-2. Projected Housing Demand Growth

Jurisdiction	2012	2040	Percent Change	Percent Average Annual Growth Rate
Orange County	999,500	1,152,300	15.3%	0.5%
Anaheim	99,200	122,600	23.6%	0.8%
Fullerton	45,500	55,200	21.3%	0.8%
Orange	43,600	49,300	13.1%	0.5%
Placentia	16,600	18,900	13.9%	0.5%

Source: SCAG 2016

Table 2.1.2-3. Projected Employment Growth**

Jurisdiction	2012	2040	Percent Change	Percent Average Annual Growth Rate
Orange County	1,526,500	1,898,900	24.4%	0.9%
Anaheim	177,900	245,600	38.1%	1.4%
Fullerton	60,800	94,100	54.8%	2.0%
Orange	94,100	105,500	12.1%	0.4%
Placentia	19,000	23,500	23.7%	0.8%

Source: SCAG 2016, State of California Employment Development Department 2020

**According to a May 22, 2020 media release from the State of California Employment Development Division, the state's unemployment rate rose to a record 15.5 percent. The Orange County unemployment rate rose to 13.8 percent at the same time. These unprecedented job losses are like nothing before seen in California history dating back to 1976, and are a direct result of the impacts of the COVID-19 pandemic. It is likely the job losses will be temporary and the economy is anticipated to rebound. This project is anticipated to assist with job creation.

2.1.2.3 ENVIRONMENTAL CONSEQUENCES

Permanent Impacts

Build Alternative (Preferred Alternative)

An assessment of potential growth-related impacts of the Build Alternative (Preferred Alternative) was completed using the "first-cut screening" analysis, as discussed below.

- *How, if at all, does the project potentially change accessibility?*

  The Build Alternative (Preferred Alternative) would not change currently accessible points along SR-91 or provide new access to the area. The Build Alternative (Preferred Alternative) would result in improvements to four existing interchanges as well as connectors to SR-57 and SR-55. These improvements would create benefits for those already traveling to work, shopping centers, or other destinations by improving travel times as a result of decreased congestion; however, no new on- or off-ramps to employment or commercial centers are proposed. The Build Alternative (Preferred Alternative) includes improvements to an existing freeway facility and would not provide new transportation facilities or new access points to areas previously not accessible. Therefore, the Build Alternative (Preferred Alternative) would not result in changes in accessibility to the transportation system in the study area.

- *How, if at all, do project type, project location, and growth pressure potentially influence growth?*

  The Build Alternative (Preferred Alternative) is not be expected to influence growth in study area cities or the county because it proposes improvements to an existing facility and existing interchanges. The proposed project does not provide new access to developable land, as much of the study area is built out. The Build Alternative (Preferred Alternative) would not induce or influence growth directly or indirectly because of minor changes in land use, and it is not anticipated to encourage population density or construction of additional housing.

  In terms of project-related growth, the proposed project is not growth inducing; it includes minor land use changes that would convert existing uses to transportation uses. The proposed project would not influence growth because it would accommodate existing and future plans for the project area. Because the proposed transportation improvements would accommodate existing and planned development, the proposed project would have a minor influence with respect to stimulating the location, rate, timing, or amount of growth locally or regionally. The Build Alternative (Preferred Alternative) includes capacity enhancements along an existing freeway corridor, which are intended to respond to expected demand and improve current operations.

- *Is project-related growth "reasonably foreseeable"?*

  Under NEPA, indirect impacts need only be evaluated if they are reasonably foreseeable as opposed to remote and speculative.

  As discussed above, the Build Alternative (Preferred Alternative) would not influence growth beyond those projects that are currently planned for the area (Table 2.1.1-3) and would not change the rate, type, or amount of growth. Therefore, no project-related growth would occur under the Build Alternative (Preferred Alternative).

- *To what extent would resources of concern be affected by this growth or land use change?*

  The Build Alternative (Preferred Alternative) is not anticipated to affect resources of concern, such as housing and/or jobs in the local study area. All land use plans in the county and the cities within the study area consider future growth. Service providers regularly evaluate growth trends and provide required infrastructure upgrades as needed.

Based on the analysis above, the Build Alternative (Preferred Alternative) does not require further analysis because growth-related impacts would not occur.

No-Build Alternative

The No-Build Alternative would not change existing accessibility along the SR-91 corridor and, therefore, would not influence growth along the corridor. The existing limitations caused by congestion on SR-91 would not negatively affect growth because the project area lacks developable land.

Temporary Impacts

Build Alternative (Preferred Alternative)

Any potential growth-related impacts of the Build Alternative (Preferred Alternative) would be permanent. There would be no temporary growth-inducing impacts under the Build Alternative (Preferred Alternative).

No-Build Alternative

The No-Build Alternative would have no temporary direct or indirect growth-inducing impacts because the proposed project would not be constructed along the SR-91 corridor.

2.1.2.4 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The proposed project is not growth inducing, and no further analysis of growth-related impacts is required. Therefore, no avoidance, minimization, and/or mitigation measures are required.

2.1.2.5 REFERENCES

Employment Development Department (EDD). 2020. *California unemployment rate rose to record 15.5 percent in April.* Available: https://edd.ca.gov/newsroom/unemployment-may-2020.htm. Accessed: May 27, 2020.

Southern California Association of Governments (SCAG). 2016. RTP Amendment #2 (p. 26). Available: http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS_amend02.pdf.

2.1.3 Community Impacts

This section examines the potential for effects on communities within the limits of the proposed project. Primary data sources used to inform analysis in this section include the 2010 Census (U.S. Census Bureau 2010) and the 2008–2012 American Community Survey (U.S. Census Bureau 2012).

2.1.3.1 COMMUNITY CHARACTER AND COHESION

Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969, as amended, established that the federal government use all practicable means to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 United States Code [USC] 4331[b][2]). The Federal Highway Administration (FHWA) in its implementation of NEPA (23 USC 109[h]) directs that final decisions on projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as destruction or disruption of human-made resources, community cohesion, and the availability of public facilities and services.

Under the California Environmental Quality Act (CEQA), an economic or social change by itself is not to be considered a significant effect on the environment. However, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether the physical change is significant. Since this project would result in physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project's effects.

Affected Environment

The study area for community character and cohesion includes portions of the cities of Anaheim, Placentia, Orange, and Fullerton, and parts of unincorporated Orange County, specifically the 12 census tracts adjacent to the project area (Census Tracts 218.13, 219.03, 116.02, 117.14, 219.15, 762.01, 762.02, 864.02, 864.04, 864.06, 864.07, and 117.20, which are shown on Figure 2.1.3-1). Data presented in this section are based on census tract information available from the 2010 Census and the 2008–2012 American Community Survey.

A community's character encompasses the demographic characteristics, housing characteristics, economic data and trends, and circulation and access assets that make it unique and establish a sense of place for its residents. Community cohesion is the degree to which residents have a "sense of belonging" to their neighborhood, a level of commitment, and a strong attachment to neighbors, groups, and institutions, usually as a result of continued association over time. Generally, the impacts of transportation projects tend to be more disruptive to cohesive communities. Some specific indicators of community cohesion include:

- **Ethnic Homogeneity**. Ethnically homogenous areas are often highly cohesive because of common traditions, values, and languages.
- **Larger Household Size.** Single-person households tend to correlate with lower cohesion compared with communities composed of households with two or more people.

- **Income and Poverty.** Lifestyle choices that prompt interaction and build community, such as schooling and education, shopping, employment, recreation, community service utilization, and other activities, are often determined by financial status.
- **Employment and Income.** Employment status can lead to community cohesion through interaction at work as well as lifestyle choices associated with income.
- **Frequent Community Activity and Personal Contact:** Schools, community centers, and other public facilities are important to neighborhood identity and serve as important gathering and meeting facilities for communities.

All census tracts within 0.25 mile of the Build Alternative (Preferred Alternative) footprint were identified to develop the study area, which consists of 12 census tracts in their entirety. As shown in Figure 2.1.3-1, the study area is larger than the area that would be directly affected by project construction and right-of-way (ROW) acquisitions to provide a broader picture of community character. The study area falls within multiple jurisdictions, including the Orange County cities of Anaheim, Fullerton, Orange, and Placentia and some unincorporated areas of Orange County. Table 2.1.3-1 lists the affected study area census tracts and associated jurisdictions.

Table 2.1.3-1. Study Area Census Tracts

Census Tract	Jurisdiction
218.13	Anaheim, Placentia
219.03	Anaheim
116.02	Anaheim, Fullerton
117.14	Anaheim, Placentia, unincorporated Orange County
219.15	Anaheim, Orange
762.01	Anaheim, Orange, unincorporated Orange County
762.02	Anaheim, Orange, unincorporated Orange County
864.02	Anaheim
864.04	Anaheim
864.06	Anaheim
864.07	Anaheim, unincorporated Orange County
117.20	Anaheim, Placentia

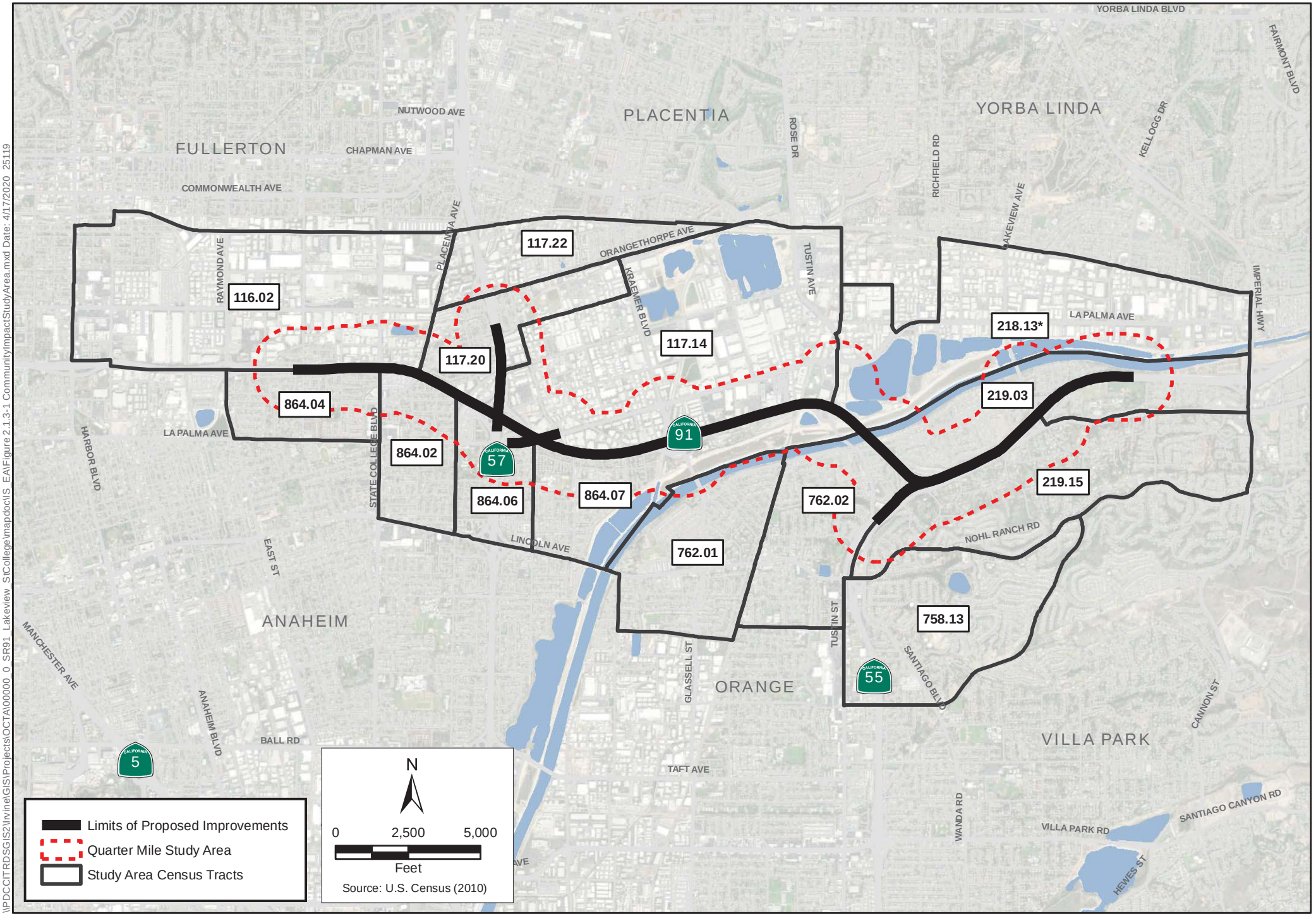


Figure 2.1.3-1
Community Impact Study Area
SR-91 Improvement Project Between SR-57 to SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Neighborhoods

The neighborhoods listed below, within the cities of Anaheim, Fullerton, Orange, and Placentia, were identified within the study area. Neighborhoods are not officially designated by local municipalities

Southeast Fullerton

This neighborhood in southeast Fullerton and northwest Anaheim can generally be bound by Harbor Boulevard to the west, South Placentia Avenue to the east, East Commonwealth Avenue to the north, and SR-91 so the south. The primary land uses within the neighborhood are industrial and commercial, but residential neighborhoods are also included. Single-family homes and apartment complexes, which are both owned and rented, are the primary types of residences within the neighborhood. Lemon Park and Chapman Park are two parks with baseball fields and picnic areas within the neighborhood.

Southwest Placentia Neighborhood

This neighborhood is in southwest Placentia and is generally bound by South Placentia Avenue and SR-57 within the study area. The primary land uses within the neighborhood are residential and industrial. The residences are primarily single-family homes. Melrose Elementary, which includes two baseball fields, is also within this neighborhood.

Central Anaheim Neighborhood

The Central Anaheim Neighborhood is in the western half of Anaheim and is bound by Anaheim Colony to the west, Santa Ana River to the east, SR-91 to the north, and Lincoln Avenue to the south. The primary land use within the neighborhood is residential, but commercial stores are also included. The residences are primarily single-family homes, but apartment complexes are also present. Edison Elementary, Edison Park, Pioneer Park, Rio Vista Elementary School, and Rio Vista Park, which include baseball fields and barbecues, are within the neighborhood. In addition, the Santa Ana River Trail, which runs along the Santa Ana River, is on the eastern perimeter of the neighborhood.

Anaheim Canyon Neighborhood

The Anaheim Canyon Neighborhood is in the western half of Anaheim and bound by SR-57 to the west, North Tustin Avenue to the east, East Orangethorpe Avenue to the north, and SR-91 to the south. The primary land use within the neighborhood is industrial; industrial buildings are located throughout the neighborhood. Residential and commercial land uses are not a major component of the neighborhood, though the eastern end of the neighborhood has more commercial restaurant facilities and stores. The following bodies of water are within the neighborhood: Kraemer Basin, Miller Basin, Miraloma Basin, and Anaheim Lake.

North Orange Neighborhood

This neighborhood in northern Orange is bound primarily by the Santa Ana River to the west and north and SR-55 to the east. The primary land use within the neighborhood is residential, specifically, single-family homes. The neighborhood includes Steve Ambriz Memorial Park, Olive Park, Olive Elementary School, Fletcher Elementary School, and Eisenhower Park, which include recreational facilities such as baseball fields and playground infrastructure. In addition, Santa Ana River Trail runs along the north of this neighborhood.

Anaheim Hills Neighborhood

The Anaheim Hills neighborhood is in the eastern half of Anaheim and is bound by SR-91 and SR-55 to the west, Santa Ana River to the north, and Nohl Ranch Road to the south. The primary land use within the neighborhood is residential, specifically, single-family homes. Riverdale Park, Peralta Canyon Park, and Pelanconi Park, which include recreational spaces, are within neighborhood.

Age Distribution

Age can be an important indicator of a community's character because certain age groups, particularly the elderly, tend to be more active in their communities. The age distribution within each of the census tract study areas, as shown in Table 2.1.3-2, is generally comparable to that of the County. However, Census Tracts 117.14 and 117.20 have a significantly lower population over the age of 65, at 2.2 percent and 3.1 percent, respectively, as compared to the County, where 11.6 percent of the population is over the age of 65. Other outliers include Census Tract 218.13, where 24.0 percent of the population is over the age of 65 and the median age is almost 52 years of age, and Census Tract 219.15, where 21.5 percent of the population is over the age of 65 and the median age is 49 years of age. However, it is important to note that Census Tract 218.13 only had a population of 25 at the time of the 2010 Census, which is a much smaller sample size than the rest of the census tract study areas and, therefore, cannot be effectively compared.

The proportion of the population under the age of 18 in the County (24.5 percent) is comparable to each of the study area census tracts except for Census Tract 117.20, where 37.5 percent of the population is under 18 years of age, and Census Tract 218.13, where 4 percent of the population is under 18 years of age. As described above, Census Tract 218.13 only had a population of 25 at the time of the 2010 Census and, therefore, cannot be effectively compared.

Table 2.1.3-2. Age Distribution Demographics in the Study Area Census Tracts

Jurisdiction	Total Population	Age Group (%)*< 18	Age Group (%)*18 to 64	Age Group (%)*65+	Median Age
Orange County	3,010,232	24.5	63.8	11.6	36.2
City of Anaheim	336,265	27.3	63.5	9.3	32.4
City of Fullerton	135,161	23.3	64.9	11.7	34.8
City of Orange	136,416	23.5	65.7	10.7	34.8
City of Placentia	50,533	24.6	62.8	12.6	36.0
Study Area Census Tracts					
218.13 *(Anaheim, Placentia)*	25	4.0	72.0	24.0	51.8
219.03 *(Anaheim)*	4,034	24.4	62.7	12.9	39.1
116.02 *(Anaheim, Fullerton)*	5,237	28.2	60.0	11.8	32.1
117.14 *(Anaheim, Placentia, unincorporated Orange County)*	499	24.6	73.1	2.2	27.7
219.15 *(Anaheim, Orange)*	3,985	18.0	60.6	21.5	49.0
762.01 *(Anaheim, Orange, unincorporated Orange County)*	6,772	21.2	68.2	10.7	36.1

Jurisdiction	Total Population	Age Group (%)*< 18	Age Group (%)*18 to 64	Age Group (%)*65+	Median Age
762.02 *(Anaheim, Orange, unincorporated Orange County)*	5,812	25.1	64.5	10.5	35.8
864.02 *(Anaheim)*	5,651	27.6	64.1	8.4	30.9
864.04 *(Anaheim)*	6,546	29.1	64.0	6.8	29.9
864.06 *(Anaheim)*	4,330	27.9	64.4	7.8	29.7
864.07 *(Anaheim, unincorporated Orange County)*	6,488	25.5	67.3	7.2	30.7
117.20 *(Anaheim, Placentia)*	7,329	37.5	59.5	3.1	24.5

Source: U.S. Census Bureau 2010.
*Percentages may not add up to 100% due to rounding.

Ethnic and Racial Demographics

Table 2.1.3-3 shows the distribution of the population by ethnic and racial demographic characteristics within the study area jurisdictions and census tracts. The majority of the population within the census tract study area is of Hispanic or Latino descent, constituting an average of 52.5 percent within the census tract study areas. This is higher than the County average of 33.7 percent but comparable to the city of Anaheim average of 52.8 percent, which is where the majority of the study area is located. The overall ethnic composition of the rest of the census tract study areas are roughly comparable to that of the County.

Table 2.1.3-3. Race and Ethnicity in the Study Area Census Tracts

Jurisdiction	Total Population	White, Non-Hispanic (%)	Hispanic or Latino[1] (%)	Black (%)	American Indian/ Native Alaskan (%)	Asian (%)	Hawaiian/ Pacific islander (%)	Other (%)	Two or More Races (%)
Orange County	3,010,232	44.1	33.7	1.5	0.2	17.7	0.3	0.2	2.4
City of Anaheim	336,265	27.5	52.8	2.4	0.2	14.6	0.4	0.2	1.8
City of Fullerton	135,161	38.2	34.4	2.1	0.2	22.6	0.2	0.2	2.2
City of Orange	136,416	46.8	38.1	1.4	0.3	11.1	0.2	0.2	2.0
City of Placentia	50,533	44.7	36.4	1.6	0.2	14.8	0.1	0.1	2.0
Study Area Census Tracts									
218.13 *(Anaheim, Placentia)*	25	44.0	20.0	0.0	0.0	36.0	0.0	0.0	0.0
219.03 *(Anaheim)*	4,034	48.8	29.2	1.7	0.2	16.6	0.5	0.3	2.7
116.02 *(Anaheim, Fullerton)*	5,237	14.8	78.9	1.7	0.1	3.6	0.2	0.1	0.6
117.14 *(Anaheim, Placentia, unincorporated Orange County)*	499	19.0	70.9	2.0	0.0	6.8	0.0	0.0	1.2
219.15 *(Anaheim, Orange)*	3,985	61.0	14.2	1.2	0.1	20.1	0.0	0.1	3.4
762.01 *(Anaheim, Orange, unincorporated Orange County)*	6,772	50.6	28.4	2.0	0.1	16.7	0.2	0.2	1.9
762.02 *(Anaheim, Orange, unincorporated Orange County)*	5,812	49.3	38.6	1.9	0.5	7.2	0.6	0.1	1.9

Jurisdiction	Total Population	White, Non-Hispanic (%)	Hispanic or Latino[1] (%)	Black (%)	American Indian/ Native Alaskan (%)	Asian (%)	Hawaiian/ Pacific islander (%)	Other (%)	Two or More Races (%)
864.02 *(Anaheim)*	5,651	20.2	68.8	1.2	0.2	7.9	0.2	0.2	1.3
864.04 *(Anaheim)*	6,546	10.1	76.9	0.4	0.3	10.9	0.1	0.1	0.8
864.06 *(Anaheim)*	4,330	25.1	59.5	1.8	0.3	11.2	0.3	0.2	1.8
864.07 *(Anaheim, unincorporated Orange County)*	6,488	30.3	53.8	2.8	0.2	10.0	0.8	0.2	2.0
117.20 *(Anaheim, Placentia)*	7,329	4.5	91.0	1.2	0.3	2.4	0.1	0.0	0.5

Source: U.S. Census Bureau 2010.

[1] From the 2010 Census. The Hispanic/Latino population is not considered a race but rather an ethnicity; therefore, the Hispanic/Latino category may include more than one race. For more information on understanding race and Hispanic origin data, please see the Census 2010 Brief entitled, Overview of Race and Hispanic Origin: 2010, issued March 2011: https://www.census.gov/prod/cen2010/briefs/c2010br-02.pdf.

Of the study area census tracts, all but five have Hispanic or Latino populations that constitute more than 50 percent of the population. Census Tract 117.20 has the highest percentage of Hispanic or Latino populations, at 91 percent. Aside from Hispanics and Latinos, white, non-Hispanic populations account for a little over 31 percent of the total study area population, followed by Asian populations at 12.5 percent. No other ethnic group accounts for more than two percent of the total population.

Economic Conditions

Table 2.1.3-4 provides the median household income of the study area jurisdictions and census tracts, with the exception of Census Tract 218.13 (U.S. Census median household income data not available for Census Tract 218.13 because too few sample observations were available to compute an estimate). The poverty level for the United States is defined annually by the Department of Health and Human Services (DHHS). In 2010, it was $22,050 (DHHS 2010) for a family of four; in 2017, it was $24,600 (DHHS 2017). Median household income within the study area census tracts, on average, is lower than it is in the County. However, all 11 census tracts with available income data were found to have a median household income above the poverty threshold for a family of four.

Table 2.1.3-4. Median Household Income in the Study Area Census Tracts**

Jurisdiction	Median Household Income[1]
Orange County	$75,566
City of Anaheim	$59,627
City of Fullerton	$67,617
City of Orange	$78,678
City of Placentia	$75,693
Study Area Census Tracts	
218.13 *(Anaheim, Placentia)*	N/A*
219.03 *(Anaheim)*	$84,430
116.02 *(Anaheim, Fullerton)*	$52,664
117.14 *(Anaheim, Placentia, unincorporated Orange County)*	$86,563
219.15 *(Anaheim, Orange)*	$104,667

Jurisdiction	Median Household Income[1]
762.01 *(Anaheim, Orange, unincorporated Orange County)*	$94,519
762.02 *(Anaheim, Orange, unincorporated Orange County)*	$80,357
864.02 *(Anaheim)*	$66,894
864.04 *(Anaheim)*	$51,438
864.06 *(Anaheim)*	$57,778
864.07 *(Anaheim, unincorporated Orange County)*	$58,454
117.20 *(Anaheim, Placentia)*	$36,982

Source: U.S. Census Bureau 2012, EDD 2020.

*U.S. Census median household income data not available for Census Tract 218.13 because too few sample observations were available to compute an estimate.

**According to a May 22, 2020 media release from the State of California Employment Development Division (EDD), the state's unemployment rate rose to a record 15.5 percent. The Orange County unemployment rate rose to 13.8 percent at the same time. These unprecedented job losses are like nothing before seen in California history dating back to 1976 and are a direct result of the impacts of the COVID-19 pandemic. It is likely the job losses will be temporary, and the economy is anticipated to rebound. This project is anticipated to assist with job creation.

[1] Data are based on a sample and are subject to sampling variability. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see Accuracy of the Data). The effect of nonsampling error is not represented in these tables.

Among study area census tracts, two (Census Tracts 219.15, 762.01) have median household incomes that are higher than $90,000. Census Tract 117.20 has the lowest median household income at $36,982 (see Figure 2.1.3-2). In all jurisdictions and census tracts presented in Table 2.1.3-4, the median household income is considerably above the 2010 DHHS poverty threshold of $22,050, which is the year that corresponds with the available census data.

Housing

Larger household sizes tend to have higher community cohesion as compared to single-person households. As shown in Table 2.1.3-5, total housing units and average household size are presented, which can be used to understand how a transportation project could affect the character and cohesion of the community.

Table 2.1.3-5. Housing Characteristics in the Study Area

Jurisdiction	Total Housing Units	Average Household Size
Orange County	1,048,907	2.99
City of Anaheim	104,237	3.38
City of Fullerton	47,869	2.91
City of Orange	45,111	3.00
City of Placentia	16,872	3.07
Study Area Census Tracts		
218.13 *(Anaheim, Placentia)*	11	2.5
219.03 *(Anaheim)*	1,216	3.35
116.02 *(Anaheim, Fullerton)*	1,506	3.69
117.14 *(Anaheim, Placentia, unincorporated Orange County)*	397	3.00
219.15 *(Anaheim, Orange)*	1,494	2.72
762.01 *(Anaheim, Orange, unincorporated Orange County)*	2,500	2.82
762.02 *(Anaheim, Orange, unincorporated Orange County)*	2,005	3.03
864.02 *(Anaheim)*	1,406	4.11
864.04 *(Anaheim)*	1,498	4.50
864.06 *(Anaheim)*	1,394	3.30
864.07 *(Anaheim, unincorporated Orange County)*	2,125	3.17
117.20 *(Anaheim, Placentia)*	1,504	5.15

Source: U.S. Census Bureau 2010.

Average household size within the census tract study areas is generally comparable to the County average of 2.99 except for Census Tracts 864.02, 864.04, and 117.20, which have average household sizes of 4.11, 4.50, and 5.15, respectively.

Local Businesses

As described in Section 2.1.1, Land Use, the study area consists primarily of single-family residential, industrial, multi-family residential, and commercial land uses. Adjacent to the Tustin Avenue on-ramp for eastbound SR-91 is a 2.5-acre area of commercial uses, including parking lots, office space, and warehouses.

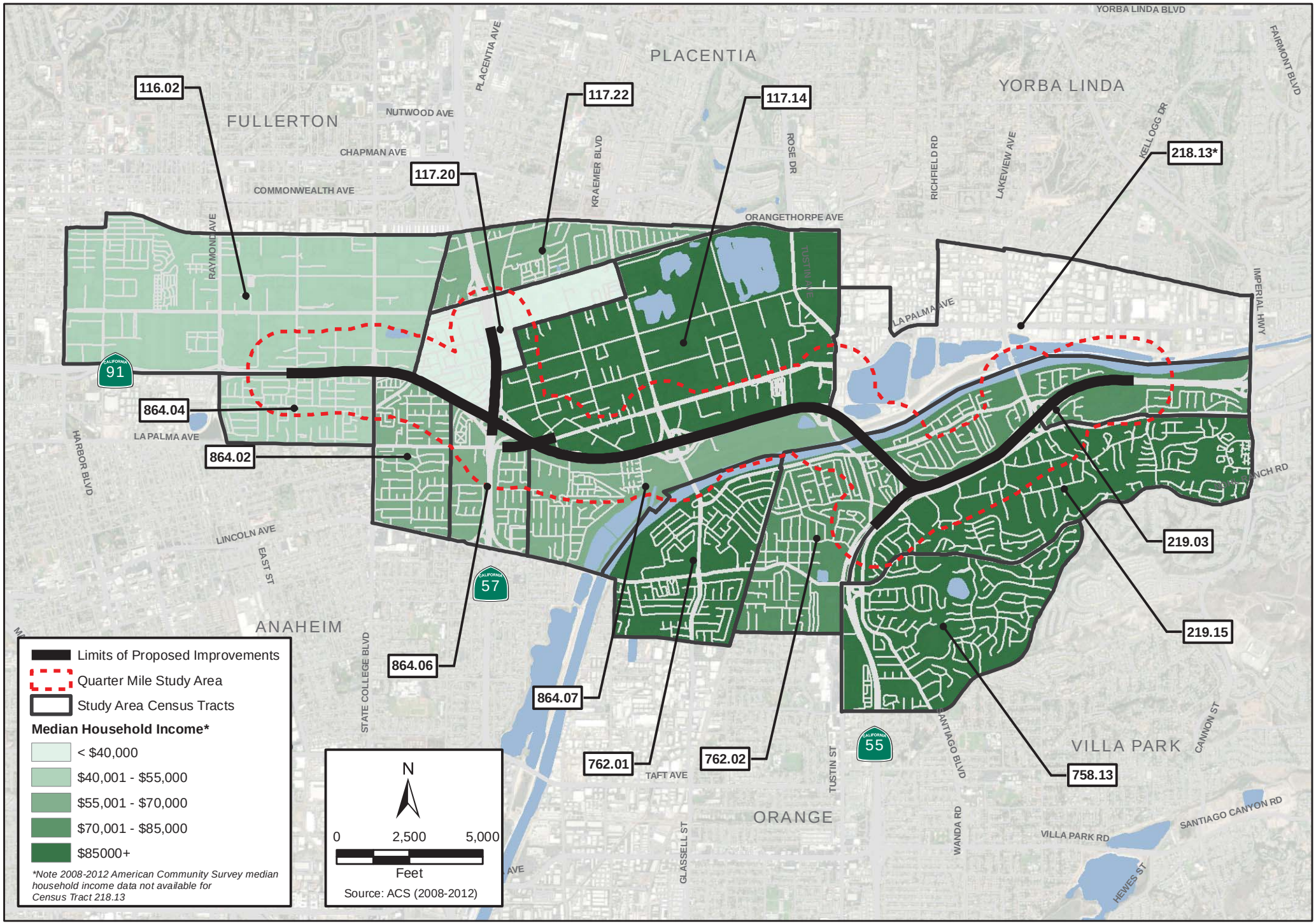


Figure 2.1.3-2
Median Household Income of Study Area Census Tracts
SR-91 Improvement Project Between SR-57 to SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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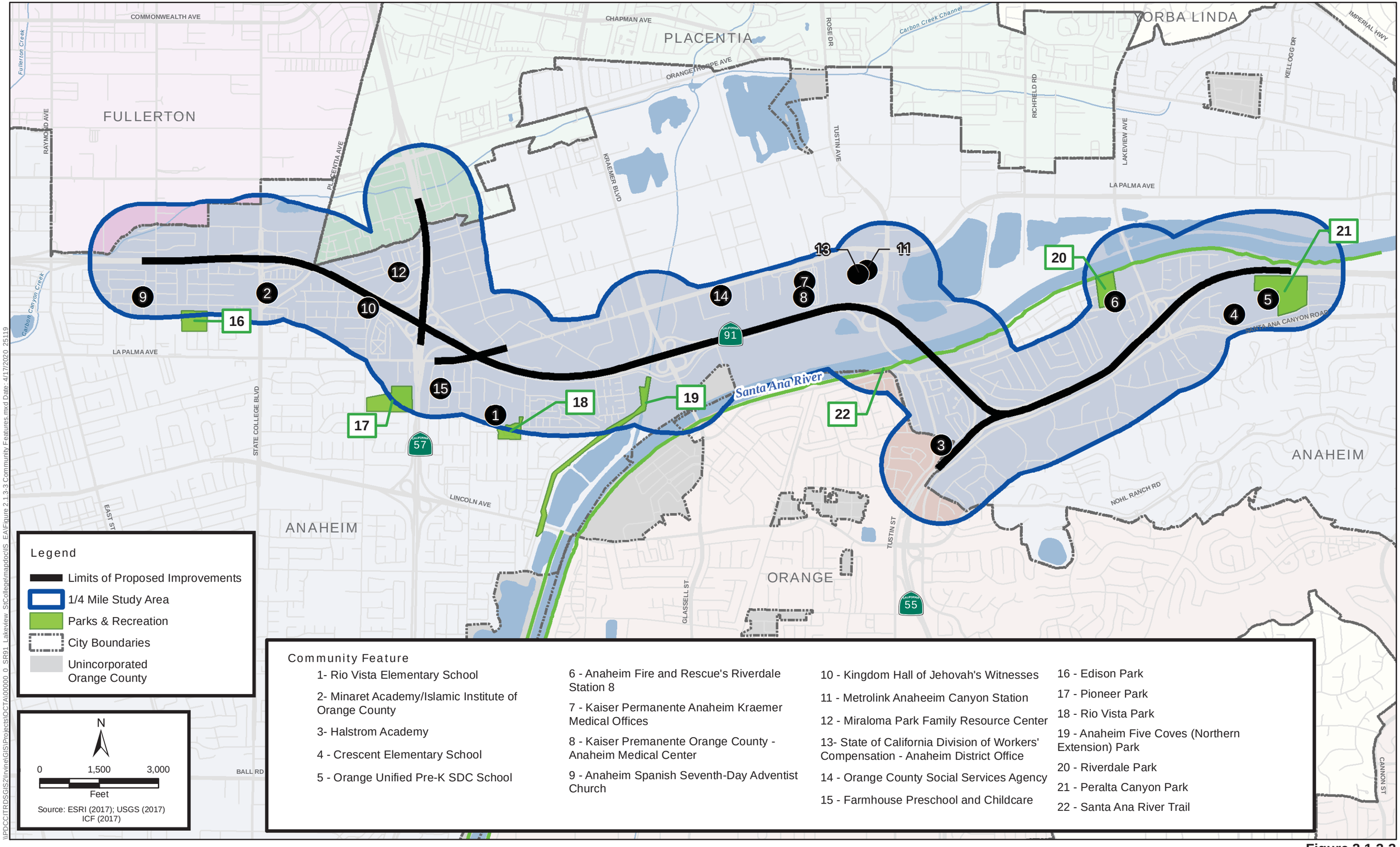
Community Services

Table 2.1.3-6 lists community services and facilities within the 0.25 mile study area that could be critical resources for establishing the identity of a particular neighborhood or community. These facilities are also shown on Figure 2.1.3-3.

Table 2.1.3-6. Community Facilities and Public Services by City in the Study Area Census Tracts

Facility Name	Location	Location Relative to the Project
Schools		
Rio Vista Elementary School	310 N. Rio Vista St., Anaheim, CA 92806	0.1 mile south
Minaret Academy	1220 N. State College Blvd., Anaheim, CA 92806	0.05 mile south
Halstrom Academy – Anaheim Hills	3111 N. Tustin St., Suite 240, Orange, CA 92865	Adjacent
Crescent Elementary School	5001 E. Gerda Dr., Anaheim, CA 92807	0.2 mile south
Orange Unified Pre-K SDC School	5125 E. Gerda Dr., Anaheim, CA 92807	0.1 mile south
Parks and Recreational Facilities		
Anaheim Five Coves – Northern Extension (Planned)	Along the Santa Ana River from Lincoln Avenue to Frontera Street	Adjacent
Edison Park	1145 N. Baxter Street, Anaheim, CA 92805	0.2 mile south
Peralta Canyon Park	115 N. Pinney Drive, Anaheim, CA 92805	Adjacent
Pioneer Park	2565 E. Underhill Avenue, Anaheim, CA 92805	0.14 mile southwest
Rio Vista Park	310 N. Park Vista Street, Anaheim, CA 92805	0.2 mile south
Riverdale Park	4545 E. Riverdale Avenue, Anaheim, CA 92805	0.1 mile west
Santa Ana River Trail/Bicycle Path	The trail begins in Huntington Beach and ends in San Bernardino. The trail runs throughout the study area.	Adjacent
Fire Department Facilities		
Anaheim Fire and Rescue's Riverdale Station 8	4555 E. Riverdale, Anaheim, CA 92805	0.1 mile west
Hospitals and Medical Facilities		
Kaiser Permanente Anaheim Kraemer Medical Offices	3460 E. La Palma Ave., Anaheim, CA 92806	0.1 mile north
Kaiser Permanente Orange County – Anaheim Medical Center	3440 E. La Palma Ave., Anaheim, CA 92806	0.05 mile north
Religious Facilities		
Anaheim Spanish Seventh-Day Adventist Church	1457 E. Romneya Ave., Anaheim, CA 92805	0.1 mile south
Kingdom Hall of Jehovah's Witnesses	1150 N. Sunkist Way, Anaheim, CA 92806	Adjacent
Public Transportation Facilities		
Metrolink Anaheim Canyon Station	1039 N. PacifiCenter Dr., Anaheim CA 92806	0.2 mile west
Government Buildings/Social Services		
Miraloma Park Family Resource Center	2600 E. Miraloma Way, Anaheim, CA 92806	0.08 mile west
State of California Division of Workers' Compensation – Anaheim District Office	1065 N. PacifiCenter Dr., Suite 170, Anaheim, CA 92806	0.1 mile north
Orange County Social Services Agency	3320 E. La Palma Ave., Anaheim, CA 92806	0.2 mile north
Day Care Facilities		
Farmhouse Preschool and Childcare	2651 E. Jackson Ave., Anaheim, CA 92806	0.1 mile south

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Legend

- Limits of Proposed Improvements
- 1/4 Mile Study Area
- Parks & Recreation
- City Boundaries
- Unincorporated Orange County

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Feet

Source: ESRI (2017); USGS (2017)
ICF (2017)

Community Feature

1- Rio Vista Elementary School

2- Minaret Academy/Islamic Institute of Orange County

3- Halstrom Academy

4 - Crescent Elementary School

5 - Orange Unified Pre-K SDC School

6 - Anaheim Fire and Rescue's Riverdale Station 8

7 - Kaiser Permanente Anaheim Kraemer Medical Offices

8 - Kaiser Premanente Orange County - Anaheim Medical Center

9 - Anaheim Spanish Seventh-Day Adventist Church

10 - Kingdom Hall of Jehovah's Witnesses

11 - Metrolink Anaheeim Canyon Station

12 - Miraloma Park Family Resource Center

13- State of California Division of Workers' Compensation - Anaheim District Office

14 - Orange County Social Services Agency

15 - Farmhouse Preschool and Childcare

16 - Edison Park

17 - Pioneer Park

18 - Rio Vista Park

19 - Anaheim Five Coves (Northern Extension) Park

20 - Riverdale Park

21 - Peralta Canyon Park

22 - Santa Ana River Trail

\\PDCCITRDSGIS2\Irvine\GIS\Projects\OCTA\00000 0_SR91_Lakeview_StCollege\mapdoc\IS_EA\Figure 2.1.3-3 Community Features.mxd Date: 4/17/2020 25119

Figure 2.1.3-3
Community Features
SR-91 Improvement Project Between SR-57 to SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Environmental Consequences

Permanent Impacts

Build Alternative (Preferred Alternative)

The Build Alternative (Preferred Alternative) would not directly or indirectly introduce any permanent adverse effects to community cohesion because improvements would be made to an existing transportation facility and would not result directly in the construction of any new housing or business facilities and would not introduce any new facilities that would divide existing communities. Improvements would be made mostly within the ROW of the existing highway to improve capacity, reduce congestion, and reduce weaving and merging between consecutive ramps at several interchanges. Permanent changes to on- and off-ramps would include improvements to the SR-91/State College Boulevard westbound on- and off-ramps, the existing Glassell Street on- and off-ramps in the eastbound direction, the existing Tustin Avenue off-ramp and loop on-ramp in the eastbound direction, and the existing SR-91 westbound on- and off-ramps at the SR-91/Lakeview Avenue interchange. Changes to community character in the East Miraloma Avenue/North Kraemer Boulevard Neighborhood would include the addition of urbanizing elements (travel lane, barrier, and chain link fencing). New hardscape elements associated with the new Lakeview Avenue overcrossing bridge and soundwall would be introduced in the East Santa Ana Canyon Avenue/Old Canyon Road Neighborhood. Because these additions would be constructed along an existing corridor, only minor impacts on communities' visual character and quality are anticipated.

The project may also require the relocation of two existing high mast stadium lights within Caltrans right-of-way (approximately 10 to 20 feet to the east or west) to allow for the proposed SR-91/SR-57 interchange improvements. The relocation of the two lights by 10 to 20 feet closer to the center of the interchange is not anticipated to affect any nearby residential communities.

No full acquisitions, residential displacements, or non-residential displacements are proposed under the Build Alternative (Preferred Alternative). As such, the project would not have an adverse impact on population characteristics, housing mixture, economic conditions, or supporting community services within the study area, outside of what is already planned by the county or city and would occur with or without this project. The reduced amount of congestion and length of congestion periods in the study area could have a positive effect on community character, sense of place, and business activity because the project is projected to improve existing and projected future traffic conditions, as discussed in Section 2.1.8, *Traffic and Transportation/Pedestrian and Bicycle Facilities*.

One parking space at the commercial center on Tustin Avenue would be removed; however, the City of Anaheim's parking standard (Section 18.42.040 of Anaheim's Municipal Code) will continue to be met despite the loss of one parking space. Therefore, no adverse impact on businesses in this commercial lot would occur because access would be restored.

Improved bicycle and pedestrian facilities in the vicinity of project area would improve bicycle and pedestrian access and safety, which could increase community cohesion. In addition, because SR-91 is an existing highway facility, the project would not divide any existing neighborhoods or communities, separate residents from community facilities, or increase urbanization or isolation.

No-Build Alternative

Under the No-Build Alternative, no new planned improvements along the SR-91 mainline and various interchanges, ramps, and intersections would be introduced as part of this project; therefore, there would be no permanent or temporary direct or indirect effects on community character or cohesion under this alternative. However, there exists the potential for community cohesion and the sense of belonging to be affected by worsening congestion on and around SR-91 if no improvements are made to the existing facility.

Temporary Impacts

Build Alternative (Preferred Alternative)

Construction associated with the Build Alternative (Preferred Alternative) would result in temporary short-term effects on community character. Road detours, ramp closures, and access restrictions due to construction could result in traffic delays and inconveniences for drivers, bicyclists, or pedestrians who live in, commute through, or access the study area. Implementation of project feature PF CI-2 (SSP Section 7-1.03) would require access to businesses in the area to be maintained through the duration of construction, including any temporary ramp closures. During construction, the existing Lakeview Avenue overcrossing bridge would be replaced with a new bridge, and the existing Lakeview Avenue bridge would be closed temporarily, with northbound detours along East Santa Ana Canyon Road and southbound detours through a temporary pavement area across Lakeview Avenue. Temporary closure of the Tustin Avenue bridge would create northbound detours along East Santa Ana Canyon Road and southbound detours along Tustin Avenue. The Kraemer Boulevard and Glassell Street temporary closure would involve a detour of westbound traffic onto Kraemer Boulevard. A temporary pavement area would be constructed across Glassell Street, and signals would be temporarily modified. Temporary closure of the La Palma Avenue overcrossing would involve temporary ramp closures and a detour of eastbound SR-91 traffic onto northbound SR-57. When possible, ramp closures would occur at night, with ramps re-opening to commuter traffic in the morning. Ramp closures would not exceed ten consecutive days/nights, and no two consecutive ramps would be closed at the same time. Weekend closures would most likely be the longest full ramp closures.

Access to community facilities listed in Table 2.1.3.6 would be maintained. The Santa Ana River Trail/Bicycle Path would be temporarily closed for approximately 8 months in order to construct the Santa Ana River Bridge; however, a detour would be provided. Please refer to Appendix A for additional information on the temporary closure of the Santa Ana River Trail/Bicycle Path, as well as the proposed detour route.

During construction, the bicycle lane along Frontera Street, between La Palma Avenue and Glassell Street, would be shifted slightly to accommodate construction of a soundwall. The lane would remain open, thus a detour would not be needed. Parking along this segment of Frontera Street would be temporarily affected during construction of the proposed project. Additionally, approximately 8 parking spaces at APN 360-212-06 would be temporarily affected during construction. The parking area at APN 360-212-06 currently has 141 spaces; during construction, 133 parking spaces would be available. Per Section 18.42.040 of Anaheim's Municipal Code, the parking requirement for commercial use is four spaces per 1,000 square feet of gross floor area. The total square footage for the commercial center is 27,874 square feet. Based on this square footage and the parking standard, the site would be required to provide 112 spaces. The parking standard would continue to be met, despite the temporary loss of eight parking spaces.

Additional potential construction-period impacts would include increased emissions, noise, and vibration as well as visual changes and minor utility interruptions. Because of the temporary and intermittent nature of these impacts, it is not expected that construction would result in major hardships to local businesses or residents such that there would be long-term impacts on community character or a sense of belonging. As such, impacts on the community would be minimal and would not adversely affect community cohesion under the Build Alternative (Preferred Alternative). Given the affected communities' proximity to and familiarity with the existing highway corridor, temporary impacts from project implementation would not alter community character considerably. With implementation of measure **PF T-1**, as discussed in Section 2.1.5, *Traffic and Transportation/Pedestrian and Bicycle Facilities*, these closures to the public and provide alternative routes for motorists, cyclists, and pedestrians; thus, temporary impacts would be further minimized after implementation of the Traffic Management Plan (TMP).

Measure **PF T-1**, as described in Appendix D, would be implemented to minimize temporary traffic impacts. Measure **PF T-1** would require development and implementation of a TMP during construction of the Build Alternative (Preferred Alternative) to address traffic delays; maintain traffic flow in the SR-91 corridor; manage detours, temporary road lanes, and ramp closures; provide ongoing information to the public regarding construction activities, closures, and detours; and maintain a safe environment for construction workers and travelers.

Temporary air quality impacts would be minimized by implementation of measures **PF AQ-1** through **AQ-2**, which are detailed in Appendix D and Section 2.2.6.4, respectively. These measures would require control of dust and equipment emissions during construction of the Build Alternative (Preferred Alternative). Such measures would benefit all persons in the project area, including environmental justice populations.

Temporary noise impacts would be minimized by implementation of measure **PF NOI-1,** which is detailed in Section 2.2.8.4. Measure **PF NOI-1** would require the construction contractor to comply with California Department of Transportation (Caltrans) Standard Specifications, Section 14-8.02, Noise Control, during construction of the Build Alternative (Preferred Alternative).

No-Build Alternative

The No-Build Alternative would not result in temporary impacts related to businesses, community character, or cohesion.

Avoidance, Minimization, and/or Mitigation Measures

The following measures would be implemented to minimize permanent and temporary impacts related to community character and cohesion under the Build Alternative (Preferred Alternative):

CI-1 No two consecutive/adjacent off-ramps or two consecutive/adjacent on-ramps in the same direction will be closed concurrently.

CI-3 To the extent possible, minimize existing tree and vegetation disturbance within the project ROW.

2.1.3.2 RELOCATIONS AND REAL PROPERTY ACQUISITION

Regulatory Setting

The Department's Relocation Assistance Program (RAP) is based on the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act), and Title 49 Code of Federal Regulations (CFR) Part 24. The purpose of the RAP is to ensure that persons displaced as a result of a transportation project are treated fairly, consistently, and equitably so that such persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. Please see Appendix C for a summary of the RAP.

All relocation services and benefits are administered without regard to race, color, national origin, persons with disabilities, religion, age, or sex. Please see Appendix B for a copy of the Department's Title VI Policy Statement.

Affected Environment

This section is based on the analysis and findings presented in the *Final Relocation Impact Memorandum* (May 2020). As described earlier in Section 2.1.1, Land Use, within the study area, the SR-91 corridor is an urban setting with distinct residential, commercial, and industrial land uses adjacent to the freeway. The project corridor also crosses the Santa Ana River and features several water-related land uses.

Environmental Consequences

No-Build Alternative

Under the No-Build Alternative, no new planned improvements to the SR-91 freeway mainline and various interchanges, ramps, and intersections would be introduced as part of this project; therefore, no full or partial fee acquisition, relocation, or displacement of businesses or households would occur.

Build Alternative (Preferred Alternative)

Permanent Impacts

The Build Alternative (Preferred Alternative) would not require full fee acquisition of any property, nor would the relocation or displacement of households or businesses occur. A parcel is defined as assessor's parcel numbers (APNs) having the same ownership and the same use. In addition, the APNs are contiguous to each other. Partial fee acquisitions are expected to be required at five parcels along the project corridor, totaling approximately 0.12 acre. Permanent easements are expected to be required at two parcels along the project corridor, totaling approximately 0.36 acre. Table 2.1.3-7 lists the partial fee and permanent easement acquisitions that are anticipated for the Build Alternative (Preferred Alternative).

Table 2.1.3-7. Permanent Impacts under the Build Alternative (Preferred Alternative)

Parcel	Assessor's Parcel Number (APN)	U.S. Census Tract	Property Type (Residential/ Commercial/ Industrial/Other)[1]	City	Action Type (Permanent Easement and/or Partial Fee Acquisition) and Estimated Acres Acquired
1	338-191-27	116.02	Industrial	Anaheim	Partial Fee Acquisition – 0.01 acre
2	359-011-83	219.03	Residential	Anaheim	Partial Fee Acquisition – 0.08 acre
3	359-084-13	219.03	Vacant	Anaheim	Partial Fee Acquisition – 0.02 acre Permanent Easement – 0.03 acre
4	360-071-14 360-071-24 360-071-28	864.07	Industrial	Anaheim	Permanent Easement – 0.33 acre
5	360-211-01 360-211-02	762.02	Vacant	Anaheim	Partial Fee Acquisition – <0.01 acre
6	361-243-05	219.03	Commercial	Anaheim	Partial Fee Acquisition – 0.01 acre

[1] Source: City of Anaheim 2005.

One parking space at a commercial center on Tustin Avenue would be permanently affected. The affected parking area currently has 141 spaces; the proposed improvements would result in a total of 140 parking spaces. Per Section 18.42.040 of Anaheim's Municipal Code, the parking requirement for commercial use is four spaces per 1,000 square feet of gross floor area. The total square footage for the commercial center is 27,874 square feet. Based on this square footage and the parking standard, the site would be required to provide 112 spaces. The parking standard would continue to be met, despite the loss of one parking space.

Approximately 106 utility facilities exist within the project limits, including overhead and underground electrical, natural gas, telephone and communication, cable TV, water, and sewer facilities. Utilities would be protected in place, adjusted, or relocated, as needed, to accommodate the proposed improvements. Utility coordination and verification will continue through the development of the final design phase of the project. Utilities that would be affected by the project are discussed further in Section 2.1.7, *Utilities*.

The following project feature/standardized measure would be implemented to minimize permanent impacts related to partial fee acquisitions under the Build Alternative (Preferred Alternative):

PF CI-4 Relocations will be conducted in compliance with the requirements of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act) (Public Law 91-646, 84 Statutes 1894). The Uniform Act mandates that certain relocation services and payments be made available to eligible residents, businesses, and nonprofit organizations displaced by federal or federally assisted projects. The Uniform Act provides for uniform and equitable treatment by federal or federally assisted programs of persons displaced from their homes, businesses, or farms and establishes uniform and equitable land acquisition policies.

Temporary Impacts

Temporary construction easements (TCEs) along SR-91 would be required to accommodate proposed Build Alternative (Preferred Alternative) improvements. Construction of the Build Alternative (Preferred Alternative) is anticipated to require a total of approximately 4.91 acres for TCEs, affecting 16 larger parcels, as shown in Table 2.1.3-8. As shown on Figure 2.1.3-4, temporary effects related to parking would be limited during the construction period.

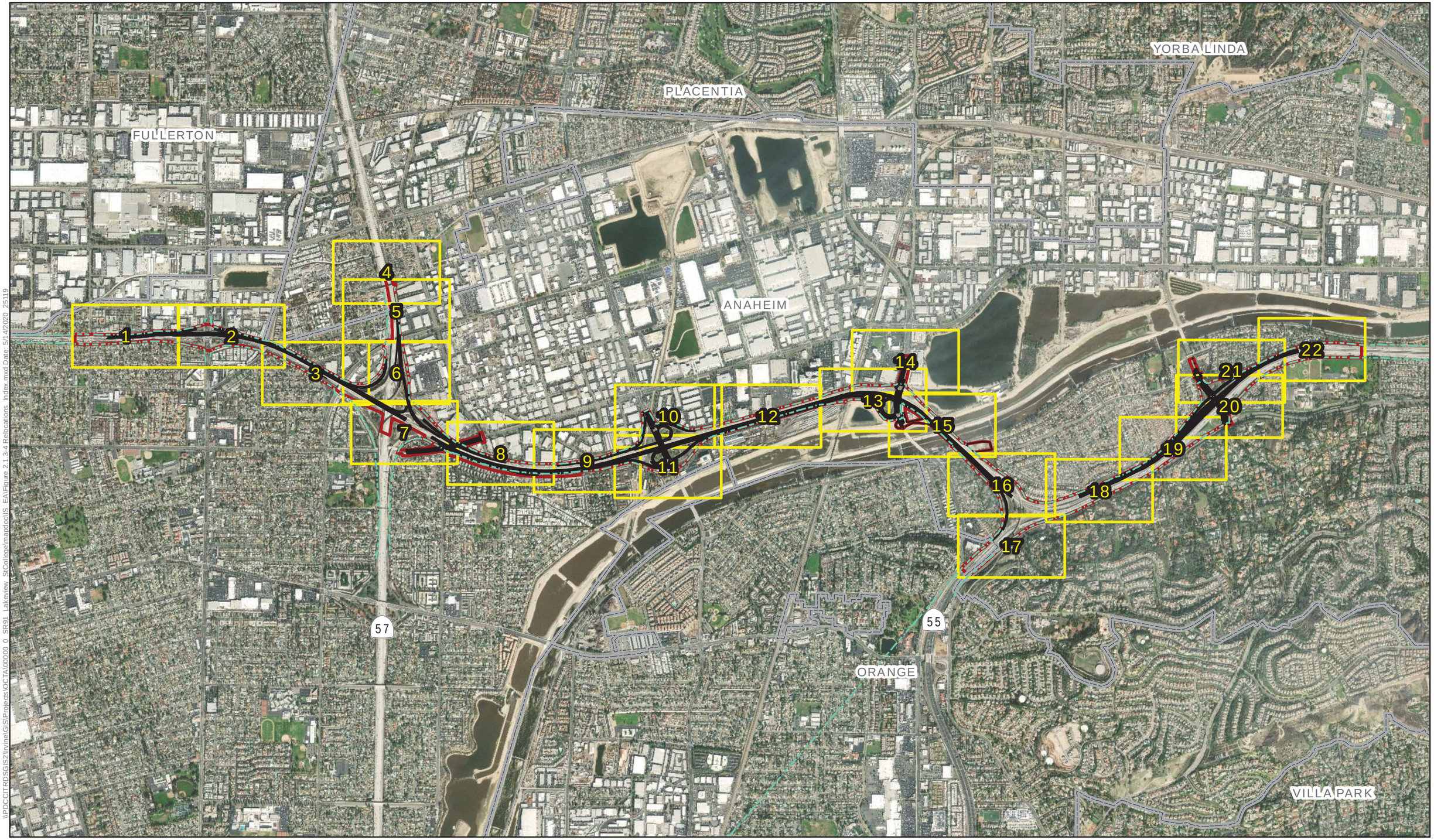
Table 2.1.3-8. Temporary Construction Easements

Larger Parcel	Assessor's Parcel Number (APN)	City	U.S. Census Tract	Property Type (Residential/ Commercial/ Industrial/Other)	Estimated TCE Acreage
1	073-132-11	Anaheim	116.02 *(Anaheim, Fullerton)*	Industrial	<0.01 acre
2	073-132-12	Anaheim	116.02 *(Anaheim, Fullerton)*	Industrial	<0.01 acre
3	268-313-01	Anaheim	864.02 *(Anaheim)*	Residential	0.07 acre
4	338-191-27	Anaheim	116.02 *(Anaheim, Fullerton)*	Industrial	0.01 acre
5	338-192-05	Anaheim	116.02 *(Anaheim, Fullerton)*	Industrial	0.01 acre
6	344-394-23	Anaheim	117.14 *(Anaheim, Placentia, unincorporated Orange County)*	Vacant	0.01 acre
7	344-401-18	Anaheim	117.14 *(Anaheim, Placentia, unincorporated Orange County)*	Industrial	0.01 acre
8	345-111-03 345-111-04	Anaheim	117.14 *(Anaheim, Placentia, unincorporated Orange County)*	Industrial	0.08 acre
9	359-011-83	Anaheim	219.03 *(Anaheim)*	Residential	0.14 acre
10	360-071-14 360-071-24 360-071-28	Anaheim	864.07 *(Anaheim, unincorporated Orange County)*	Industrial	0.26 acre
11	359-084-13	Anaheim	219.03 *(Anaheim)*	Vacant	0.05 acre
12	360-211-01 360-211-02	Anaheim	762.02 *(Anaheim, Orange, unincorporated Orange County)*	Vacant	0.35 acre
13	360-212-01	Anaheim	762.02 *(Anaheim, Orange, unincorporated Orange County)*	Vacant	1.27 acre
14	360-212-06	Anaheim	864.07 *(Anaheim, unincorporated Orange County)*	Commercial	0.43 acre
15	361-243-05	Anaheim	219.03 *(Anaheim)*	Commercial	0.02 acre
16	360-184-01	Anaheim	219.03 *(Anaheim)*	Vacant	2.19 acre

The temporary use of land from privately owned properties as temporary construction easements (TCEs) may result in short-term visual, air quality, and noise effects, as discussed in Section 2.1.3.1, Community Character and Cohesion.

Avoidance, Minimization, and/or Mitigation Measures

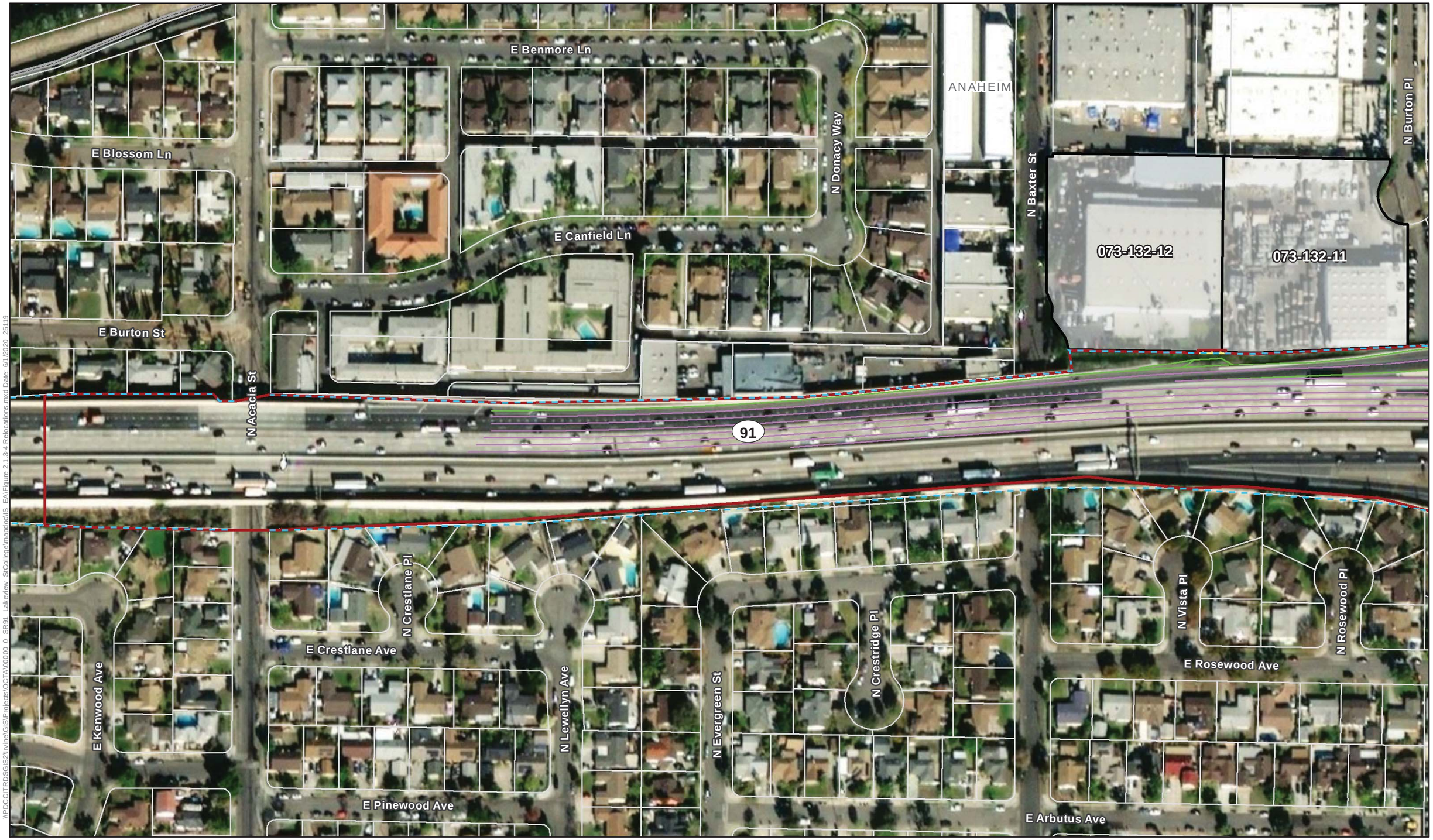
The Build Alternative (Preferred Alternative) would not require relocation or displacement of businesses or households. Additionally, implementation of project features/standardized measures would minimize potential impacts related to partial fee acquisitions under the Build Alternative (Preferred Alternative); therefore, no additional avoidance, minimization, or mitigation measures are required.



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Figure 2.1.3-4 - Index Map
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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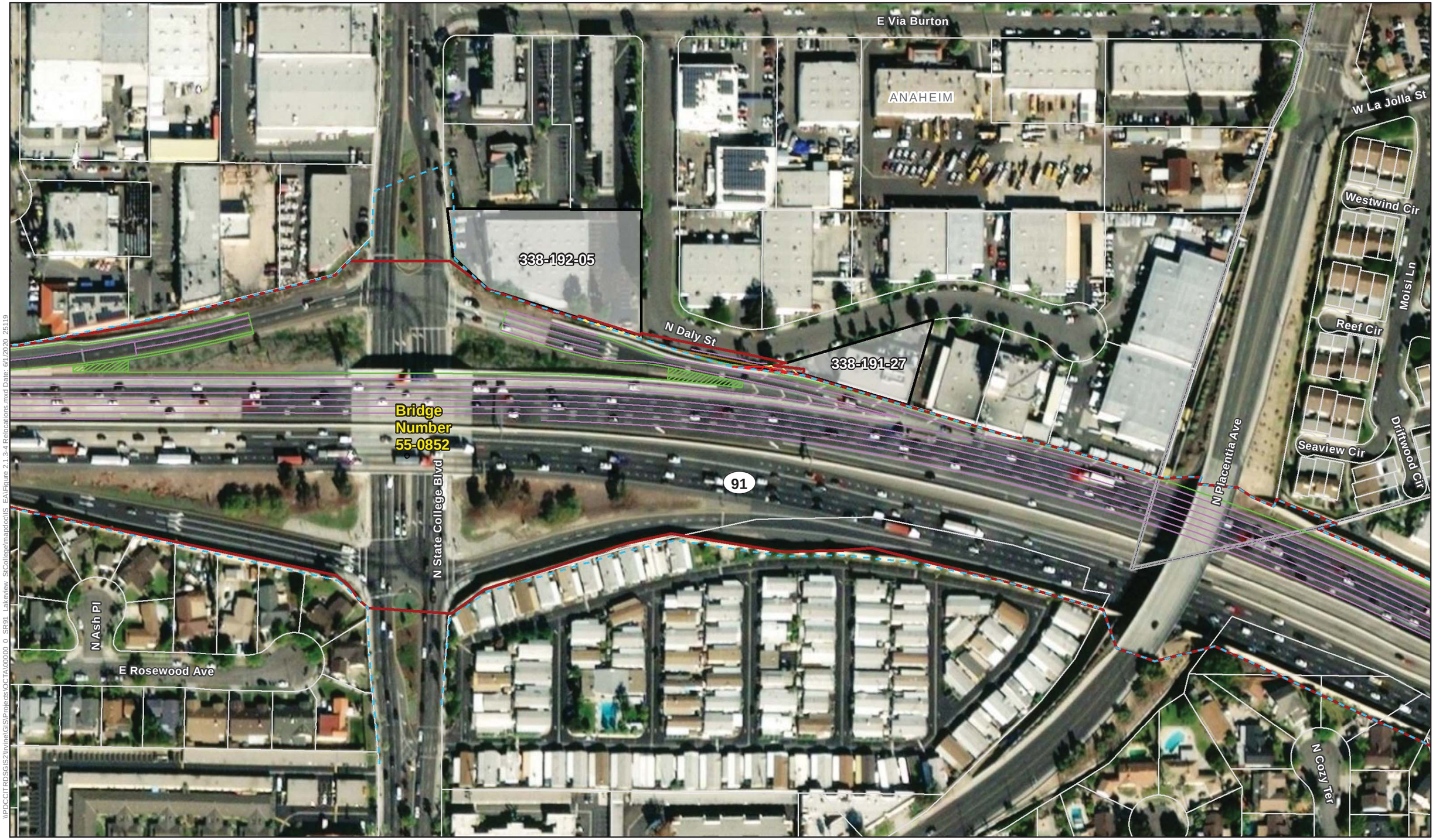
Source: ESRI Imagery (2018)

Legend

- City Boundary
- Assessor's Parcels
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Impacted Parcel
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 1 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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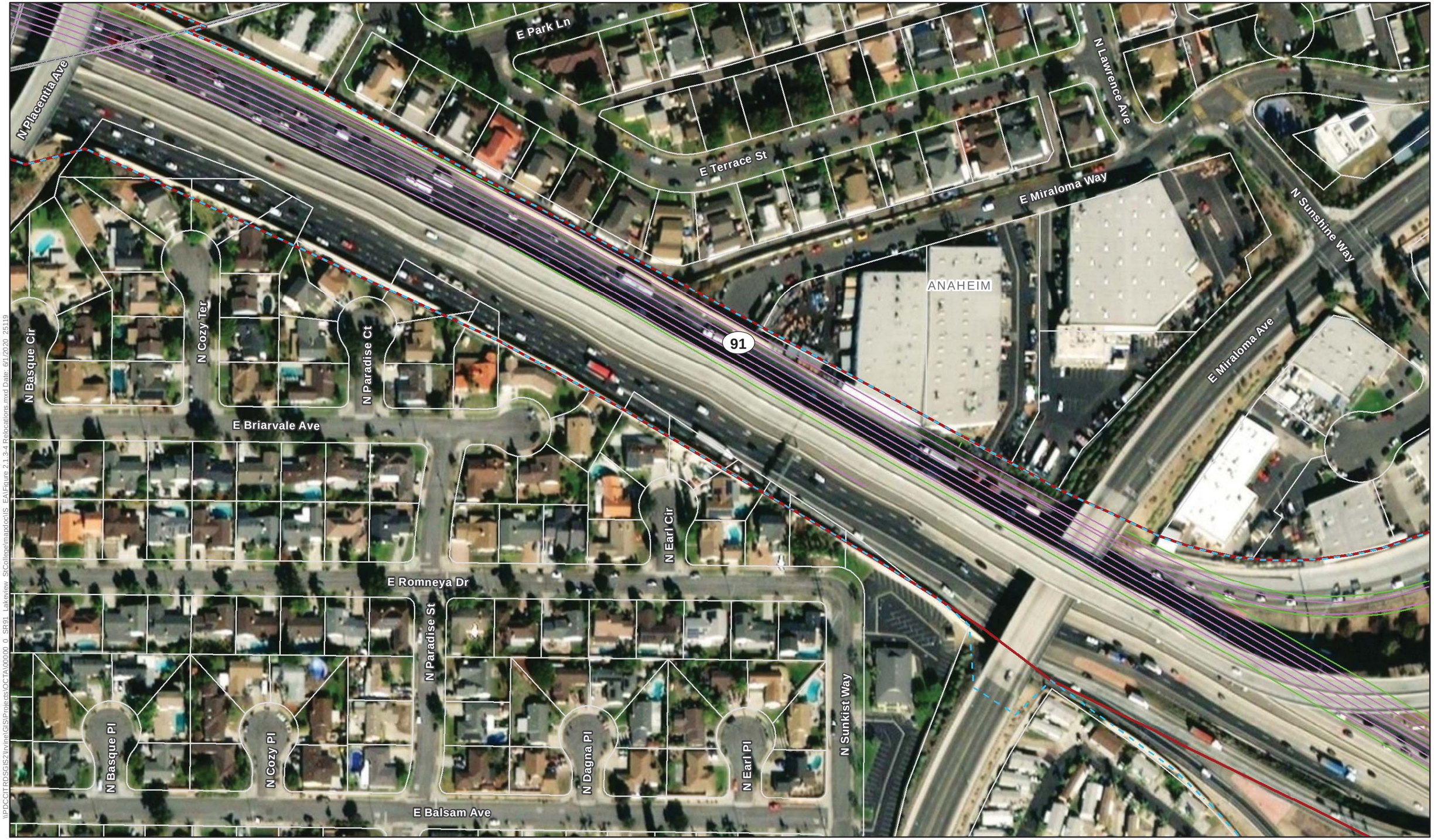
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Legend

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- Curb & Gutter
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- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 2 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
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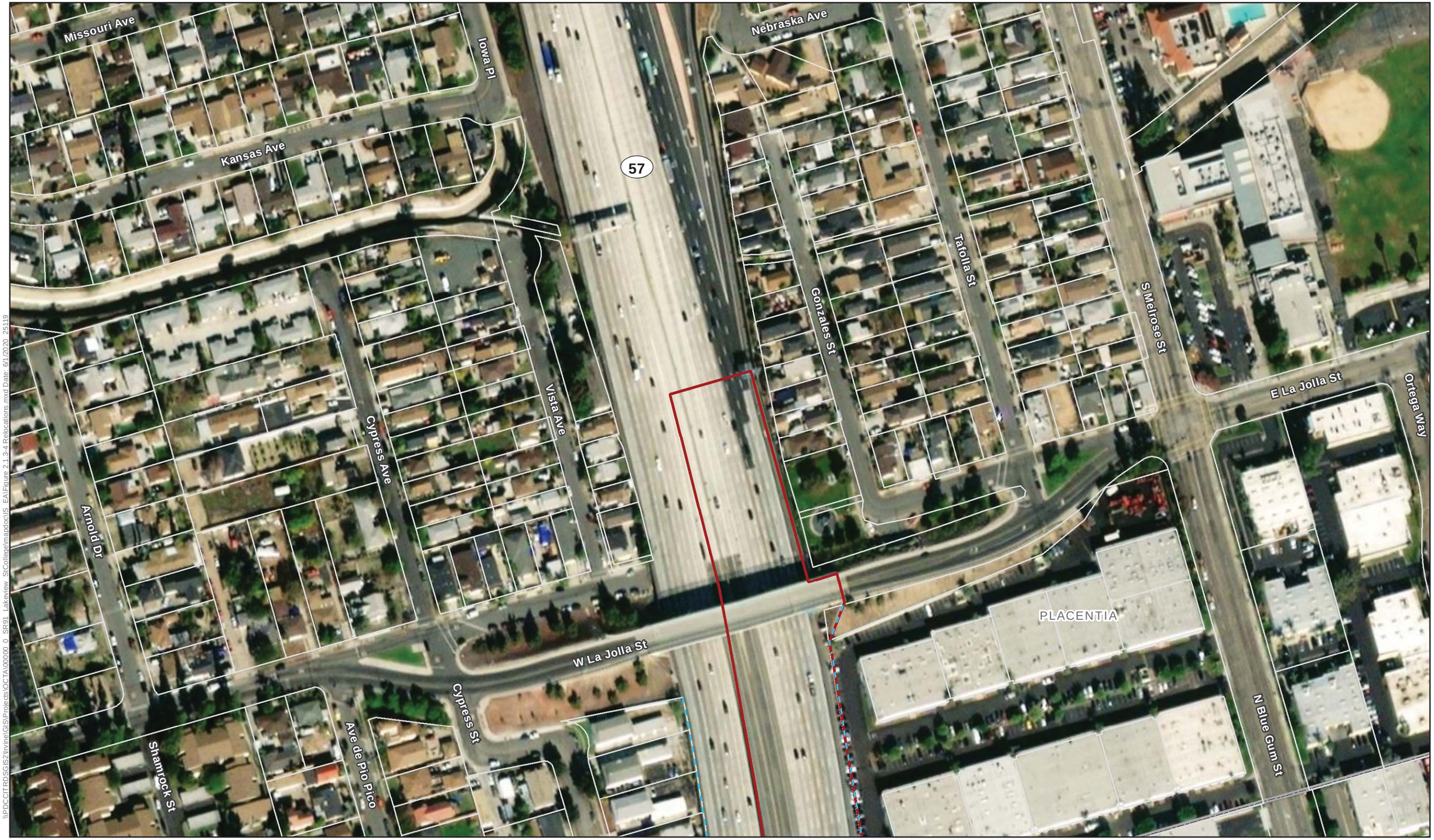
Legend

- City Boundary
- Assessor's Parcels
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Impacted Parcel
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 3 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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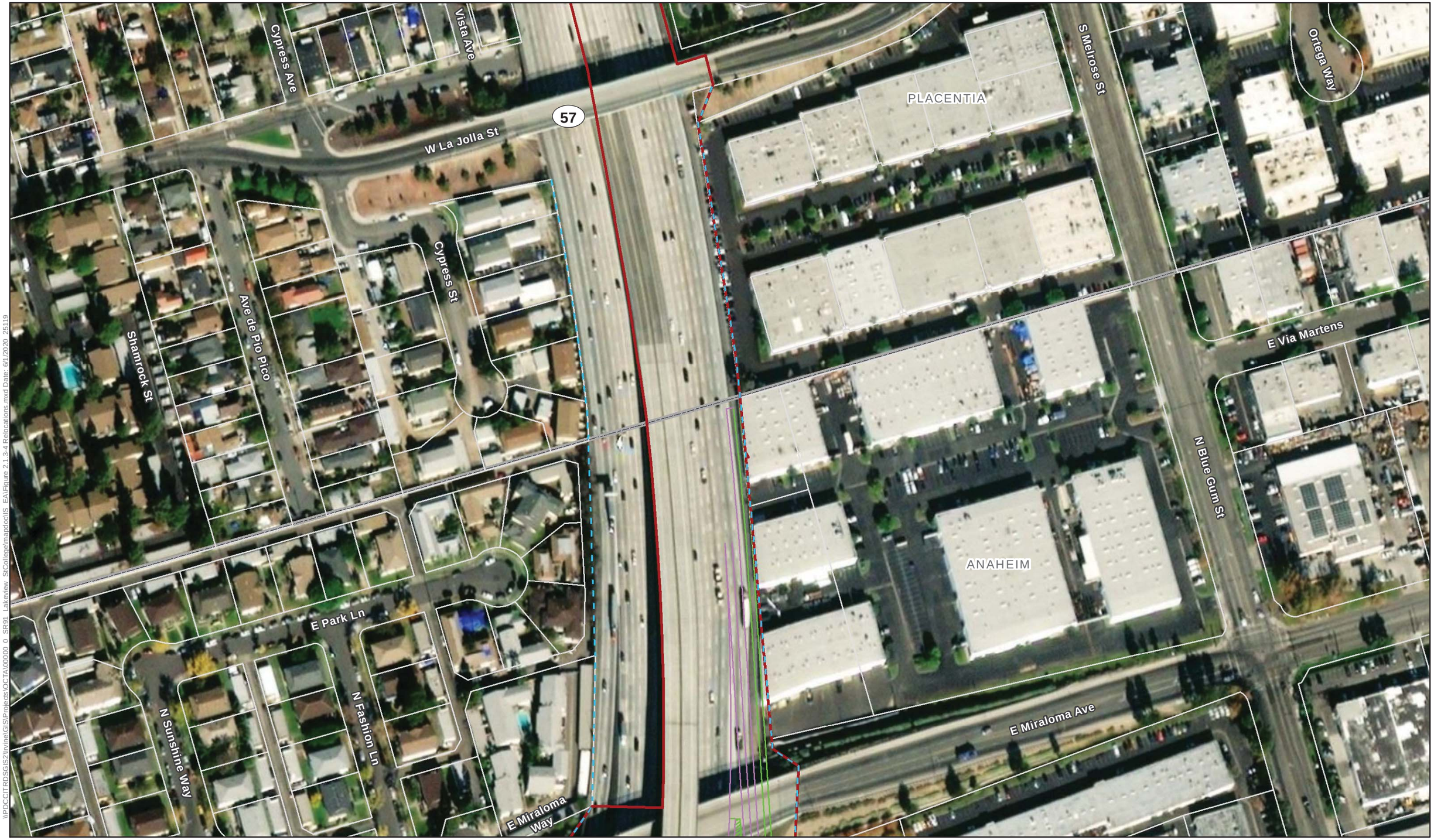
Source: ESRI Imagery (2018)

Legend

- City Boundary
- Assessor's Parcels
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Impacted Parcel
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 4 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
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Source: ESRI Imagery (2018)

Legend

- City Boundary
- Assessor's Parcels
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Impacted Parcel
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 5 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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N Lawrence Ave
N Fashion Ln
E Miraloma Way
N Sunshine Way
E Miraloma Ave
E Regal Park Dr
N Blue Gum St
E La Cresta Ave
ANAHEIM
E Coronado St
91
57
344-394-23
344-401-18

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Feet

Source: ESRI Imagery (2018)

Legend

- City Boundary
- Assessor's Parcels
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Impacted Parcel
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 6 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Source: ESRI Imagery (2018)

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- City Boundary
- Assessor's Parcels
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Impacted Parcel
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 7 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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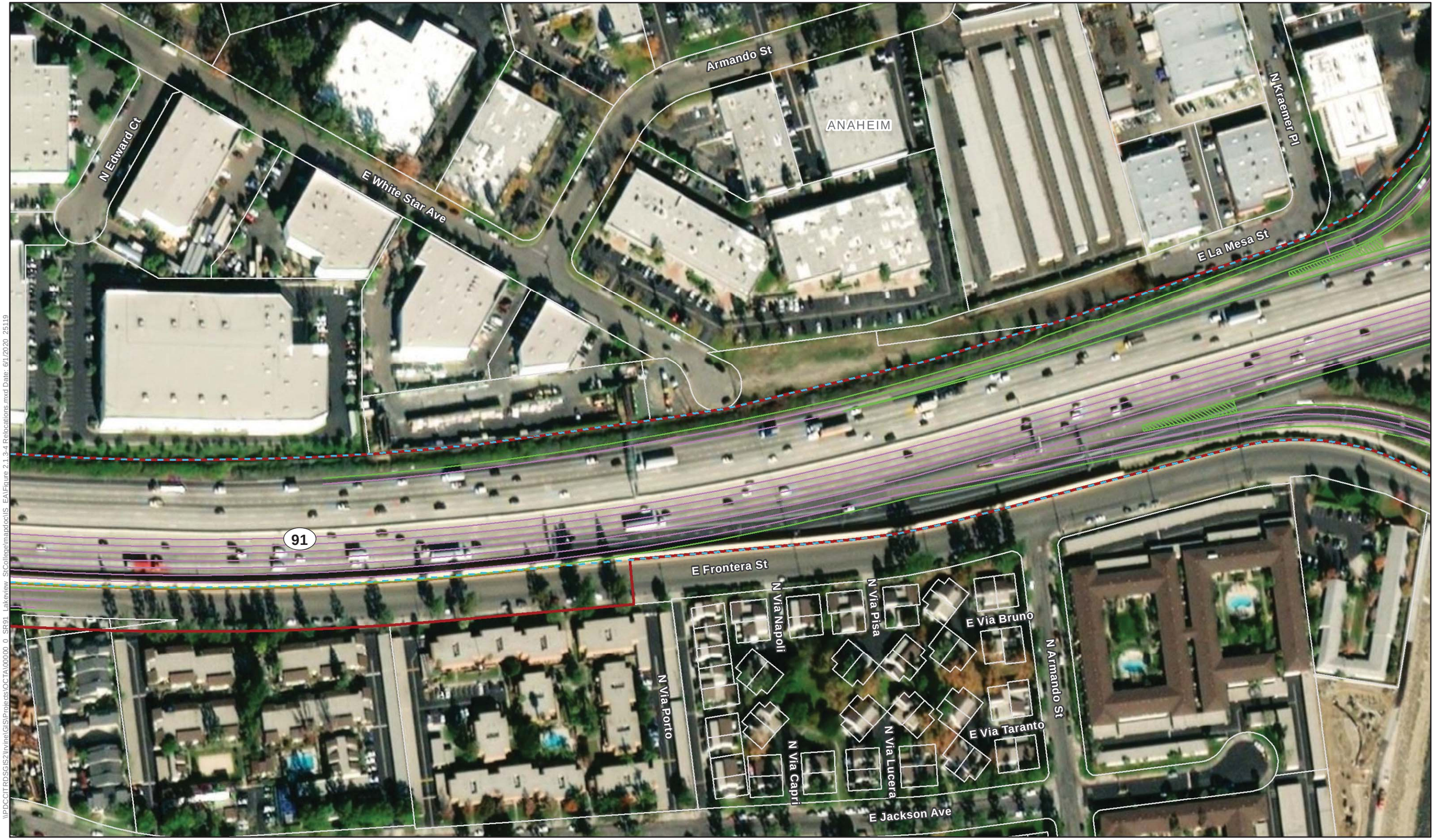
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Legend

- City Boundary
- Assessor's Parcels
- Limits of Disturbance
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- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Impacted Parcel
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 8 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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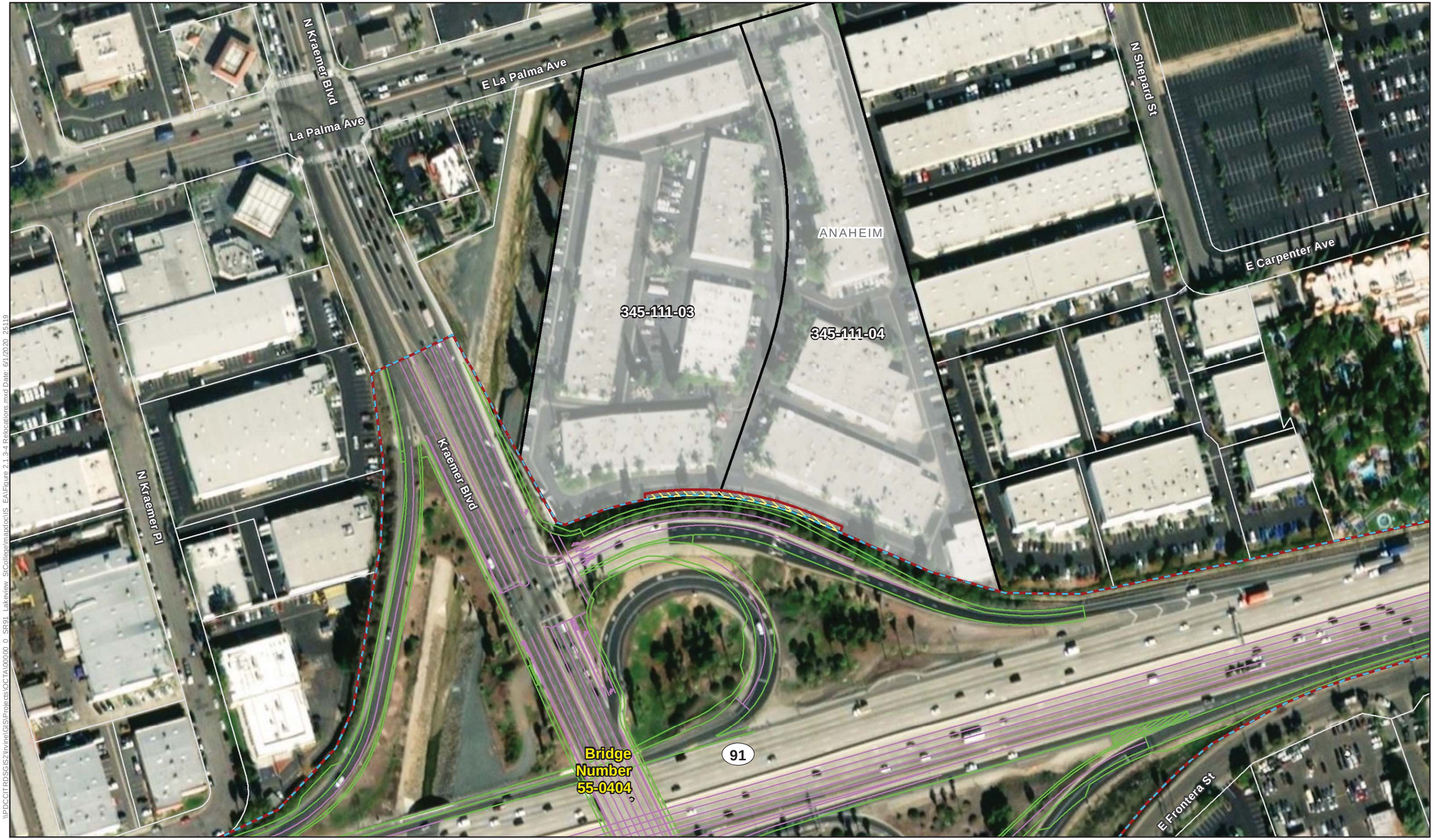
Source: ESRI Imagery (2018)

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- City Boundary
- Assessor's Parcels
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Impacted Parcel
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 9 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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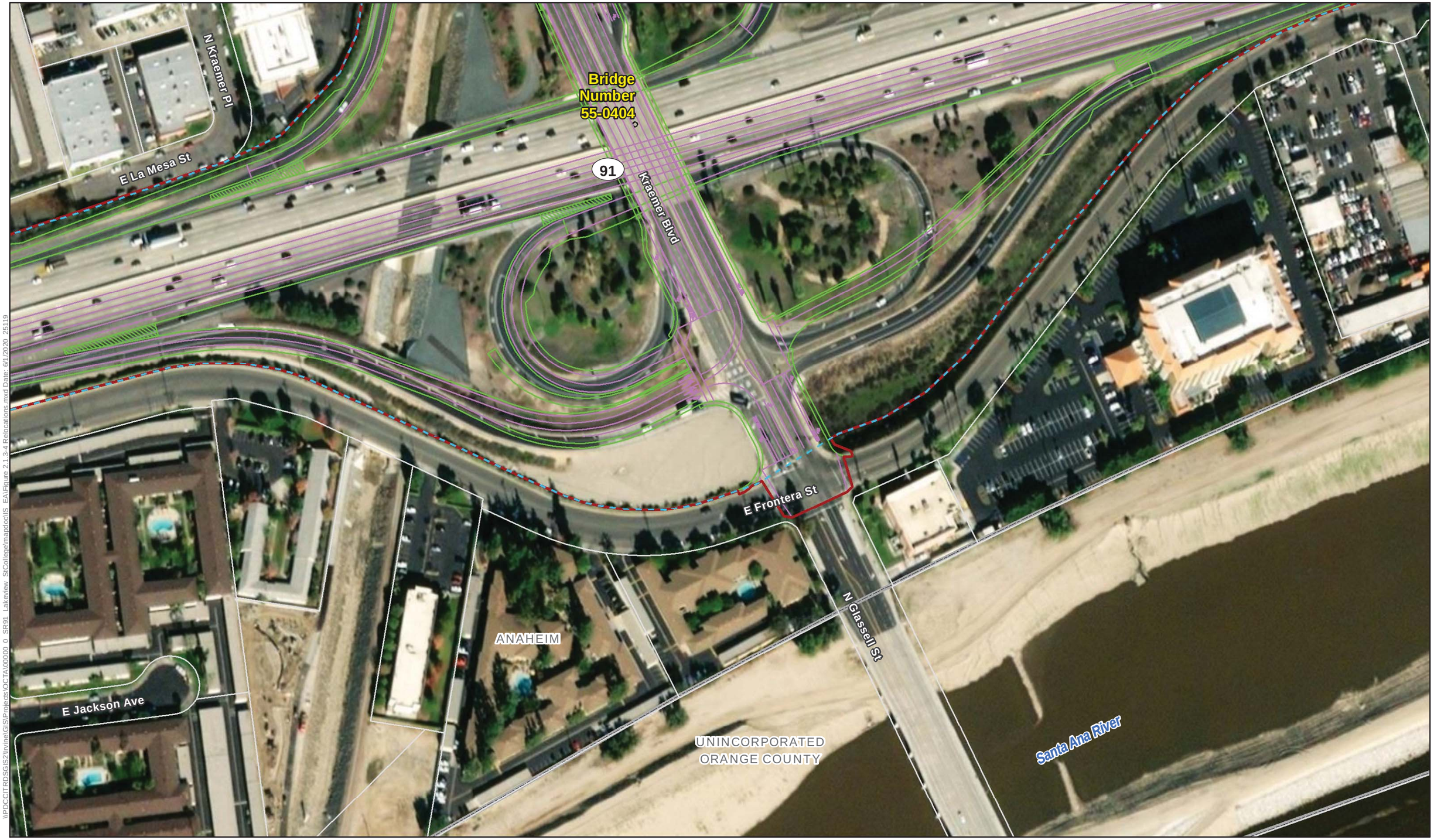
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- City Boundary
- Assessor's Parcels
- Limits of Disturbance
- Existing Right-of-Way
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- Proposed Pavement Edges
- Curb & Gutter
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- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 10 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Source: ESRI Imagery (2018)

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- City Boundary
- Assessor's Parcels
- Limits of Disturbance
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- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Impacted Parcel
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 11 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Source: ESRI Imagery (2018)

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- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Impacted Parcel
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 12 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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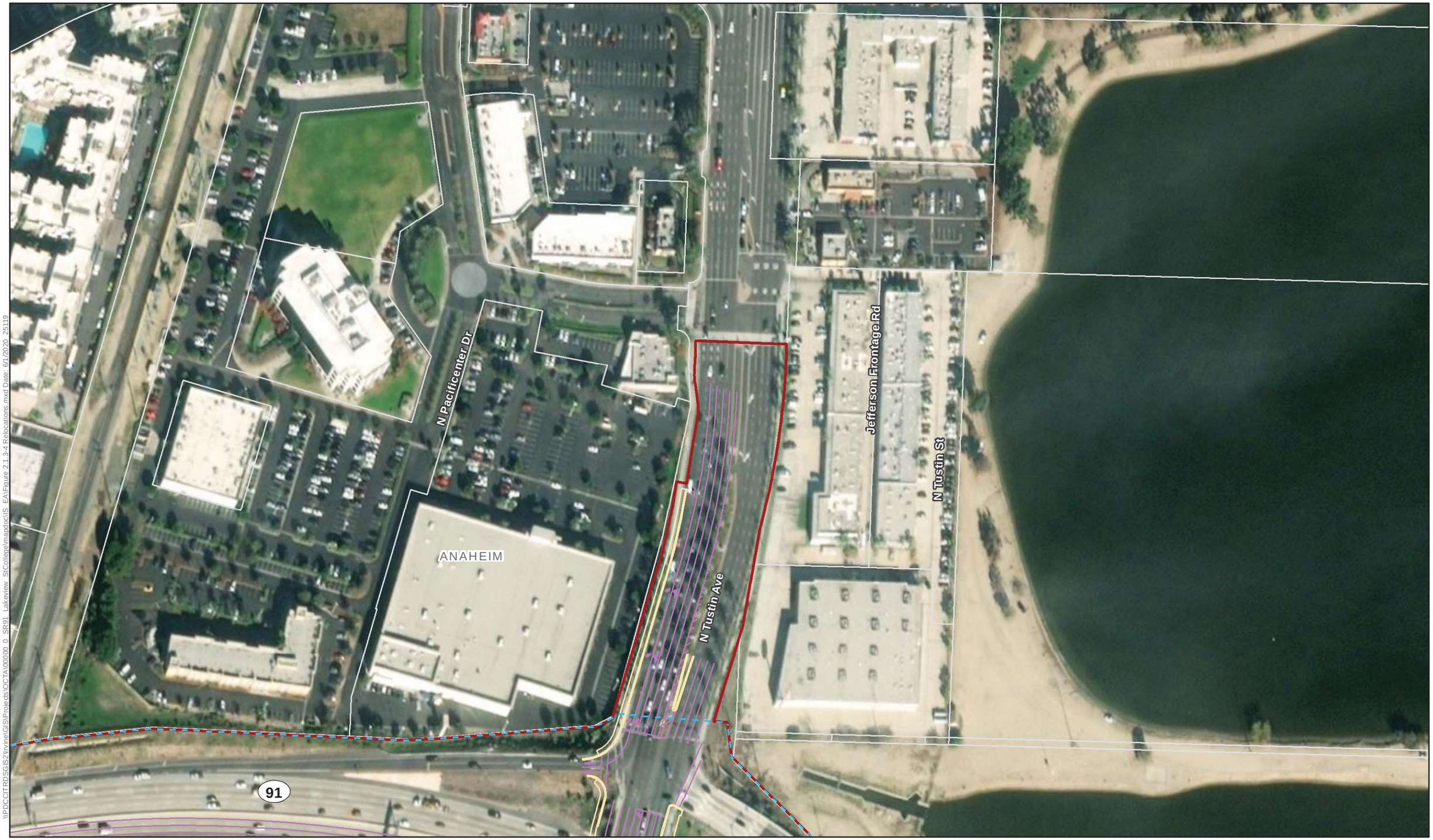
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- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
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- Impacted Parcel
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 13 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Source: ESRI Imagery (2018)

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- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Impacted Parcel
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 14 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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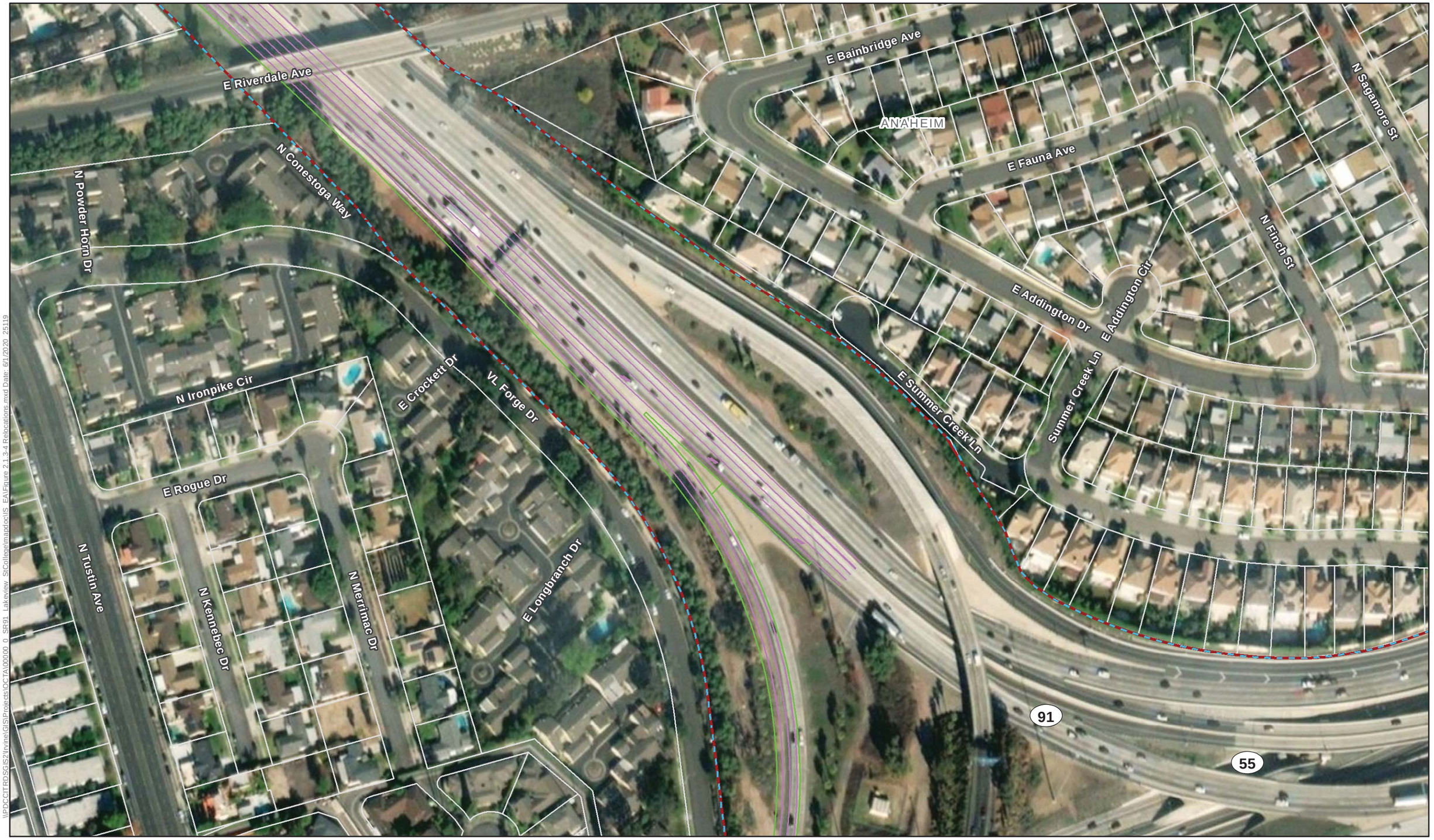
Source: ESRI Imagery (2018)

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- City Boundary
- Assessor's Parcels
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- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Impacted Parcel
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 15 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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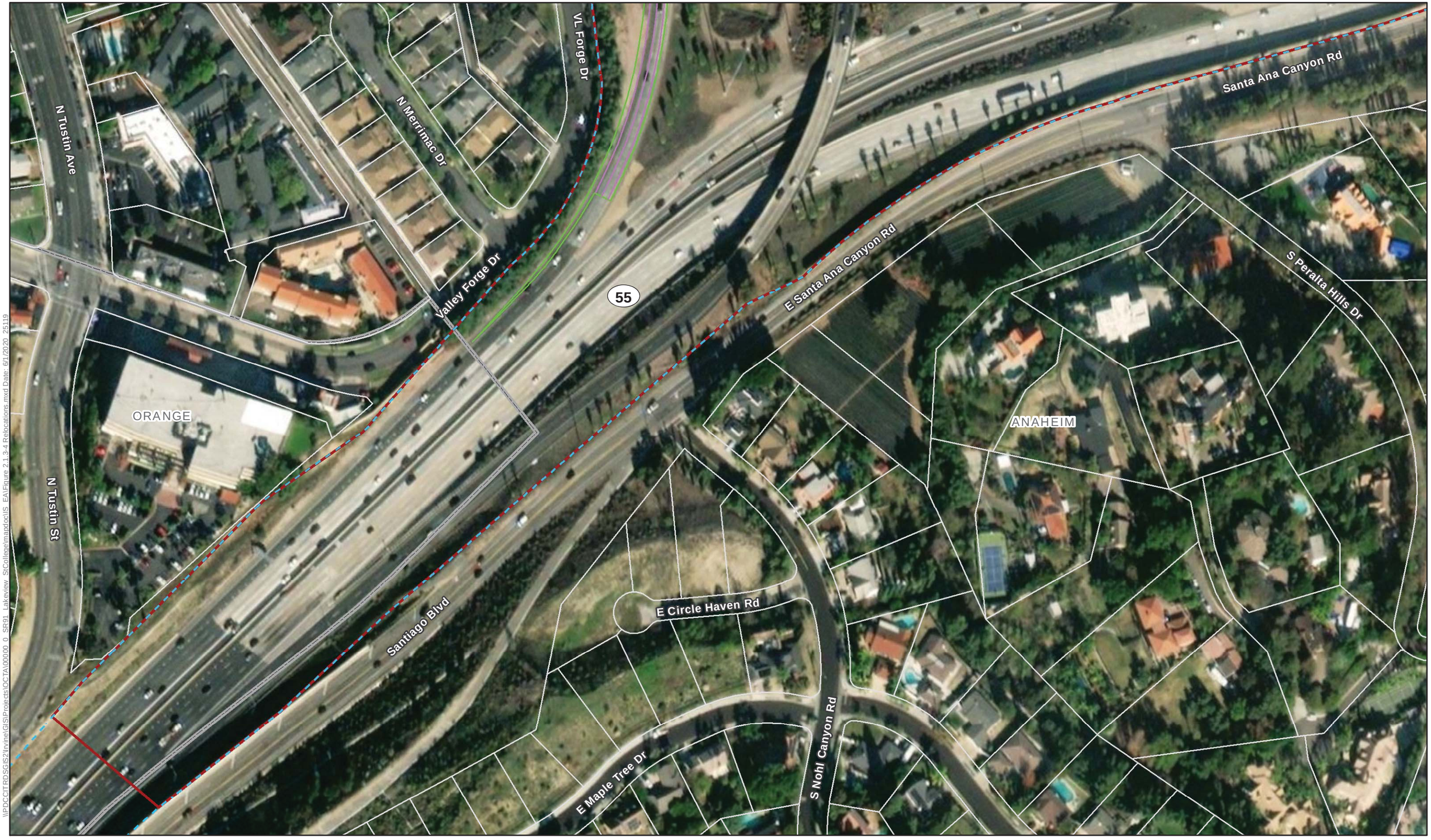
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- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Impacted Parcel
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 16 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Impacted Parcel
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 17 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
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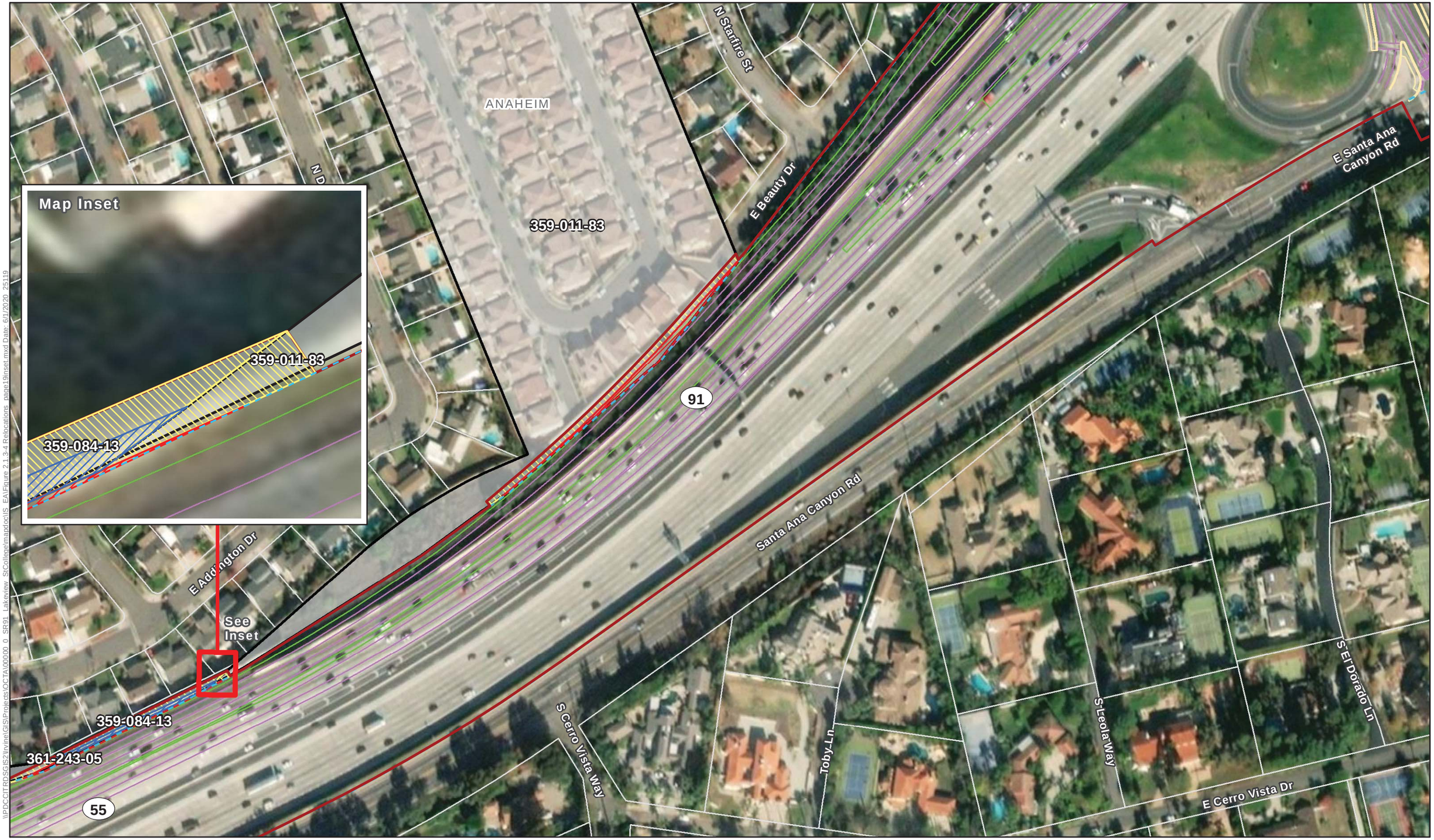
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- City Boundary
- Assessor's Parcels
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- Existing Right-of-Way
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- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
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- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 18 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
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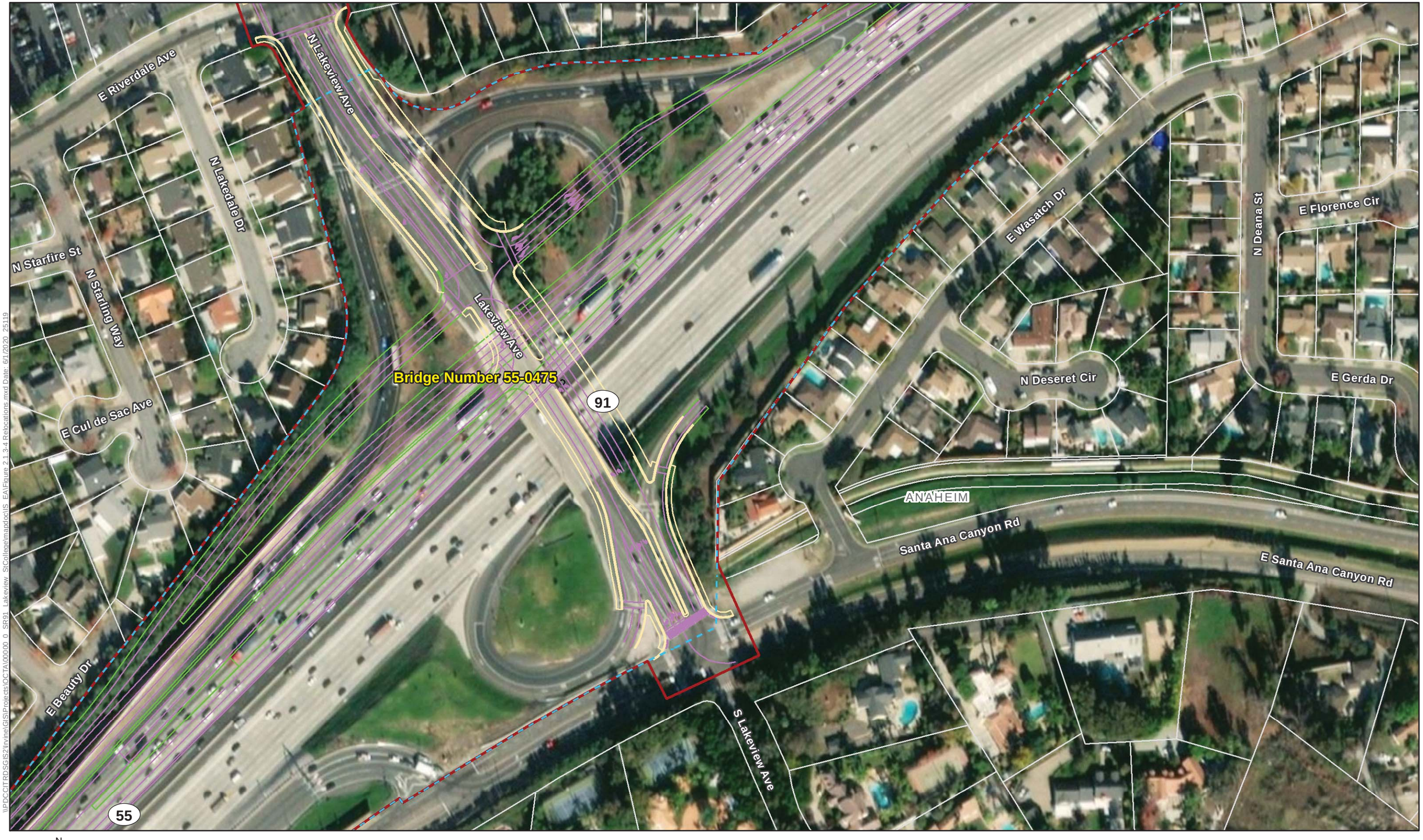
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- City Boundary
- Assessor's Parcels
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
- Curb & Gutter
- Impacted Parcel
- Partial Fee Acquisition
- Permanent Easement
- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 19 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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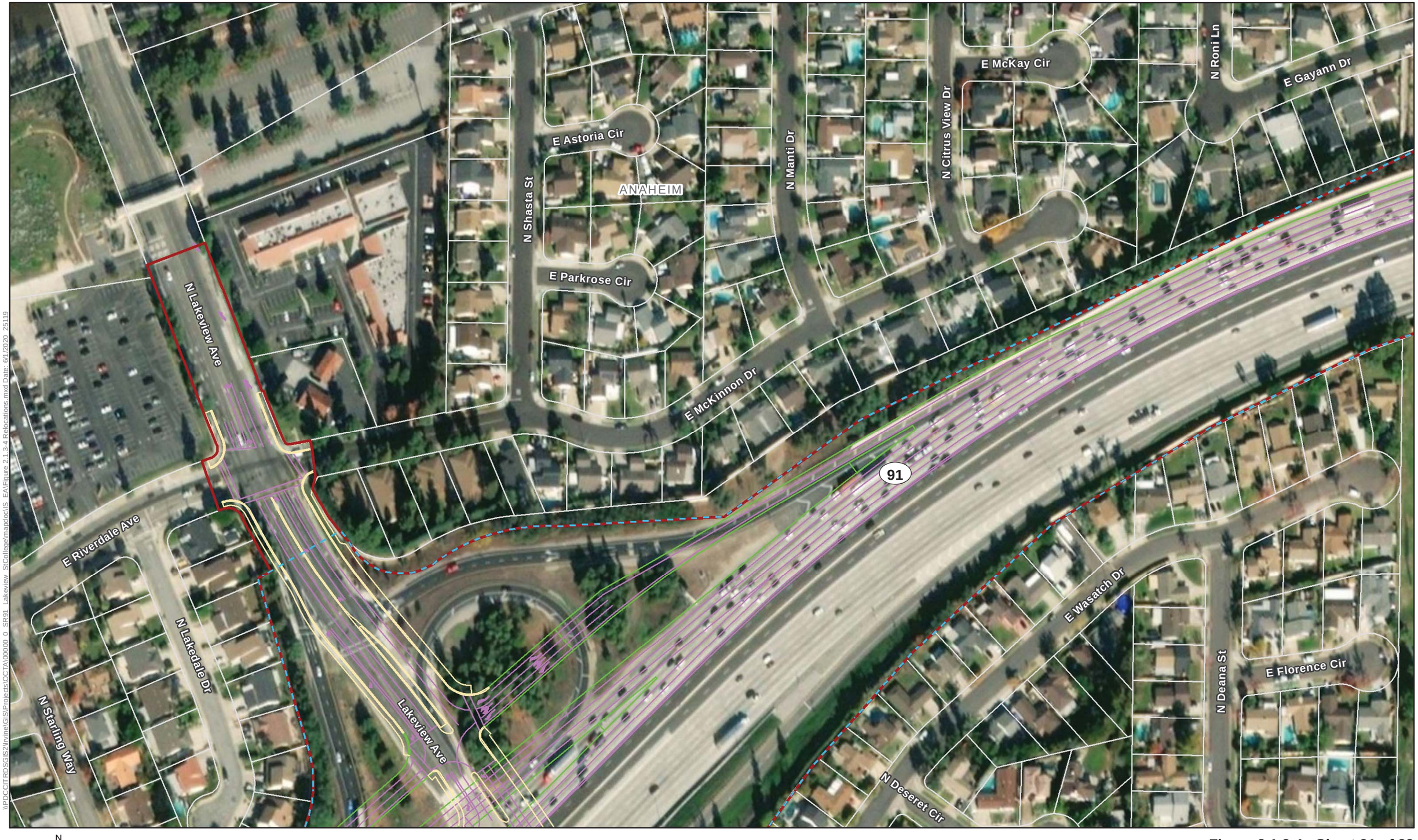
Source: ESRI Imagery (2018)

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- City Boundary
- Assessor's Parcels
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- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
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- Impacted Parcel
- Partial Fee Acquisition
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- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 20 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Source: ESRI Imagery (2018)

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- City Boundary
- Assessor's Parcels
- Limits of Disturbance
- Existing Right-of-Way
- Proposed Right of Way
- Pavement Striping
- Proposed Pavement Edges
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- Permanent Easement
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Figure 2.1.3-4 - Sheet 21 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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- Temporary Construction Easement

Figure 2.1.3-4 - Sheet 22 of 22
Right of Way Impacts
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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2.1.3.3 ENVIRONMENTAL JUSTICE

Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* signed by President William J. Clinton on February 11, 1994. This EO directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the DHHS poverty thresholds. For 2010, this was $22,050 for a family of four.

All considerations under Title VI of the Civil Rights Act of 1964, and related statutes, have also been included in this project. The Department's commitment to upholding the mandates of Title VI is demonstrated by its Title VI Policy Statement, signed by the Director, which can be found in Appendix B of this document.

Affected Environment

The environmental justice analysis was conducted by comparing the census tract study area within a 0.25-mile radius of the proposed project to municipal and county reference jurisdictions. Two primary indicators were evaluated for environmental justice populations: minority populations within the study area and low-income populations within the study area.

For purposes of this analysis, a minority population is defined as all individuals who identify as black or African American, American Indian or Alaska Native, Native Hawaiian or Pacific Islander, Asian, or Hispanic or Latino. A low-income population is defined as all individuals with incomes below the DHHS poverty threshold for 2010, the same year as the most recent decennial census data. A census tract was identified as having an environmental justice population if:

1. According to the 2010 Census, a minority population percentage was 10% higher than the corresponding countywide average; or

2. According American Community Survey 2008–2012 five-year estimates, the median income for a census tract is equal to or lower than the 2010 DHHS poverty threshold of $22,050.

As shown in Section 2.1.3.1, Table 2.1.3-3, five study area census tracts have Hispanic or Latino populations that constitute more than 50 percent of the population. On average, the census tract study area is composed of 52.5 percent Hispanic or Latino population, which is higher than the County, at 33.7 percent, and about the same as the city of Anaheim, at 52.8 percent. Census Tract 117.20 has the highest percentage of Hispanic or Latino populations, at 91 percent. Five of the census tracts are composed of more than 70 percent Hispanic or Latino populations; four other census tracts are composed of more than 45 percent white, non-Hispanic populations. Census Tracts 864.04, 116.02, 117.14, 864.02, 864.06, 864.07, and 117.20 were identified to be minority (environmental justice) populations because they have Hispanic or Latino populations that are at least 10 percent higher than the County's Hispanic or Latino population.

As shown in Table 2.1.3-9 below, the average median household income in the census tract study area is $72,033, which is well above the poverty threshold of $22,050, established by the 2010

DHHS for a family of four. Furthermore, each individual census tract[1] has a median household income that is above the DHHS established poverty guidelines for 2010. Based on 2012 U.S. Census Bureau data, all 11 census tracts with available income data were found to have a median household income above the 2010 DHHS Bureau poverty threshold of $22,050 for a family of four; therefore, no low-income census tracts were identified within the study area. (2012 U.S. Census income data for Census Tract 218.13 was not available, as the sample size was too low to compute an estimate.)

Table 2.1.3-9. Median Household Income in the Study Area Census Tracts as Compared to the DHHS Poverty Threshold**

Jurisdiction	Median Household Income	DHHS Poverty Guidelines
Orange County	$75,566	$22,050
City of Anaheim	$59,627	$22,050
City of Fullerton	$67,617	$22,050
City of Orange	$78,678	$22,050
City of Placentia	$75,693	$22,050
Census Tract Study Areas		
218.13 *(Anaheim, Placentia)*	N/A*	$22,050
219.03 *(Anaheim)*	$84,430	$22,050
116.02 *(Anaheim, Fullerton)*	$52,664	$22,050
117.14 *(Anaheim, Placentia, unincorporated Orange County)*	$86,563	$22,050
219.15 *(Anaheim, Orange)*	$104,667	$22,050
762.01 *(Anaheim, Orange, unincorporated Orange County)*	$94,519	$22,050
762.02 *(Anaheim, Orange, unincorporated Orange County)*	$80,357	$22,050
864.02 *(Anaheim)*	$66,894	$22,050
864.04 *(Anaheim)*	$51,438	$22,050
864.06 *(Anaheim)*	$57,778	$22,050
864.07 *(Anaheim, unincorporated Orange County)*	$58,454	$22,050
117.20 *(Anaheim, Placentia)*	$36,982	$22,050
Average of all Census Tract Study Areas	$72,033	$22,050

Source: U.S. Census Bureau 2012, EDD 2020.

*U.S. Census median household income data not available for Census Tract 218.13 because too few sample observations were available to compute an estimate.

**According to a May 22, 2020 media release from the State of California Employment Development Division (EDD), the state's unemployment rate rose to a record 15.5 percent. The Orange County unemployment rate rose to 13.8 percent at the same time. These unprecedented job losses are like nothing before seen in California history dating back to 1976 and are a direct result of the impacts of the COVID-19 pandemic. It is likely the job losses will be temporary, and the economy is anticipated to rebound. This project is anticipated to assist with job creation.

Environmental Consequences

Permanent Impacts

Build Alternative (Preferred Alternative)

The Build Alternative (Preferred Alternative) would not displace any residents or businesses, nor would it require the full acquisition of any property. As such, there would be no displacements of any low-income or minority (environmental justice) populations within the study area.

[1] US Census Bureau does not provide data for Census Tract 218.13 because too few sample observations were available to compute an estimate.

As shown in Section 2.1.3.1, Table 2.1.3-3, 52.5 percent of the census tract study area population is Hispanic or Latino. This is higher than for the County, which has a population that is 33.7 percent Hispanic or Latino. Seven Census Tracts, which qualify as environmental justice populations, have been identified in the study area, as they all have Hispanic or Latino populations 10 percent higher than that of the County. These include Census Tracts 864.04, 116.02, 117.14, 864.02, 864.06, 864.07, and 117.20. All census tracts in the study area, where data was available[2], have median household incomes above the 2010 DHHS established poverty threshold.

The Build Alternative (Preferred Alternative) would improve freeway mainline operations along SR-91 and adjacent local road connections, thereby benefiting all study area residents and users, including minority and low-income populations, equally.

Table 2.1.3-10 lists the partial fee acquisitions and permanent easements within the census tract study areas that are anticipated for the Build Alternative (Preferred Alternative).

Table 2.1.3-10. Permanent Right-of-Way Impacts within the Census Tract Study Area

Census Tract[1]	APN	Property Type	Acquisitions Type	Area (ac)	Percent of Permanent ROW Impacts within Census Tract Study Area (%)
116.02	338-191-27	Industrial	Partial Fee Acquisition	**0.01**	**2.06**
219.03	359-011-83	Residential	Partial Fee Acquisition	0.08	28.9
	359-084-13	Vacant	Partial Fee Acquisition Permanent Easement	0.02 0.03	
	361-243-05	Commercial	Partial Fee Acquisition	0.01	
762.02	360-211-01 360-211-02	Vacant	Partial Fee Acquisition	<0.01	1.03
864.07	360-071-14 360-071-24 360-071-28	Industrial	Permanent Easement	**0.33**	**68.0**

[1] Bolded census tracts and associated percentages indicate those identified as environmental justice populations.

As shown in Table 2.1.3-10, permanent ROW, including partial fee acquisitions and permanent easements, are expected to be required within two environmental justice census tracts (116.02 and 864.07). While Census Tract 864.07 represents 68.0 percent of total permanent ROW, and Census Tract 116.02 represents 2.06 percent, these permanent impacts would be required at two industrial properties and would not affect single- or multi-family residential properties. Because the partial fee acquisition and permanent easement would not require relocation of residents or businesses and would consist of partial sliver acquisitions at these two properties adjacent to the state ROW, permanent ROW impacts associated with the project are not anticipated to result in a loss of employment or a disruption to the social fabric of the communities in which they are located.

[2] US Census Bureau does not provide data for Census Tract 218.13 because too few sample observations were available to compute an estimate.

Based on the above discussion and analysis, the Build Alternative (Preferred Alternative) will not cause disproportionately high and adverse effects on any minority or low-income populations per EO 12898 regarding environmental justice.

No-Build Alternative

Under the No-Build Alternative, no new planned improvements along the SR-91 mainline and various interchanges, ramps, and intersections would be implemented. Therefore, no disproportionate impacts on environmental justice populations would occur. However, congestion along SR-91 would continue to worsen in the project study area for non-environmental justice populations and environmental justice populations alike.

Temporary Impacts

Build Alternative (Preferred Alternative)

Short-term construction-related work activities associated with the Build Alternative (Preferred Alternative) would temporarily affect residents and businesses in the project area, including low-income and minority populations. Standard project features **PF T-1**, **PF AQ-1**, **PF AQ-4**, and **PF NOI-1**, as described in Appendix D, would be implemented to minimize temporary impacts relating to traffic, air quality, and noise. Project construction activities may provide jobs that would benefit local economies, including low-income and minority populations identified in study area census tracts.

During the construction period, temporary weekend closures of the SR-91 mainline would be required and detours around the temporarily closed segments would be provided on local arterials in the vicinity of the closures. The temporarily closed segments of SR-91 would result in increased travel times. The impacts may include temporary delays involving local traffic and access during overnight mainline, ramp, and local arterial closures, as well as increased traffic congestion, noise levels, and the presence of dust from construction activities.

Detours that have been developed as part of the October 2017 draft of the Conceptual Traffic Handling Plan, and potentially affected census tracts, are identified below in Table 2.1.3.11.

Table 2.1.3-11. Proposed Detours for Construction-Period Closures

Temporary Closure	Census Tracts	Detour Route
La Palma Avenue OC	**117.14** **864.06** **864.07** *(Anaheim, Placentia, unincorporated Orange County)*	EB SR-91: Travel north on SR-57, exit SR-57 and travel east on Orangethorpe Avenue, south on Kraemer Boulevard, and east on SR-91. WB SR-91: Exit SR-91 and travel north on Kraemer Boulevard, west on Orangethorpe Avenue, and north or south on SR-57. Major and primary arterial.
Kraemer/ Glassell OC	**117.14** 762.01 *(Anaheim, Orange, Placentia, unincorporated Orange County)*	EB SR-91: Exit SR-91 at Kraemer Boulevard/Glassell Street and use Kraemer Boulevard/Glassell Street EB on-ramp. WB SR-91: Exit SR-91 and travel north on Kraemer Boulevard, west on Orangethorpe Avenue, south on State College Boulevard, and west on SR-91

Temporary Closure	Census Tracts	Detour Route
Tustin Avenue OC/EB SR-91 to SB SR-55 Connector	**117.14** 218.13 **864.07** 762.02 *(Anaheim, Orange, Placentia, unincorporated Orange County)*	EB SR-91: Exit SR-91 and travel south on Tustin Avenue to Lincoln Avenue/Nohl Ranch Road, and travel north or south on SR-55. WB SR-91: Exit SR-91 at Tustin Avenue and use Tustin WB on-ramp.
Lakeview Avenue OC	218.13 219.03 219.15 *(Anaheim, Orange, Placentia)*	EB SR-91: Exit SR-91 at Santa Ana Canyon Road/Lakeview Avenue and use Santa Ana Canyon Road/Lakeview Avenue EB on-ramp. WB SR-91: Exit SR-91 at Lakeview Avenue and use Lakeview Avenue WB on-ramp.
Santa Ana River Trail/Bicycle Path	218.13 219.03 219.15 *(Anaheim, Orange, Placentia)*	NB Santa Ana River Trail: Exit Santa Ana River Trail/Bicycle Path at Tustin Avenue; travel south along Tustin Avenue; turn left on Riverdale Avenue (heading northeast); turn left on Lakeview Avenue and travel north for approximately 800 feet to Santa Ana River Trail/Bicycle Path access ramp (right hand side). SB Santa Ana River Trail: Exit Santa Ana River Trail/Bicycle Path at Lakeview Avenue; travel south along Lakeview Avenue; turn right on Riverdale Avenue (heading southwest); turn right on Tustin Avenue and travel north for approximately 250 feet to Santa Ana River Trail/Bicycle Path access ramp (right hand side).

Source: Michael Baker International 2017.
OC = overcrossing; SB = southbound; NB = northbound; EB = eastbound; WB = westbound

Final detours would be provided in the TMP. Temporary full mainline closures of the overcrossing bridges listed in Table 2.1.3-11 are anticipated on weekends in order to accommodate bridge demolition. The portion of the Santa Ana River Trail/Bicycle Path that is under the SR-91 Bridge would also be partially closed for up to eight months. Of the detours identified in Table 2.1.3-11, three would pass through Census Tracts 117.14, 864.06, and 864.07, which contain environmental justice populations; however, all of the proposed detour routes that would be directed through these census tracts during weekend closures would be on major or primary arterials, which are identified in the City of Anaheim's circulation element (e.g., Orangethorpe Avenue, Kraemer Boulevard). Because the detours would not be routed through residential neighborhoods during peak travel times, environmental justice populations would not be adversely impacted. In addition, the detours would impact all residents of the area equally, and would not have an adversely high or disproportionate impact on environmental justice communities.

Access to businesses in the area would be maintained through the duration of construction, including any temporary ramp closures. Additionally, the Build Alternative (Preferred Alternative) would not displace any residents or businesses, nor would it require full acquisition of any property. As such, there would be no temporary displacement of any low-income or minority populations within the study area. The measures presented below would minimize impacts during construction.

Table 2.1.3-12, below, lists the temporary easements within the census tract study areas that are anticipated for the Build Alternative (Preferred Alternative).

Table 2.1.3-12. Temporary Construction Easements within the Census Tract Study Area

Census Tract[1]	APN	Property Type	Acquisition Type	Area (acre)	Percent of Construction Easements within Census Tract Study Area (%)
116.02	**073-132-11**	**Industrial**	**TCE**	**<0.01**	**0.6**
	073-132-12	**Industrial**	**TCE**	**<0.01**	
	338-191-27	**Residential**	**TCE**	**0.01**	
	338-192-05	**Industrial**	**TCE**	**0.01**	
	Total TCE in Census Tract 116.02			*0.03*	
117.14	**344-394-23**	**Industrial**	**TCE**	**0.01**	**2.0**
	344-401-18	**Vacant**	**TCE**	**0.01**	
	345-111-03 345-111-04	**Industrial**	**TCE**	**0.08**	
	Total TCE in Census Tract 117.14			*0.10*	
219.03	359-011-83	Industrial	TCE	0.14	48.9
	359-084-13	Residential	TCE	0.05	
	360-184-01	Vacant	TCE	2.19	
	361-243-05	Industrial	TCE	0.02	
	Total TCE in Census Tract 219.03			*2.40*	
762.02	360-211-01 360-211-02	Vacant	TCE	0.35	33.0
	360-212-01	Vacant	TCE	1.27	
	Total TCE in Census Tract 762.02			1.62	
864.02	**268-313-01**	**Commercial**	**TCE**	**0.07**	**1.4**
	Total TCE in Census Tract 864.02			0.07	
864.07	**360-071-14 360-071-24 360-071-28**	**Commercial**	**TCE**	**0.26**	**14.1**
	360-212-06	**Vacant**	**TCE**	**0.43**	
	Total TCE in Census Tract 864.02			0.69	
			Total TCE Area	4.91	

[1]Bolded census tracts and associated percentages indicate those identified as environmental justice populations.

As shown, temporary easements are expected to be required within four environmental justice populations (Census Tracts 116.02, 117.14, 864.02, and 864.07). Approximately 18.1 percent (0.90 acre) of the TCEs needed to construct the project would occur in minority or low-income (environmental justice) census tracts. Approximately 81.9 percent (4.02 acre) of temporary ROW impacts would occur in non-environmental justice areas (Census Tracts 219.03 and 762.02). Therefore, under the Build Alternative (Preferred Alternative), there would not be a disproportionately high or adverse impact on environmental justice populations resulting from temporary ROW impacts.

Although the total number of parcels affected (TCEs) is higher for environmental justice census tracts, as indicated in Table 2.1.3-12, this only includes one residential parcel. The temporary impact on this residential parcel in an environmental justice census tract is considerably less than the one residential parcel that is similarly affected in a non-environmental justice census tract. The non-environmental justice residential parcel is affected at an 5:1 ratio; a TCE of 0.05 acre for one residential parcel in census tract 219.03 (APN 359-084-13), compared to a TCE of 0.01 acre for one residential parcel in census tract 116.02 (APN 338-191-27). Therefore, considering the TCE information in total, there is no disproportionately high or adverse effect for environmental justice populations with regard to TCEs.

No-Build Alternative

Under the No-Build Alternative, the temporary construction-related adverse effects on all populations, including low-income and minority (environmental justice) populations, would not occur. However, also under the No Build Alternative, environmental justice populations would not receive the benefit of improved freeway mainline operations along SR-91 and adjacent local road connections that would occur from the Build Alternative (Preferred Alternative).

Avoidance, Minimization, and/or Mitigation Measures

Based on the above discussion and analysis, the Build Alternative (Preferred Alternative) would not cause disproportionately high and adverse effects on any minority or low-income (environmental justice) populations, in accordance with the provisions of EO 12898. No further environmental justice analysis is required.

2.1.3.4 REFERENCES

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2.1.4 Utilities/Emergency Services

2.1.4.1 REGULATORY SETTING

There are no federal, state, regional, or local regulations related to utilities/emergency services that are applicable to the project area.

2.1.4.2 AFFECTED ENVIRONMENT

Utilities

The following utility providers have facilities within the study area, along the project segment of SR-91 and SR-57:

- **AT&T:** Telecommunication cables
- **City of Anaheim:** Water service lines, overhead and underground distribution lines, and sewer lines
- **City of Placentia:** Sewer lines
- **CenturyLink:** Underground fiber optic communication cables
- **Golden State Water:** Water service lines
- **Level 3 Communications:** Underground fiber optic communication cables
- **Metropolitan Water District:** Water service lines
- **Orange County Sanitation District (OCSD):** Sewer lines
- **Orange County Water District (OCWD):** Water service lines
- **Southern California Edison:** Overhead distribution lines
- **Southern California Gas Company:** Transmission and distribution gas pipelines
- **Sunesys, LLC:** Underground fiber optic communication cables
- **Time Warner Cable:** Underground and overhead community access television cables
- **Wilshire Connections:** Underground fiber optic communication cables

Fire Protection

The Anaheim Fire Department provides fire protection services in Anaheim. There are two Anaheim Fire Department stations within 0.5 mile of the project area: Station #05 (1154 North Kraemer Boulevard) and Station #08 (4555 East Riverdale).

Fire protection and emergency medical/paramedic services in Placentia are provided by the Orange County Fire Authority, under contract with the City of Placentia. There are no Orange County Fire Authority fire stations within 0.5 mile of the project area.

The Orange Fire Department provides fire protection services in Orange. There are no Orange Fire Department stations within 0.5 mile of the project area.

Police Protection

Police protection services in the study area are provided by the police departments in the cities of Anaheim, Orange, and Placentia as well as the Orange County Sheriff's Department. There is one police station within 0.5 mile of the project area: Orange County Sheriff's Department (1530 Valencia Avenue, Placentia).

The next nearest police station is 1.5 miles south of the project area in Anaheim. Police services on freeways in California, including SR-91 and SR-57, are provided by the California Highway Patrol. The nearest California Highway Patrol office is approximately 1.8 miles north of the study area in the city of Santa Ana.

Hospitals

There two nearest hospitals to the project site are Kaiser Permanente Anaheim Kraemer Medical Offices located at 3460 East La Palma Avenue in the City of Anaheim about 0.1 mile north of the project and Kaiser Permanente Orange County – Anaheim Medical Center located at 3440 East La Palma Avenue in the City of Anaheim approximately 0.05 mile north of the project.

2.1.4.3 ENVIRONMENTAL CONSEQUENCES

Permanent Impacts

Build Alternative (Preferred Alternative)

Any relocation or other effects on utility facilities under the Build Alternative (Preferred Alternative) would occur during the final design or construction phase. All existing utility facilities would be permanently maintained under the Build Alternative (Preferred Alternative). The Build Alternative (Preferred Alternative) would not result in increased demand for domestic water services, wastewater facilities, or solid waste disposal. Therefore, the Build Alternative (Preferred Alternative) would not result in permanent adverse effects on utility facilities and providers. As required by Caltrans and the respective standards of the affected cities, emergency access would be maintained or provided as part of the final design of the Build Alternative (Preferred Alternative). Following the construction period, SR-91 and SR-57 would operate better than under existing conditions because traffic flow would be improved by the project. This could improve the response times of emergency responders within the study area. Therefore, the Build Alternative (Preferred Alternative) would not result in permanent adverse effects on emergency services and providers.

No-Build Alternative

No improvements to SR-91 or SR-57 are proposed under the No-Build Alternative, other than routine maintenance. Therefore, the No-Build Alternative would not result in permanent adverse effects related to emergency service and utility facilities and services.

Temporary Impacts

Build Alternative (Preferred Alternative)

Construction of the Build Alternative (Preferred Alternative) would affect existing underground and overhead utility facilities, which could require protection in place, relocation, or encasement extensions. The utility facilities that could be affected during construction of the Build Alternative (Preferred Alternative) are listed in Table 2.1.4-1. Final determinations of impacts on utilities and

relocation requirements will be completed during the initial design portion of the design-build phase of the proposed project. An updated utility search will be conducted during final design to confirm that all utility conflicts that require protection in place or relocation are addressed. Utility companies typically do not approve such relocations until the final design phase of a project. If the final utility relocations create additional environmental impacts, beyond those identified in this analysis, then additional environmental analysis would be required. The current analysis is based on preliminary engineering efforts to date. Potentially affected utilities would be relocated in accordance with federal and state laws and regulations as well as County of Orange and city policies. Ongoing coordination will continue between Caltrans, the County of Orange, cities of Anaheim and Placentia, affected agencies, and utility companies to minimize any potential disruption of utility service. Completion of the utility work described in Table 2.1.4-1 may result in temporary service disruptions for some utility users in the vicinity of the project area. Implementation of measure **UES-1** would ensure impacts on utilities are minimized.

Table 2.1.4-1. Potential Effects on Utility Facilities during Construction of Build Alternative (Preferred Alternative)

Utility Operator	Facility Description	Size	Location of Utility	Project Effect
AT&T CA	Telephone UG	4"	Anaheim	Extend encasement
	Telephone UG	TBD	Anaheim	Extend encasement
	Telephone UG	TBD	Anaheim	Extend encasement
	Telephone UG	TBD	Anaheim	Extend encasement
	Telephone UG	TBD	Anaheim	Relocate into new bridge
	Telephone UG	TBD	Anaheim	Extend encasement
	Telephone UG	TBD	Anaheim	Extend encasement
	Telephone UG	TBD	Anaheim	Extend encasement
	Telephone UG	TBD	Anaheim	Relocate
	Telephone UG	TBD	Anaheim/Placentia	Extend encasement
AT&T Legacy T	Fiber Optic UG	26-Conduit	Anaheim	Extend encasement
CenturyLink	Fiber Optic UG	2 Quad 4-1 1/4"	Anaheim	Relocate into new bridge
	Fiber Optic UG	2 Quad 4-1 1/4"	Anaheim	Extend encasement
City of Anaheim	Electric OH	12kV	Anaheim	Relocate 2 poles on sidewalk
	Electric UG	12.5 kV	Anaheim	Extend encasement
	Electric UG	12 kV	Anaheim	Relocate into new bridge
	Electric UG	69 kV	Anaheim	Extend encasement
	Electric UG	69 kV	Anaheim	Extend encasement
	Sewer	10"	Anaheim/Placentia	Extend encasement
	Water	10"	Anaheim	Extend encasement
	Water	12"	Anaheim/Placentia	Extend encasement
	Water	36"	Anaheim	Extend encasement
Level 3 Communications	Fiber Optic UG	2 Hex 6-1 1/4"	Anaheim	Relocate into new bridge
	Fiber Optic UG	3 Quad 4-1 1/4"	Anaheim	Extend encasement
	Fiber Optic UG	TBD	Anaheim	Relocate into new bridge
SoCal Gas Distribution	Gas	6"	Anaheim	Extend encasement
Sunesys LLC	Fiber Optic UG	TBD	Anaheim	Relocate into new bridge
Wilshire Connection	Fiber Optic UG	FO in AT&T Conduit	Anaheim	Relocate into new bridge

Source: Advanced Civil Technologies 2020
kV = kilovolt TBD = to be determined
OH = overhead UG = underground

Construction activities may require temporary lane closures, which could result in delays for emergency service providers that use SR-91, SR-55 or SR-57. However, construction activities at any given time would be limited to a small portion of the project alignment. Work that requires roadway and freeway closures, such as falsework and structure demolishing, would occur mostly during non-peak commute hours, at night, or on weekends. Construction of the improvements will require temporary nighttime lane closures of SR-91, SR-55, and SR-57 mainline, ramps, and ramps (see Table 2.1.4-2). Furthermore, access to all interconnecting roadways, though impeded, would be maintained at all times with the use of detours. Therefore, first responders would be able to use SR-91 or SR-57 to reach their destinations in time. Long-term ramp closures are not anticipated at any given ramps. Detours using ramps and local streets would be developed in the Traffic Management Plan (TMP) (measure **PF T-1**) and will be implemented during project construction. The TMP is developed and coordinated with affected cities and their emergency responders prior to implementation. The need for temporary lane closures would be communicated to the appropriate fire, law enforcement, or other emergency service agencies to ensure continuation of adequate service. Coordination with emergency services personnel and preparation of a TMP (measure **PF T-1**) would improve response times and would ensure that temporary impacts related to emergency service providers would be minimized during the construction period.

Table 2.1.4-2. Potential Freeway and Street Closures

Freeway and Local Street Closures
SR-91/Tustin Avenue OC
SR-91/Kraemer-Glassell Boulevard OC
SR-91/La Palma Avenue OC
WB SR-91 between Kraemer Boulevard and SR-57
EB SR-91 near the EB off-ramp to N. Tustin Avenue
WB SR-91 at SR-55
EB SR-91 just east of N. Tustin Avenue
EB SR-91 just south of E. Riverdale Avenue
WB SR-91 between N. Lakeview Avenue and SR-55
WB SR-91 between Imperial Highway and N. Lakeview Avenue
Complete Closures of Freeway to Freeway Connectors and Interchange Ramps
EB 91 to SB 55 Connector
WB 91 to NB 57 Connector
WB 91 to SB 57 Connector
NB 57 to EB 91 Connector
EB 91 to SB 55 Connector
WB 91 to SB 55 Connector
Kraemer Boulevard WB On-ramp
Kraemer Boulevard WB Loop On-ramp
Kraemer Boulevard EB Loop On-ramp

Source: TranSystems 2018
EB = eastbound, WB = westbound, SB = southbound, NB = northbound
OC = Overcrossing

No-Build Alternative

No improvements to SR-91 or SR-57, other than routine maintenance, are proposed under the No-Build Alternative. Therefore, the No-Build Alternative would not result in temporary adverse effects on utilities and emergency services.

2.1.4.4 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The following measures have been incorporated in the Build Alternative (Preferred Alternative) to address the potential temporary adverse effects of project construction on utilities and emergency services:

UES-1 During final design, utility relocation plans will be prepared in consultation with the affected utility providers/owners for those utilities that will need to be relocated, removed, or protected in place. If relocation is necessary, the final design will focus on relocating utilities within the state right-of-way or other existing public rights-of-way and/or easements. If relocation outside of existing rights-of-way or additional public rights-of-way and/or easements are necessary, the final design will focus on relocating facilities so as to minimize environmental impacts resulting from project construction as well as ongoing maintenance and repair activities. The utility relocation plans will be included in the project specifications.

Prior to and during construction, the contractor and/or utility provider, as applicable, will implement the components of the utility relocation plans provided in the project specifications.

Prior to utility relocation activities, the contractor will coordinate with affected utility providers regarding potential utility relocations, and utility providers will inform affected utility users in advance about the date and timing of potential service disruptions.

UES-2 Prior to and during construction, the contractor will coordinate all temporary mainline, ramp, and arterial roadway closures and detour plans with law enforcement, fire protection, and emergency medical service providers to minimize temporary delays that could affect emergency response times. This includes identifying alternative routes for emergency vehicles as well as routes across the construction areas, which would be developed in coordination with the affected agencies.

In addition to these measures, temporary construction impacts on emergency services would be minimized by implementation of Measure **PF T-1** in Section 2.1.5, Traffic and Transportation/Pedestrian and Bicycle Facilities. Measure **PF T-1** requires development and implementation of a TMP during construction of the Build Alternative (Preferred Alternative) to address traffic delays; maintain traffic flow in the SR-91 and SR-57 corridors; manage detours and temporary road, lane, and ramp closures; provide ongoing information to the public regarding construction activities, closures, and detours; and maintain a safe environment for construction workers and travelers.

2.1.4.5 REFERENCES

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Jolla Street on Route 55 between SR-91 and Santa Ana Canyon Road. June. Prepared for Caltrans and OCTA.

TranSystems 2018. *Transportation Management Plan for Widening on Route 91 PM 4.8/R10.4, for Widening on Route 57 PM 15.6/16.1, for Widening on Route 55 PM 17.5/R17.9.* September. Prepared for Caltrans and OCTA.

2.1.5 Traffic and Transportation/Pedestrian and Bicycle Facilities

2.1.5.1 REGULATORY SETTING

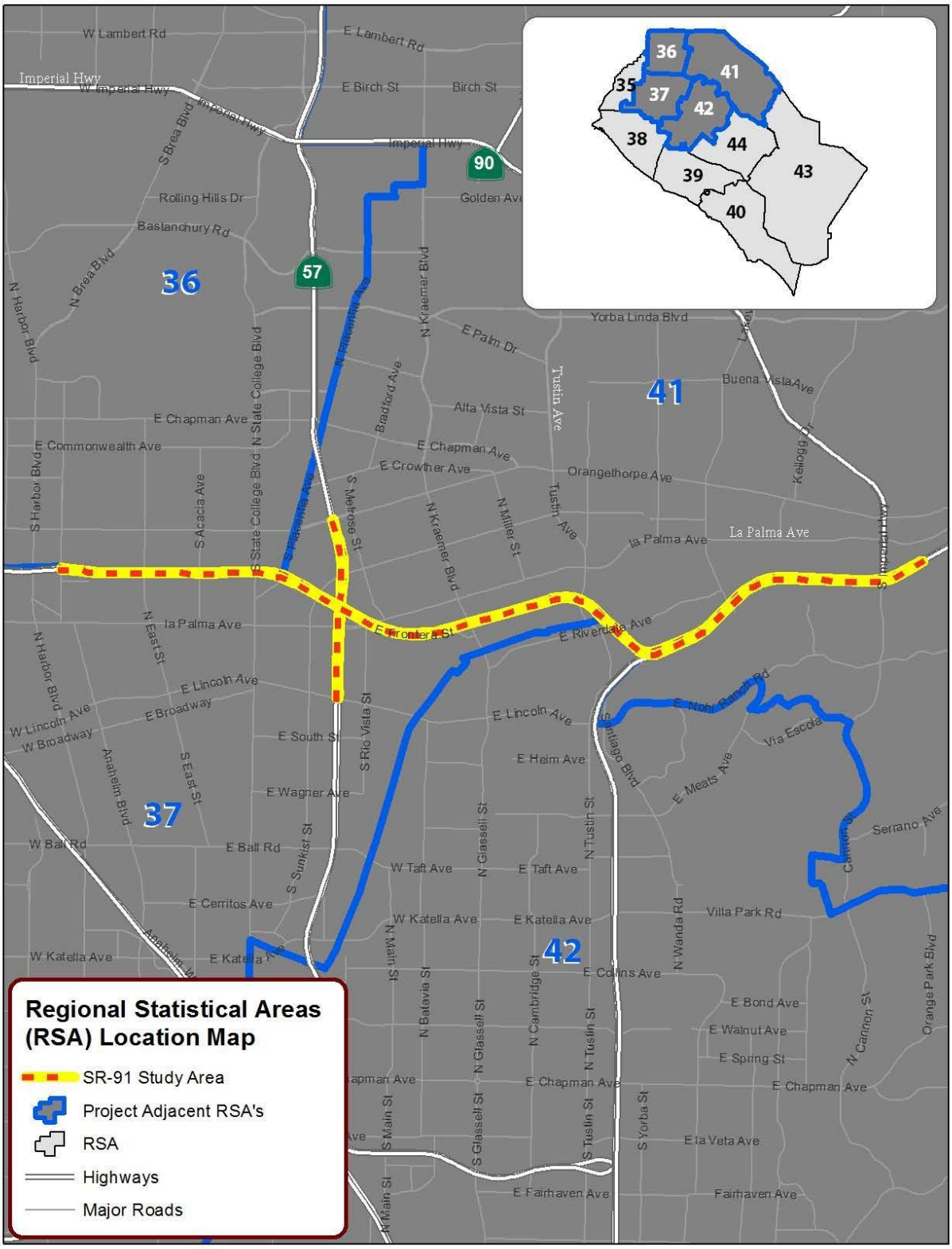
The Department, as assigned by the Federal Highway Administration (FHWA), directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of Federal-aid highway projects (see 23 Code of Federal Regulations [CFR] 652). It further directs that the special needs of the elderly and the disabled must be considered in all Federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

In July 1999, the U.S. Department of Transportation (USDOT) issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally assisted programs is governed by the USDOT regulations (49 CFR 27) implementing Section 504 of the Rehabilitation Act (29 United States Code [USC] 794). The FHWA has enacted regulations for the implementation of the 1990 Americans with Disabilities Act (ADA), including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to federal-aid projects, including Transportation Enhancement Activities.

2.1.5.2 AFFECTED ENVIRONMENT

This section is based on the *Traffic Study Report* (System Metrics Group 2018) prepared for the proposed project. The study area has been defined as the area in which the proposed project could have effects on roadway performance during short-term construction and long-term operations. Specifically, the study area comprises freeway mainline segments, freeway ramps, high-occupancy vehicle (HOV) lanes, and local arterials and intersections, which are identified in Tables 2.1.5-1 through 2.1.5-4. For the purposes of forecasting population and employment growth in the project area, regional statistical areas were used, as shown in Figure 2.1.5-1.

Figure 2.1.5-1. Regional Statistical Area (RSA) Location Map



Study Area

Freeway Mainline

As shown in Table 2.1.5-1, the existing numbers of traffic lanes within the SR-91 portion of the study area vary by location. In the westbound (WB) direction, SR-91 has three to five general purpose lanes, up to two auxiliary lanes, and up to two high-occupancy vehicle/high-occupancy toll (HOV/HOT) lanes. The existing eastbound (EB) SR-91 has three to six general purpose lanes, up to two auxiliary lanes, and up to two HOV/HOT lanes. Northbound (NB) SR-57 in the project vicinity has six general purpose lanes and one HOV lane.

Table 2.1.5-1. Summary of Lanes in the Study Area (Existing)

Location	Number of Lanes			
	Existing			
	General Purpose	Auxiliary	HOV	HOT
Westbound SR-91				
Mainline e/o Imperial Hwy Off-ramp	5	0	0	2
Mainline e/o Imperial Hwy On-ramps	5	0	0	2
Mainline e/o Lakeview Ave Off-ramp	5	0	0	2
Mainline e/o SR-91/SR-55 Split	3	2	0	2
Mainline e/o NB SR-55 Connector On-ramp	3	0	0	1
Mainline NB SR-55 Connector On-ramp to Tustin Ave Off-ramp	4	1	0	1
Mainline e/o Tustin Ave On-ramp	5	0	0	0
Mainline e/o Kraemer Blvd Off-ramp	5	0	1	0
Mainline e/o Kraemer Blvd On-ramps	5	0	1	0
Mainline e/o SR-57 Connector Off-ramp	3	2	1	0
Mainline e/o NB SR-57 Connector On-ramp	3	0	1	0
Mainline e/o SB SR-57 Connector On-ramp	3	0	1	0
Mainline e/o State College Blvd Off-ramp	4	1	1	0
Mainline e/o State College Blvd On-ramp	4	0	2	0
Mainline e/o Raymond Ave/East St Off-ramp	4	1	1	0
Eastbound SR-91				
Mainline w/o State College Blvd Off-ramp	4	0	1	0
Mainline w/o State College Blvd On-ramp	3	1	1	0
Mainline w/o SR-57 Connector Off-ramp	3	2	1	0
Mainline w/o SB SR-57 Connector On-ramp	3	0	1	0
Mainline w/o NB SR-57 Connector On-ramp	4	0	1	0
Mainline w/o Glassell St Off-ramp	3	1	1	0
Mainline w/o Glassell St On-ramp	3	1	1	0
Mainline w/o Tustin Ave Off-ramp	3	1	1	0
Mainline w/o SB Tustin Ave On-ramp	4	0	1	0
Mainline w/o Tustin Ave On-ramp	4	0	1	0
Mainline w/o SB SR-55 Connector Off-ramp	3	1	0	1
Mainline w/o SR-55 Connector On-ramp	3	0	0	1
Mainline w/o Lakeview Ave Off-ramp	6	1	0	2
Mainline w/o Lakeview Ave On-ramps	6	0	0	2
Mainline w/o Imperial Highway Off-ramp	5	1	0	2
Mainline w/o Imperial Highway On-ramps	5	0	0	2
Northbound SR-57				
Mainline s/o Orangethorpe Ave Off-ramp	6	0	0	1

Hwy = Highway; HOV=High occupancy vehicle; HOT=high occupancy toll; e/o = east of; w/o = west of; SB = southbound; NB = northbound

Freeway Ramps

As shown in Table 2.1.5-2, study area freeway ramps include on- and off-ramps that have one to two ramp lanes, with the exception of NB SR-55 to the eastbound (EB) SR-91 connector on-ramp, which has three ramp lanes.

Table 2.1.5-2. Study Area Freeway Ramps (Existing)

Location	Existing Number of Ramp Lanes
Westbound SR-91	
Imperial Highway Off-ramp	1.5*
NB Imperial Highway On-ramp	1
SB Imperial Highway On-ramp	1
Lakeview Ave Off-ramp	1
NB Lakeview Ave On-ramp	1
SB Lakeview Ave On-ramp	1
WB SR-91 to SB SR-55 Connector Off-ramp	2
NB SR-55 to WB SR-91 Connector On-ramp	2
Tustin Ave Off-ramp	1
Tustin Ave On-ramp	1
Kraemer Blvd Off-ramp	1
NB Kraemer Blvd On-ramp	1
SB Kraemer Blvd On-ramp	1
WB SR-91 to SR-57 Connector Off-ramp	2
WB SR-91 to NB SR-57 Connector Off-ramp	1
WB SR-91 to SB SR-57 Connector Off-ramp	1
NB SR-57 to WB SR-91 Connector On-ramp	1
SB SR-57 to WB SR-91 Connector On-ramp	1
State College Blvd Off-ramp	1
State College Blvd On-ramp	1
Eastbound SR-91	
State College Blvd Off-ramp	1
State College Blvd On-ramp	1
EB SR-91 to SR-57 Connector Off-ramp	2
EB SR-91 to NB SR-57 Connector Off-ramp	1.5*
EB SR-91 to SB SR-57 Connector Off-ramp	1
SB SR-57 to EB SR-91 Connector On-ramp	1
NB SR-57 to EB SR-91 Connector On-ramp	1
Glassell St SB Off-ramp (Glassell St Off-ramp Build)	1.5*
Glassell St SB On-ramp	1
Glassell St NB Off-ramp	1
Glassell St NB On-ramp	1
Tustin Ave Off-ramp	1
Tustin Ave On-ramp	1
EB SR-91 to SB SR-55 Connector Off-ramp	1.5*
NB SR-55 to EB SR-91 Connector On-ramp	3
Lakeview Ave Off-ramp	1
SB Lakeview Ave On-ramp	1
NB Lakeview Ave On-ramp	1
Imperial Highway Off-ramp	2

Location	Existing Number of Ramp Lanes
SB Imperial Highway On-ramp	1
NB Imperial Highway On-ramp	1
Northbound SR-57	
NB SR-57 to EB SR-91 Connector Off-ramp	2
NB SR-57 to WB SR-91 Connector Off-ramp	1
NB SR-57 Off-ramp to Orangethorpe Ave	1

* A 0.5-lane denotes a split in a lane at an off-ramp whereby travelers have the option of continuing on the mainline or exiting.
SB = southbound; NB = northbound; EB = eastbound; WB = westbound

HOV/HOT Lanes

As shown in Table, 2.1.5-3, the existing number of HOV/HOT lanes varies depending on location, with all segments of SR-91 and SR-57 within the project vicinity having one or two HOV/HOT lanes.

Table 2.1.5-3. Study Area HOV/HOT Lanes

Location	Number of Lanes	
	HOV	HOT
Westbound SR-91		
HOT Lane e/o Imperial Hwy Off-ramp	0	2
HOT Lane e/o NB Imperial Hwy On-ramp	0	2
HOT Lane e/o SB Imperial Hwy On-ramp	0	2
HOT Lane e/o Lakeview Ave Off-ramp	0	2
HOT Lane e/o SR91/SR55 Split	0	1
HOV Lane e/o Kraemer Blvd Off-ramp	1	0
HOV Lane e/o NB Kraemer Blvd On-ramp	0	0
HOV Lane e/o SB Kraemer Blvd On-ramp	1	0
HOV Lane e/o SR-57 Connector Off-ramp	1	0
HOV Lane e/o NB SR57 Connector On-ramp	1	0
HOV Lane e/o SB SR57 Connector On-ramp	1	0
HOV Lane e/o State College Blvd Off-ramp	1	0
HOV Lane e/o State College Blvd On-ramp	1	0
HOV Lane e/o Raymond Ave/East St Off-ramp	1	0

Location	Number of Lanes	
	HOV	HOT
Eastbound SR-91		
HOV Lane w/o State College Blvd On-ramp	1	0
HOV Lane w/o SR-57 Connector Off-Ramp	1	0
HOV Lane w/o SB SR-57 Connector On-ramp	1	0
HOV Lane w/o Glassell St Off-ramp	1	0
HOV Lane w/o SB Glassell St On-ramp	1	0
HOV Lane w/o Tustin Ave Off-ramp	1	0
HOV Lane to HOT Lane w/o SR 55 Connector Off-ramp	1	0
HOT Lane w/o SB Lakeview Ave On-ramp	1	2
HOT Lane w/o NB Lakeview Ave On-ramp	1	2
HOT Lane w/o Imperial Highway Off-ramp	0	2
HOT Lane w/o SB Imperial Highway On-ramp	0	2
HOT Lane w/o NB Imperial Highway On-ramp	0	2
HOT Lane e/o Imperial Highway On-ramp	0	2
Northbound SR-57		
HOV Lane b/w SR91 Connector Off and On-ramps	1	0

Hwy = Highway; HOV=High occupancy vehicle; HOT=high occupancy toll; e/o = east of; w/o = west of; SB = southbound; NB = northbound; EB = eastbound; WB = westbound

Local Arterials and Intersections

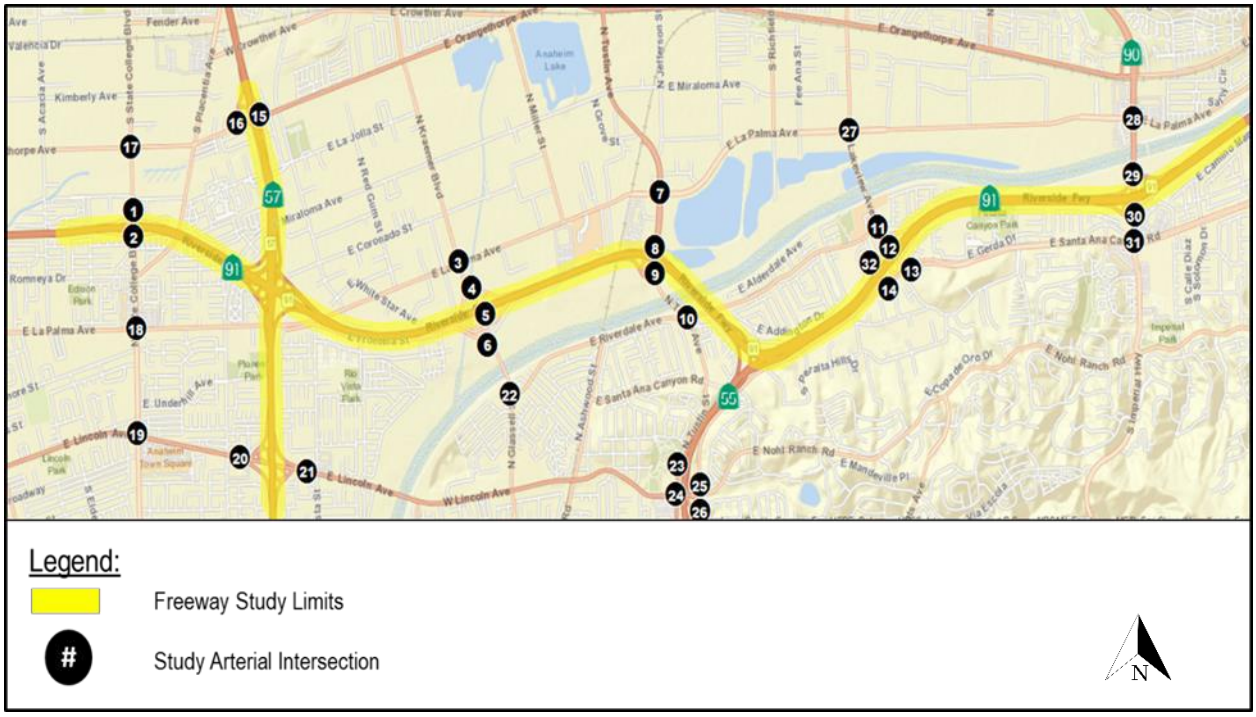
Table 2.1.5-4 shows the 32 local arterial intersections that are part of the study area, and Figure 2.1.5-2 shows the locations of the intersections.

Table 2.1.5-4. Study Area Arterial Intersections

Location	Study Intersection	Location	Study Intersection
1	SR-91 WB/State College Blvd	17	Orangethorpe Ave/State College Blvd
2	SR-91 EB/State College Blvd	18	State College Blvd/La Palma Ave
3	La Palma Ave/Kraemer Blvd	19	State College Blvd/Lincoln Ave
4	SR-91 WB/Kraemer Blvd	20	SR-57 NB Ramps & Lincoln Ave
5	SR-91 EB/Kraemer Blvd	21	SR-57 SB Ramps & Lincoln Ave
6	Frontera St/Glassell St	22	Glassell St/East Riverdale Ave
7	La Palma Ave /Tustin Ave	23	Tustin Ave/SR-55 SB Off-ramp
8	SR-91 WB/Tustin Ave	24	Tustin Ave/Lincoln Ave
9	SR-91 EB/Tustin Ave	25	Nohl Ranch Rd/Santiago Blvd/Lincoln Ave
10	East Riverdale Ave/Tustin Ave	26	Santiago Blvd/SR-55 NB Ramps
11	East Riverdale Ave/Lakeview Ave	27	La Palma Ave/Lakeview Ave
12	SR-91 WB/Lakeview Ave	28	Imperial Hwy/La Palma Ave
13	Lakeview Ave/Santa Ana Cyn Rd	29	Imperial Hwy/SR-91 WB Ramps
14	SR-91 EB Off Ramp/Lakeview Ave	30	Imperial Hwy/SR-91 EB Ramps
15	Orangethorpe Ave/SR-57 NB	31	Imperial Hwy/Santa Ana Cyn Rd
16	Orangethorpe Ave/SR-57 SB	32	Lakeview Ave/WB On Ramp to SR-55 **

SB = southbound; NB = northbound; EB = eastbound; WB = westbound

Figure 2.1.5-2. Arterial Intersection Locations Map



Existing Traffic Operations

Discussions were held early in the project development phase by the Project Development Team (PDT) regarding the appropriate baseline year due to the various improvements constructed within the project area over the last several years (i.e., SR-91 [SR-55 to Tustin Avenue], SR-91 [I-5 to SR-57] Lane Addition Project, and Capital Prevention Maintenance Strategy Project). It was decided that the baseline year needed to be prior to 2014 (when the Project Approval and Environmental Document [PA&ED] phase was initiated) to capture normal operating conditions before the construction of improvement projects, though they are included as part of the future No-Build Alternative. The PDT advised that 2011 was the best representative data for 2014 as a baseline for existing conditions considering the subsequent construction activities. There was very little or no growth from 2011 to 2014 based on Orange County Transportation Authority's (OCTA's) staff findings from analysis of Caltrans Performance Measurement System (PeMS) data for the study corridor. PeMS collects real-time traffic data for metropolitan areas throughout California.

Freeway Mainline

The existing freeway mainline segments peak hour volumes and level of service (LOS)[1] results for WB and EB SR-91 and NB SR-57 are summarized in Tables 2.1.5-5 through 2.1.5-7. The tables also present additional performance measures for SR-91 based on the microsimulation

[1] As discussed in Chapter 1, the ability of a highway to accommodate traffic is typically measured in terms of LOS. Traffic flow is classified by LOS; ranging from LOS A (free-flow traffic with low volumes and high speeds) to LOS F (traffic volume exceeds design capacity with forced flow and substantial delays). The LOS for signalized and unsignalized intersections is based on delay time per vehicle.

modeling analysis results. They include the peak period vehicle miles traveled (VMT), vehicle hours delay (VHD), and the peak average travel times for the mainline.

There are two main areas along WB SR-91 that are currently operating at oversaturated conditions, as summarized in Table 2.1.5-5, where LOS is at F. The first area, east of the SR-91/SR-55 split, is a major bottleneck that queues back to the Lakeview Avenue off-ramp. The second area, east of State College Boulevard on-ramp, is a bottleneck that queues back to the SR-57 interchange. The demand is either at, or exceeds, capacity at these bottleneck locations, resulting in queuing upstream. It should be noted that recent improvements on the WB SR-91 through State College Boulevard have reduced the bottleneck and congestion. Weaving operations are also deficient in the segment from NB SR-55 to Tustin Avenue due to the high entry volumes from the NB SR-55 connector on-ramp. The segment east of Raymond Avenue/East Street is a part of the queue from an existing bottleneck farther downstream of the project study area.

As shown in Table 2.1.5-5, microsimulation results show that the WB SR-91 corridor currently experiences over 4,000 vehicle hours of delay during the AM period and nearly 2,300 during the PM period as a result of the two major bottlenecks.

Also, as shown in Table 2.1.5-5, in the EB direction of SR-91, the segment from State College Boulevard to the SR-57 connector off-ramp currently operates at oversaturated conditions. Weaving analysis indicate that operations are also deficient from the Glassell Street on-ramp to the Tustin Avenue off-ramp segment due to the capacity constraints of the existing through lanes within this location.

Average travel times can reach up to nearly 20 minutes during the peak hour in the WB direction of the 5-mile corridor. The EB SR-91 corridor currently experiences over 250 VHD during the AM peak hour and almost 800 VHD during the PM peak hour. Average travel times in the WB direction are 10 and 12 minutes during the AM and PM peak hours, respectively.

Table 2.1.5-5 also shows the NB SR-57 segment south of Orangethorpe Avenue in the study area, which carries approximately 9,200 vehicles during the AM peak hour and 8,300 vehicles during the PM peak hour. The NB project segment of SR-57 experiences 40 VHD during the AM peak hour and 50 VHD during the PM peak hour. Average travel times in the NB direction through the project segment are 2 minutes for both the AM and PM peak hour.

Table 2.1.5-5. Existing Freeway Mainline Performance

Freeway	Existing			
	AM Peak Hour		PM Peak Hour	
Westbound SR-91				
Mainline Location	**Volume**	**LOS**	**Volume**	**LOS**
e/o Imperial Hwy Off-ramp	6,340	C	6,310	C
e/o NB Imperial Hwy On-ramp	5,570	C	5,630	C
e/o SB Imperial Hwy On-ramp	6,260	C	6,280	C
e/o Lakeview Ave Off-ramp	7,530	F*	7,140	F*
e/o NB Lakeview Ave On-ramp	7,470	F*	6,920	F*
e/o SB Lakeview Ave On-ramp	7,890	F*	6,920	F*
e/o SR-91/SR-55 Split & Lakeview Ave On-ramps	7,770	F**	7,040	F**
e/o SR-55 Connector On-ramp	5,080	D	4,220	C

Freeway	Existing			
	AM Peak Hour		PM Peak Hour	
e/o Tustin Ave Off-ramp	6,990	F	6,090	F
e/o Tustin Ave On-ramp	7,730	D	6,520	B
e/o Kraemer Blvd Off-ramp	7,460	C	6,240	C
e/o Kraemer Blvd On-ramps	7,860	C	6,800	C
e/o SR-57 Off-ramp	8,260	D	6,970	C
e/o NB SR-57 On-ramp	4,730	F*	3,610	F*
e/o State College Blvd Off-ramp	6,490	F*	5,710	F*
e/o State College Blvd On-ramp	5,290	F**	4,350	F**
e/o Raymond Ave/East St Off-ramp	6,090	F	5,490	F
Mainline Corridor Performance Measures				
Imperial Hwy to Raymond Ave/East St - Vehicle Miles Traveled (VMT)	336,800		308,700	
Imperial Hwy to Raymond Ave/East St - Vehicle Hours Delay (VHD)	4,050		2,290	
Imperial Hwy to Raymond Ave/East St - Peak Avg Travel Time (minutes)	19.6		17.6	
Eastbound SR-91				
Mainline Location	**Volume**	**LOS**	**Volume**	**LOS**
w/o State College Blvd Off-ramp	7,310	E	7,130	E
w/o SR-57 Connector Off-ramp	7,040	F**	7,390	F**
w/o NB SR-57 Connector On-ramp	4,510	C	4,960	C
w/o Glassell St Off-ramp	6,520	B	7,050	B
w/o Tustin Ave Off-ramp	5,790	F	6,660	F
w/o Tustin Ave On-ramp	5,690	C	7,370	F
w/o SB SR-55 Connector Off-ramp	5,840	D	7,290	E
w/o SR-55 Connector On-ramp	3,480	B	2,990	B
w/o Lakeview Ave Off-ramp	7,480	B	7,660	B
w/o NB Lakeview Ave On-ramp	6,810	C	6,900	C
w/o Imperial Highway Off-ramp	6,590	B	6,310	B
w/o NB Imperial Highway On-ramp	6,160	C	5,920	B
e/o Imperial Highway On-ramp	6,360	C	5,440	C
Mainline Corridor Performance Measures				
Raymond Ave/East St to Imperial Hwy - Vehicle Miles Traveled (VMT)	288,000		365,000	
Raymond Ave/East St to Imperial Hwy - Vehicle Hours Delay (VHD)	260		780	
Raymond Ave/East St to Imperial Hwy - Peak Avg Travel Time (minutes)	10.2		11.7	
Northbound SR-57				
Mainline Location	**Volume**	**LOS**	**Volume**	**LOS**
s/o Orangethorpe Ave Off-ramp	9,170	E	8,270	F*
Mainline Corridor Performance Measures				
s/o SR-91 Off-ramp to n/o Orangethorpe Ave Off-ramp – Vehicle Miles	55,500		61,500	
s/o SR-91 Off-ramp to n/o Orangethorpe Ave Off-ramp – Vehicle Hours	40		50	
s/o SR-91 Off-ramp to n/o Orangethorpe Ave Off-ramp – Peak Avg Travel Time (minutes)	2.1		2.0	

Level of Service (LOS) based on 2010 HCM (HCS) where segments are not saturated.
F* denotes saturated conditions where vehicles are in queue, based on Caltrans PeMS speed contours.
F** denotes saturated conditions where demand exceeds or is at near capacity causing bottleneck to occur, based on Caltrans PeMS speed contours.
SB = southbound; NB = northbound; EB = eastbound; WB = westbound; e/o = east of; w/o = west of; s/o = south of

Freeway Ramps

Table 2.1.5-6 shows the existing study area freeway ramp performance. In the EB direction, the highest volume-to-capacity (V/C) ratios are experienced at the WB SR-91 to Southbound (SB) SR-55 Connector Off-ramp, WB SR-91 to SR-57 Connector Off-ramp, WB SR-91 to NB SR-57 Connector Off-ramp, and the WB SR-91 to SB SR-57 Connector Off-ramp, all of which have a V/C of at least 0.80 during one or both peak hours. In the EB direction, only one ramp (EB SR-91 to SB SR-55 Connector Off-ramp) experiences a V/C of 0.80 or greater, which occurs in both the AM and PM peak hour. V/C ratios are one measure of the performance of transportation facilities, with a V/C ratio greater than 0.80 corresponding to a LOS D or worse on a scale of A to F.

Table 2.1.5-6. Existing Freeway Ramp Performance

	Existing	
	AM Peak Hour	PM Peak Hour
Location	V/C	V/C
Westbound SR-91		
Imperial Highway Off-ramp	0.21	0.19
NB Imperial Highway On-ramp	0.43	0.34
SB Imperial Highway On-ramp	0.59	0.46
Lakeview Ave Off-ramp	0.19	0.15
NB Lakeview Ave On-ramp	0.23	0.08
SB Lakeview Ave On-ramp	0.42	0.47
WB SR-91 to SB SR-55 Connector Off-ramp	0.80	0.85
NB SR-55 to WB SR-91 Connector On-ramp	0.70	0.69
Tustin Ave Off-ramp	0.60	0.60
Tustin Ave On-ramp	0.42	0.42
Kraemer Blvd Off-ramp	0.45	0.40
NB Kraemer Blvd On-ramp	0.24	0.17
SB Kraemer Blvd On-ramp	0.21	0.40
WB SR-91 to SR-57 Connector Off-ramp	0.80	0.76
WB SR-91 to NB SR-57 Connector Off-ramp	0.80	0.76
WB SR-91 to SB SR-57 Connector Off-ramp	0.80	0.76
NB SR-57 to WB SR-91 Connector On-ramp	0.40	0.46
SB SR-57 to WB SR-91 Connector On-ramp	0.44	0.54
State College Blvd Off-ramp	0.20	0.25
State College Blvd On-ramp	0.41	0.57
Eastbound SR-91		
State College Blvd Off-ramp	0.46	0.33
State College Blvd On-ramp	0.39	0.42
EB SR-91 to SR-57 Connector Off-ramp	0.78	0.71
EB SR-91 to NB SR-57 Connector Off-ramp	0.64	0.60
EB SR-91 to SB SR-57 Connector Off-ramp	0.60	0.52
SB SR-57 to EB SR-91 Connector On-ramp	0.36	0.37
NB SR-57 to EB SR-91 Connector On-ramp	0.45	0.48
Glassell St SB Off-ramp	0.20	0.13
Glassell St SB On-ramp	0.37	0.39
Glassell St NB Off-ramp	0.39	0.25
Glassell St NB On-ramp	0.15	0.16
Tustin Ave Off-ramp	0.52	0.43
Tustin Ave On-ramp	0.59	0.67

Location	Existing	
	AM Peak Hour	PM Peak Hour
	V/C	V/C
EB SR-91 to SB SR-55 Connector Off-ramp	0.92	0.80
NB SR-55 to EB SR-91 Connector On-ramp	0.58	0.50
Lakeview Ave Off-ramp	0.46	0.47
SB Lakeview Ave On-ramp	0.13	0.09
NB Lakeview Ave On-ramp	0.02	0.01
Imperial Highway Off-ramp	0.31	0.35
SB Imperial Highway On-ramp	0.26	0.13
NB Imperial Highway On-ramp	0.13	0.12
Northbound SR-57		
NB SR-57 to EB SR-91 Connector Off-ramp	0.22	0.24
NB SR-57 to WB SR-91 Connector Off-ramp	0.40	0.46
NB SR-57 Off-ramp to Orangethorpe Ave	0.24	0.17

HOV=High occupancy vehicle; HOT=high occupancy toll; e/o = east of; w/o = west of; SB = southbound; NB = northbound; EB = eastbound; WB = westbound; V/C = volume-to-capacity

HOV Lanes

Table 2.1.5-7 shows the existing HOV performance results for the SR-91 study area. The HOV analysis does not include the analysis of the HOT lanes within the study area. As shown in Table 2.1.5-7, all HOV lane segments within the study area are currently operating at LOS C or better.

Table 2.1.5-7. Existing HOV Lane Performance

Location	Existing	
	AM Peak Hour	PM Peak Hour
	V/C	V/C
Westbound SR-91		
HOV Lane e/o Kraemer Blvd Off-ramp	0.52	0.49
HOV Lane e/o NB Kraemer Blvd On-ramp	0.43	0.33
HOV Lane e/o SB Kraemer Blvd On-ramp	0.44	0.36
HOV Lane e/o SR-57 Off-ramp	0.50	0.51
HOV Lane e/o NB SR57 On-ramp	0.55	0.59
HOV Lane e/o SB SR57 On-ramp	0.55	0.59
HOV Lane e/o State College Blvd Off-ramp	0.29	0.31
HOV Lane e/o State College Blvd On-ramp	0.73	0.70
HOV Lane e/o Raymond/East Off-ramp	0.71	0.69
Eastbound SR-91		
HOV Lane w/o State College Blvd Off-ramp	0.56	0.68
HOV Lane w/o State College Blvd On-ramp	0.64	0.71
HOV Lane w/o SR-57 Off Ramp	0.17	0.23
HOV Lane w/o SB SR-57 Connector On-ramp	0.40	0.46
HOV Lane w/o Glassell St Off-ramp	0.26	0.48
HOV Lane w/o SB Glassell St On-ramp	0.26	0.47
HOV Lane w/o Tustin Ave Off-ramp	0.25	0.47
Northbound SR-57		
HOV Lane b/w SR91 Connector Off & On-ramps	0.29	0.51

HOV =High occupancy vehicle; e/o = east of; w/o = west of; b/w = between; SB = southbound; NB = northbound; EB = eastbound; WB = westbound; V/C = volume-to-capacity

Local Arterials and Intersections

Existing peak hour performance results for the study area arterial intersections are summarized in Table 2.1.5-8. As shown, the following intersections currently fail to meet an acceptable LOS D:

- La Palma Avenue/Kraemer Boulevard (AM/PM)
- SR-91 EB/Kraemer Boulevard (PM)
- SR-91 WB/Tustin Avenue (AM/PM)
- Lakeview Avenue/Santa Ana Canyon Road (AM)
- Tustin Avenue/Lincoln Avenue (AM/PM)
- Imperial Highway/Santa Ana Canyon Road (PM)

Queuing analysis was also performed for existing conditions. Table 2.1.5-9 summarizes the 95th percentile queue and storage lengths for the off-ramps within the study area. As shown in the table, the WB SR-91 off-ramp segment to Tustin Avenue currently experiences queuing that exceeds the existing storage capacity of the ramp during the AM peak hour. The other off-ramps within the study area have adequate storage capacity to accommodate the queueing for the existing conditions.

The intersection capacity utilization (ICU) performance results for the Congestion Management Program Highway System (CMPHS) intersections are summarized in Table 2.1.5-10. The intersection of SR-91 WB ramps and Tustin Avenue was undergoing construction during the existing conditions analysis period and operates over an acceptable LOS E during both the AM and PM peak hours. The other CMPHS intersections are all currently operating are LOS E or better for both peak hours.

Table 2.1.5-8. Existing Arterial Corridors Intersection Performance

		Existing			
		AM Peak Hour		PM Peak Hour	
Location	Study Intersection	Delay (sec)	LOS	Delay (sec)	LOS
1	SR-91 WB/State College Blvd	11.7	B	13.0	B
2	SR-91 EB/State College Blvd	25.7	C	27.6	C
3	La Palma Ave/Kraemer Blvd	86.6	F	55.8	E
4	SR-91 WB/Kraemer Blvd	16.6	B	15.0	B
5	SR-91 EB/Kraemer Blvd	18.6	C	44.9	E
6	Frontera St/Glassell St	19.0	B	15.2	B
7	La Palma Ave /Tustin Ave	33.1	C	36.1	D
8	SR-91 WB/Tustin Ave	130.8	F	111.1	F
9	SR-91 EB/Tustin Ave	21.3	C	20.6	C
10	East Riverdale Ave/Tustin Ave	22.8	C	24.6	C
11	East Riverdale Ave/Lakeview Ave	35.0	D	44.2	D
12	SR-91 WB/Lakeview Ave	16.8	B	17.1	B
13	Lakeview Ave/Santa Ana Cyn Rd	64.3	E	46.5	D
14	SR-91 EB Off Ramp/Lakeview Ave	15.0	B	16.5	B
15	Orangethorpe Ave/SR-57 NB	28.6	C	32.1	C
16	Orangethorpe Ave/SR-57 SB	33.7	C	41.1	D
17	Orangethorpe Ave/State College Blvd	28.1	C	36.2	D

Location	Study Intersection	Existing			
		AM Peak Hour		PM Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
18	State College Blvd/La Palma Ave	39.2	D	46.3	D
19	State College Blvd/Lincoln Ave	35.5	D	36.7	D
20	SR-57 NB Ramps & Lincoln Ave	23.1	C	23.0	C
21	SR-57 SB Ramps & Lincoln Ave	21.1	C	20.3	C
22	Glassell St/East Riverdale Ave	16.8	B	17.5	B
23	Tustin Ave/SR-55 SB Off-ramp	13.4	B	12.1	B
24	Tustin Ave/Lincoln Ave	94.4	F	113.5	F
25	Nohl Ranch Rd/Santiago Blvd/Lincoln Ave	37.9	D	27.5	C
26	Santiago Blvd/SR-55 NB Ramps	23.5	C	22.3	C
27	La Palma Ave/Lakeview Ave	27.7	C	37.5	D
28	Imperial Hwy/La Palma Ave	46.8	D	44.9	D
29	Imperial Hwy/SR-91 WB Ramps	12.1	B	10.9	B
30	Imperial Hwy/SR-91 EB Ramps	14.0	B	19.3	B
31	Imperial Hwy/Santa Ana Cyn Rd	46.0	D	63.5	E

Shading indicates unacceptable LOS (i.e. LOS E or F)
Hwy = Highway; LOS = level of service; SB = southbound; NB = northbound; EB = eastbound; WB = westbound

Table 2.1.5-9. Existing Off-Ramp Queuing

Off-Ramp Location	Existing		
	95th Percentile Queue Length (ft) [1,2]		
	AM Peak Hour	PM Peak Hour	Storage Length (ft)
SR-91 WB Off-ramp to State College Blvd	118	222	1,735
SR-91 EB Off-ramp to State College Blvd	157	171	1,850
SR-57 SB Off-ramp to Orangethorpe Ave	188	127	1,890
SR-57 NB Off-ramp to Orangethorpe Ave	259	317	1,575
SR-91 WB Off-ramp to Kraemer Blvd	244	177	2,390
SR-91 EB Off-ramp to Glassell St	117	312	1,160
SR-91 WB Off-ramp to Tustin Ave	1,329	1,280	1,310
SR-91 EB Off-ramp to Tustin Ave	337	277	3,255
SR-55 NB Off-ramp to Santiago Blvd	175	366	3,200
SR-55 SB Off-ramp to Tustin Ave	192	178	2,260
SR-57 SB Off-ramp to Lincoln Ave	242	217	2,450
SR-57 NB Off-ramp to Lincoln Ave	125	278	1,650
SR-91 WB Off-ramp to Lakeview Ave	182	178	1,520
SR-91 EB Off-ramp to Lakeview Ave	133	182	3,480
SR-91 WB Off-ramp to Imperial Hwy	199	195	3,450
SR-91 EB Off-ramp to Imperial Hwy	226	334	3,014

[1] 95th percentile queue length reported based on Synchro.
[2] Shaded entry indicates queue exceeds storage capacity
Hwy = Highway; SB = southbound; NB = northbound; EB = eastbound; WB = westbound

Table 2.1.5-10. Existing CMP Highway System Performance

CMP Location	Intersection Location		Existing			
			AM Peak Hour		PM Peak Hour	
	Street[1]	Street [2]	ICU Rating	LOS	ICU Rating	LOS
1	SR-91 WB Ramps	State College Blvd	0.50	A	0.66	B
2	SR-91 EB Ramps	State College Blvd	0.50	A	0.66	B
3	SR-91 WB Ramps	Tustin Ave	1.02	F	1.00	F
4	SR-91 EB Ramps	Tustin Ave	0.60	A	0.59	A
5	SR-57 NB Ramps	Orangethorpe Ave	0.48	A	0.52	A
6	SR-57 SB Ramps	Orangethorpe Ave	0.52	A	0.51	A

[1] ICU ratings are calculated based on ICU methodology using Synchro.
[2] ICU LOS is based on the 2015 Orange County Congestion Management Program.
Shading indicates unacceptable LOS (i.e. LOS E or F)
ICU = intersection capacity utilization; LOS = level of service; SB = southbound; NB = northbound; EB = eastbound; WB = westbound

Bicycle and Pedestrian Facilities

As identified in the City of Anaheim Bicycle Master Plan, the following bicycle facilities are present in the project vicinity. Table 2.1.5-11 shows the location of these bicycle facilities, the class of facility, and the relationship to SR-91. Although Table 2.1.5-11 identifies the currently designated bicycle facilities in the immediate vicinity of the proposed project, other roadways may be used by bicyclists when bicycle use is not explicitly prohibited with signage. The Santa Ana River Trail is a Class I bikeway that partially runs through the City of Orange within the project vicinity. At Glassell Street, the Santa Ana River Trail provides a link to a Class II bikeway on Glassell Street, approximately 1,000 feet south of SR-91. The City of Orange is planning a Class I bikeway at the Tustin Branch Trail, from Santa Ana River to Santiago Boulevard, approximately 1,000 feet southeast of SR-91. There is a segment of the proposed Tustin Branch Trail bikeway that extends into the Villa Park City limits, approximately 500 feet southeast of SR-91. (City of Orange 2001, 2015.)

Table 2.1.5-11. Existing Bicycle Facilities

Name of Bicycle Facility	Location	Class	Relationship to SR-91
La Palma Avenue	East of SR-57	Class II (Bike Lane)	Crosses over SR-91 east of the SR-57 interchange
Frontera Street	East of SR-57	Class II (Bike Lane)	Parallels SR-91 east of SR-57 interchange
Riverdale Avenue	SR-91 and Santa Ana River	Class II (Bike Lane)	Crosses over SR-91 south of the Santa Ana River
Santa Ana River Trail/Bicycle Path	SR-91 and Santa Ana River	Class I (Bike Path)	Crosses under SR-91 south of the Santa Ana River
Santa Ana Canyon Road	East of SR-55	Class II (Bike Lane)	Parallels SR-91 along SR-55 interchange

Source: City of Anaheim 2017.

The study area also has sidewalks along SR-91 overcrossing and undercrossing locations, as identified in Table 2.1.5-12.

Table 2.1.5-12. Existing Pedestrian Facilities

Name of Pedestrian Facility	Location	Description
State College Boulevard Undercrossing	West of SR-57	Sidewalks in each direction
Placentia Avenue Overcrossing	West of SR-57	Sidewalks in each direction
Miraloma Avenue Overcrossing	West of SR-57	Sidewalks in each direction
La Palma Avenue Overcrossing	East of SR-57	Sidewalk in eastbound direction only
Glassell Street Overcrossing	Between SR-57 and SR-55	Sidewalks in each direction
Tustin Avenue Overcrossing	West of SR-55	Sidewalks in each direction
Riverdale Avenue Overcrossing	East of SR-55	Sidewalk in eastbound direction only
Lakeview Avenue Overcrossing	East of SR-55	Sidewalks in each direction

Source: Google Maps 2018.

2.1.5.3 ENVIRONMENTAL CONSEQUENCES

Permanent Impacts

For the traffic study, three analysis time periods were analyzed: existing, opening year (2030), and horizon or design year (2050). For the opening and design years, the analysis included without project ("No-Build") and with project ("Build") scenarios. The Build and No-Build project scenarios include Orange County projects from the approved 2012 SCAG Financially Constrained Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). The following scenarios were used to assess the potential for permanent impacts resulting from implementation of the proposed project:

1. Existing
2. 2030 Opening Year (No-Build)
3. 2030 Opening Year (Build)
4. 2050 Design Year (No-Build)
5. 2050 Design Year (Build)

Build Alternative (Preferred Alternative)

Freeway Mainline

Traffic analysis for the freeway facilities was performed using the methodologies in the 2010 Highway Capacity Manual (HCM) when the freeway segment is not oversaturated, or congested. The Highway Capacity Software (HCS) program was used to calculate the performance measures based on the HCM methodology for freeway segments. The HCM defines three types of freeway segments:

- *Freeway merge and diverge segments:* Segments in which two or more traffic streams (i.e., traffic lanes) combine to form a single traffic stream (merge) or a single traffic stream diverge to form two or more separate traffic streams (diverge).
- *Freeway weaving segments*: Segments in which two or more traffic streams traveling in the same general direction cross paths along a significant length of freeway without the aid of traffic control devices (except for guide signs).
- *Basic freeway segments*: All segments that are not merge, diverge, or weaving segments.

Tables 2.1.5-13 through 2.1.5-15 show freeway mainline performance for the 2030 Build Alternative scenario, and Tables 2.1.5-16 through 2.1.5-18 show freeway mainline performance for the 2050 Build Alternative scenario. As shown in Table 2.1.5-13, the Build Alternative (Preferred Alternative) is projected to result in operational improvements on the WB SR-91 by the 2030 opening year. While demand volumes are projected to be higher with the Build Alternative (Preferred Alternative) during the peak hours, the LOS levels are relatively similar to those of the No-Build Alternative. More significantly, the Build Alternative (Preferred Alternative) is expected to result in delay reductions. Daily vehicle hours of delay during the AM and PM peak periods are projected to be 13,800 hours of delay under the No-Build Alternative and 9,900 hours of delay under the Build Alternative (Preferred Alternative), an improvement of over 28 percent in the AM and PM peak periods combined. This would be accomplished while increasing the VMT by almost 3 percent. Peak average travel times would also be reduced by about 5 minutes in either peak period. At the 2030 opening year, the separation of the WB off-ramps to NB and SB SR-57 is projected to result in AM and PM peak period delays of 3,784 and 6,011 VHD respectively. The proposed design is estimated to result in a delay savings of almost 15 percent over the existing configuration.

In the EB direction of SR-91, the Build Alternative (Preferred Alternative) is expected to result in operational improvements, as shown in Table 2.1.5-14. The LOS would improve overall, and the congestion delay would be reduced from nearly 9,000 hours of delay for the No-Build Alternative to 1,640 hours of delay for the Build Alternative (Preferred Alternative) for the AM and PM peak periods combined. This would result in an improvement of over 80 percent and reduction of peak average travel time by 10 minutes, and would be accomplished with slightly reduced VMT. By 2050, the mainline operations at the EB lane reduction downstream of the SB SR-55 Connector split is projected to operate at LOS C and D during the AM and PM peak hours under the Build Alternative (Preferred Alternative). Under the No-Build Alternative, the same location would operate at LOS D during the AM peak hour and LOS F during the PM peak hour. No adverse operational or safety impacts are anticipated under the Build Alternative (Preferred Alternative).

The 2050 Build freeway mainline performance results for the WB SR-91 are summarized in Table 2.1.5-16. Table 2.1.5-17 summarizes the results for the EB SR-91. The results are an estimated projection to year 2050 based on the existing baseline and 2030 microsimulation analysis results. Microsimulation was not conducted for year 2050, as this type of analysis is uncommon and impractical beyond 20 years into the future. At the microscopic level for so far into the future, the models often lose accuracy from the high demand volumes, excessive congestion, and queuing beyond the model limits. As such, travel times could not be predicted based on projections of congestion delay and VMT, as predicted speeds are required to estimate travel times. From the estimated projections, it is expected that much of the benefits realized by 2030 would be more pronounced by 2050, as the exhibits indicate, with over 8,000 vehicle hours of delay savings in the WB SR-91 and 15,000 in the EB SR-91 when compared to the No-Build Alternative.

Table 2.1.5-18 summarizes the NB SR-57 performance analysis for 2050 under the Build scenario. Much like the 2030 results, there would be operational improvements in terms of delay, but LOS on the mainline SR-57 would change only marginally.

Table 2.1.5-13. 2030 No-Build and Build Westbound SR-91 Freeway Mainline Performance

	2030 No-Build						2030 Build					
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
Mainline Location	**Demand**	**D/C**	**LOS**	**Demand**	**D/C**	**LOS**	**Demand**	**D/C**	**LOS**	**Demand**	**D/C**	**LOS**
e/o Imperial Hwy Off-ramp	7,390	0.74	F*	7,900	0.79	F*	7,470	0.75	F*	8,070	0.81	F*
e/o NB Imperial Hwy On-ramp	6,490	0.65	F*	7,020	0.70	F*	6,610	0.66	F*	7,200	0.72	F*
e/o SB Imperial Hwy On-ramp	7,380	0.74	F*	7,670	0.77	F*	7,660	0.77	F*	7,920	0.79	F*
e/o Lakeview Ave Off-ramp	8,360	0.84	F*	8,420	0.84	F*	8,590	0.86	F*	8,640	0.86	F*
e/o Lakeview Ave Off-ramp	8,360	0.84	F*	8,420	0.84	F*	8,590	0.86	F*	8,640	0.86	F*
e/o NB Lakeview Ave On-ramp	7,980	0.80	F*	8,100	0.81	F*	n/a	n/a	n/a	n/a	n/a	n/a
e/o SB Lakeview Ave On-ramp	8,410	0.84	F*	8,240	0.82	F*	n/a	n/a	n/a	n/a	n/a	n/a
e/o SR-91/SR-55 Split & Lakeview Ave On-	9,270	1.01	F**	9,160	1.00	F**	9,590	1.04	F**	9,590	1.04	F**
e/o Tustin Ave Off-ramp	7,960	0.83	F	7,230	0.75	F	9,050	0.94	F	7,210	0.75	F
e/o Tustin Ave On-ramp	6,820	0.68	C	6,050	0.61	C	7,910	0.79	C	6,030	0.60	B
e/o Kraemer Blvd Off-ramp	7,750	0.78	D	7,020	0.70	D	8,770	0.88	D	7,080	0.71	C
e/o Kraemer Blvd On-ramps	8,120	0.81	F*	6,870	0.69	F*	8,470	0.85	F*	7,660	0.77	F*
e/o SR-57 Connector Off-ramp	8,920	0.97	F**	8,010	0.87	F*	9,290	1.01	F*	8,800	0.96	F*
e/o NB SR-57 Connector On-ramp	5,380	0.90	F*	4,780	0.80	F*	5,600	0.93	F*	5,480	0.91	F*
e/o State College Blvd Off-ramp	8,060	0.84	F*	7,790	0.81	F*	8,290	0.83	F*	8,650	0.87	F*
e/o State College Blvd On-ramp	7,530	0.94	F**	7,220	0.90	F**	7,560	0.76	F**	7,780	0.78	F**
e/o Raymond Ave/East St Off-ramp	8,400	0.88	E	8,450	0.88	E	8,420	0.88	E	9,020	0.94	E
Mainline Corridor Performance Measures	**AM Peak Period**			**PM Peak Period**			**AM Peak Period**			**PM Peak Period**		
Imperial Highway to Raymond Ave/East St - Vehicle Miles Traveled (VMT) (daily, peak hour)	381,000			376,000			394,800			380,000		
Imperial Highway to Raymond Ave/East St - Vehicle Hours Delay (VHD) (daily, peak hour)	6,070			7,770			3,790			6,110		
Imperial Highway to Raymond Ave/East St - Peak Average Travel Time (minutes)	24.7			29.4			20.5			24.6		

LOS based on 2010 HCM (HCS) where segments are not saturated.
F* denotes saturated conditions where vehicles are in queue, based on 2030 microsimulation modeling analysis.
F** denotes saturated conditions where demand exceeds or is at near capacity causing bottleneck to occur, based on 2030 microsimulation modeling analysis.
Shading denotes a D/C ratio greater than 1.0.
D/C = demand-to-capacity; ICU = intersection capacity utilization; LOS = level of service; SB = southbound; NB = northbound; EB = eastbound; WB = westbound; VHD = Vehicle hours of delay; VMT = vehicle miles traveled

Table 2.1.5-14. 2030 No-Build and Build Eastbound SR-91 Freeway Mainline Performance

	2030 No-Build						2030 Build					
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
Mainline Location	**Demand**	**D/C**	**LOS**	**Demand**	**D/C**	**LOS**	**Demand**	**D/C**	**LOS**	**Demand**	**D/C**	**LOS**
w/o State College Blvd Off-ramp	6,970	0.87	E	7,140	0.89	F	7,130	0.89	E	7,240	0.91	E
w/o SR-57 Connector Off-ramp	7,790	0.78	F**	7,910	0.79	F**	7,670	0.77	F**	7,920	0.79	F**
w/o NB SR-57 Connector On-ramp	5,230	0.52	D	6,080	0.61	F*	5,040	0.50	C	5,570	0.56	D
w/o Glassell St Off-ramp	6,370	0.80	B	7,340	0.92	F*	6,370	0.64	B	6,910	0.69	B
w/o Tustin Ave Off-ramp	5,190	0.87	F	6,350	1.06	F**	5,160	0.65	E	5,760	0.72	F
w/o Tustin Ave On-ramp	6,260	0.78	C	8,110	1.01	F	6,540	0.65	C	7,400	0.74	C
w/o SR-55 Connector Off-ramp	6,590	0.82	C	7,780	0.97	F	6,870	0.86	C	7,420	0.93	D
w/o SR-55 Connector On-ramp	4,520	0.75	B	4,220	0.70	E	4,460	0.74	B	4,240	0.71	D
w/o Lakeview Ave Off-ramp	8,570	0.61	B	8,110	0.58	B	8,540	0.61	B	7,910	0.57	B
w/o NB Lakeview Ave On-ramp	7,760	0.65	B	7,290	0.61	B	7,680	0.64	B	6,980	0.58	B
w/o Imperial Highway Off-ramp	7,800	0.65	C	7,300	0.61	C	7,720	0.64	C	7,000	0.58	C
w/o NB Imperial Highway On-ramp	7,490	0.75	C	6,150	0.62	C	7,180	0.72	C	5,630	0.56	B
w/o Imperial Highway On-ramp	7,960	0.80	D	6,440	0.64	C	7,690	0.77	D	5,890	0.59	C
Mainline Corridor Performance Measures	**AM Peak Period**			**PM Peak Period**			**AM Peak Period**			**PM Peak Period**		
Raymond Ave/East St to Imperial Highway - Vehicle Miles Traveled (VMT) (daily, peak	353,000			367,000			340,900			358,300		
Raymond Ave/East St to Imperial Highway - Vehicle Hours Delay (VHD) (daily, peak hour)	3,190			5,800			1,140			500		
Raymond Ave/East St to Imperial Highway - Peak Avg Travel Time (minutes)	17.7			23.4			12.0			10.1		

LOS based on 2010 HCM (HCS) where segments are not saturated.

F* denotes saturated conditions where vehicles are in queue, based on 2030 microsimulation modeling analysis.

F** denotes saturated conditions where demand exceeds or is at near capacity causing bottleneck to occur, based on 2030 microsimulation modeling analysis.

Shading denotes a D/C ratio greater than 1.0.

D/C = demand-to-capacity; ICU = intersection capacity utilization; LOS = level of service; SB = southbound; NB = northbound; EB = eastbound; WB = westbound; VHD = Vehicle hours of delay; VMT = vehicle miles traveled

Table 2.1.5-15. 2030 No-Build and Build Northbound SR-57 Freeway Mainline Performance

	2030 No-Build						2030 Build					
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
Mainline Location	**Demand**	**D/C**	**LOS**	**Demand**	**D/C**	**LOS**	**Demand**	**D/C**	**LOS**	**Demand**	**D/C**	**LOS**
s/o Orangethorpe Ave Off-ramp	9,970	0.83	F	8,820	0.74	F*	10,140	0.85	F	8,940	0.75	F*
Mainline Corridor Performance Measures	**AM Peak Period**			**PM Peak Period**			**AM Peak Period**			**PM Peak Period**		
s/o SR-91 Off to n/o Orangethorpe Ave Off-ramp - Vehicle Miles Traveled (VMT) (daily, peak hour)	61,100			64,500			60,400			67,500		
s/o SR-91 Off to n/o Orangethorpe Ave Off-ramp - Vehicle Hours of Delay (VHD) (daily, peak hour)	660			2,010			100			120[1]		
s/o SR-91 Off to n/o Orangethorpe Ave Off-ramp - Peak Avg Travel Times (minutes)	4.6			7.3			2.1			2.0		

LOS based on 2010 HCM (HCS) where segments are not saturated.

F* denotes saturated conditions where vehicles are in queue, based on 2030 microsimulation modeling analysis.

F** denotes saturated conditions where demand exceeds or is at near capacity causing bottleneck to occur, based on 2030 microsimulation modeling analysis.

[1] Microsimulation model assumes no downstream congestion spillback to project area (model analysis did not include areas beyond project limits).

Shading denotes a D/C ratio greater than 1.0.

D/C = demand-to-capacity; ICU = intersection capacity utilization; LOS = level of service; SB = southbound; NB = northbound; EB = eastbound; WB = westbound; VHD = Vehicle hours of delay; VMT = vehicle miles traveled

Table 2.1.5-16. 2050 No-Build and Build Westbound SR-91 Freeway Mainline Performance

	2050 No-Build						2050 Build					
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
Mainline Location	**Demand**	**D/C**	**LOS**	**Demand**	**D/C**	**LOS**	**Demand**	**D/C**	**LOS**	**Demand**	**D/C**	**LOS**
e/o Imperial Hwy Off-ramp	8,030	0.80	F*	8,500	0.85	F*	8,140	0.81	F*	8,720	0.87	F*
e/o NB Imperial Hwy On-ramp	7,000	0.70	F*	7,520	0.75	F*	7,160	0.72	F*	7,740	0.77	F*
e/o SB Imperial Hwy On-ramp	7,950	0.80	F*	8,210	0.82	F*	8,320	0.83	F*	8,530	0.85	F*
e/o Lakeview Ave Off-ramp	8,990	0.90	F*	9,000	0.90	F*	9,290	0.93	F*	9,280	0.93	F*
e/o Lakeview Ave Off-ramp	8,990	0.90	F*	9,000	0.90	F*	9,290	0.93	F*	9,280	0.93	F*
e/o NB Lakeview Ave On-ramp	8,590	0.86	F*	8,650	0.87	F*	n/a	n/a	n/a	n/a	n/a	n/a
e/o SB Lakeview Ave On-ramp	9,030	0.90	F*	8,800	0.88	F*	n/a	n/a	n/a	n/a	n/a	n/a
e/o SR-91/SR-55 Split & Lakeview Ave On-	9,940	1.08	F**	9,760	1.06	F**	10,350	1.13	F**	10,320	1.12	F**
e/o Tustin Ave Off-ramp	8,440	0.88	F	7,690	0.80	F	9,780	1.02	F	7,580	0.79	F
e/o Tustin Ave On-ramp	7,260	0.73	B	6,470	0.65	C	8,600	0.86	C	6,350	0.64	C
e/o Kraemer Blvd Off-ramp	8,260	0.83	D	7,500	0.75	C	9,510	0.95	E	7,490	0.75	C
e/o Kraemer Blvd On-ramps	8,830	0.88	F*	7,380	0.74	F*	9,300	0.93	F*	8,410	0.84	F*
e/o SR-57 Connector Off-ramp	9,770	1.06	F*	8,640	0.94	F*	10,250	1.11	F*	9,680	1.05	F*
e/o NB SR-57 Connector On-ramp	6,020	1.00	F*	5,230	0.87	F*	6,300	1.05	F*	6,140	1.02	F*
e/o State College Blvd Off-ramp	8,980	0.94	F*	8,590	0.89	F*	9,280	0.93	F*	9,730	0.97	F*
e/o State College Blvd On-ramp	8,380	1.05	F**	7,980	1.00	F**	8,430	0.84	F**	8,720	0.87	F**
e/o Raymond Ave/East St Off-ramp	9,300	0.97	E	9,260	0.96	E	9,330	0.97	E	9,910	1.03	E
Mainline Corridor Performance Measures	**AM Peak Period**			**PM Peak Period**			**AM Peak Period**			**PM Peak Period**		
Imperial Highway to Raymond Ave/East St - Vehicle Miles Traveled (VMT) (daily, peak hour)	427,400			447,500			455,900			455,100		
Imperial Highway to Raymond Ave/East St - Vehicle Hours Delay (VHD) (daily, peak hour)	8,210			13,530			5,100			10,600		
Imperial Highway to Raymond Ave/East St - Peak Average Travel Time (minutes)	n/a			n/a			n/a			n/a		

LOS based on 2010 HCM (HCS) where segments are not saturated.

F* denotes saturated conditions where vehicles are in queue, based on 2030 microsimulation modeling analysis and 2050 forecast.

F** denotes saturated conditions where demand exceeds or is at near capacity causing bottleneck to occur, based on 2030 microsimulation modeling analysis and 2050 forecast

Shading denotes a D/C ratio greater than 1.0.

D/C = demand-to-capacity; ICU = intersection capacity utilization; LOS = level of service; SB = southbound; NB = northbound; EB = eastbound; WB = westbound; VHD = Vehicle hours of delay; VMT = vehicle miles traveled

Table 2.1.5-17. 2050 No-Build and Build Eastbound SR-91 Freeway Mainline Performance

	2050 No-Build						2050 Build					
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
Mainline Location	**Demand**	**D/C**	**LOS**	**Demand**	**D/C**	**LOS**	**Demand**	**D/C**	**LOS**	**Demand**	**D/C**	**LOS**
w/o State College Blvd Off-ramp	7,380	0.92	F	7,460	0.93	F	7,580	0.95	F	7,600	0.95	E
w/o SR-57 Connector Off-ramp	8,240	0.82	F**	8,270	0.83	F**	8,080	0.81	F**	8,250	0.83	F**
w/o NB SR-57 Connector On-ramp	5,600	0.56	D	6,370	0.64	F*	5,350	0.54	D	5,750	0.58	D
w/o Glassell St Off-ramp	6,810	0.85	B	7,730	0.97	F*	6,810	0.68	B	7,240	0.72	C
w/o Tustin Ave Off-ramp	5,500	0.92	F	6,670	1.11	F**	5,320	0.67	F	5,840	0.73	F
w/o Tustin Ave On-ramp	6,770	0.85	D	8,710	1.09	F	7,210	0.72	C	7,910	0.79	C
w/o SR-55 Connector Off-ramp	6,990	0.87	D	8,200	1.03	F	7,440	0.93	C	7,860	0.98	D
w/o SR-55 Connector On-ramp	4,960	0.83	C	4,480	0.75	E	4,880	0.81	C	4,510	0.75	D
w/o Lakeview Ave Off-ramp	9,280	0.66	B	8,600	0.61	B	9,330	0.67	B	8,420	0.60	B
w/o NB Lakeview Ave On-ramp	8,420	0.70	C	7,750	0.65	B	8,390	0.70	C	7,430	0.62	B
w/o Imperial Highway Off-ramp	8,470	0.71	C	7,760	0.65	C	8,440	0.70	C	7,440	0.62	C
w/o NB Imperial Highway On-ramp	8,150	0.82	C	6,570	0.66	C	7,820	0.78	C	5,970	0.60	B
w/o Imperial Highway On-ramp	8,690	0.87	D	6,880	0.69	C	8,410	0.84	D	6,240	0.62	C
Mainline Corridor Performance Measures	**AM Peak Period**			**PM Peak Period**			**AM Peak Period**			**PM Peak Period**		
Raymond Ave/East St to Imperial Highway - Vehicle Miles Traveled (VMT) (daily, peak	422,300			370,000			396,600			351,300		
Raymond Ave/East St to Imperial Highway - Vehicle Hours Delay (VHD) (daily, peak hour)	6,270			11,080			2,200			950		
Raymond Ave/East St to Imperial Highway - Peak Avg Travel Time (minutes)	n/a			n/a			n/a			n/a		

LOS based on 2010 HCM (HCS) where segments are not saturated.

F* denotes saturated conditions where vehicles are in queue, based on 2030 microsimulation modeling analysis and 2050 forecast.

F** denotes saturated conditions where demand exceeds or is at near capacity causing bottleneck to occur, based on 2030 microsimulation modeling analysis and 2050 forecast.

n/a – 2050 travel times could not be reasonably projected or estimated

Shading denotes a D/C ratio greater than 1.0.

D/C = demand-to-capacity; ICU = intersection capacity utilization; LOS = level of service; SB = southbound; NB = northbound; EB = eastbound; WB = westbound; VHD = Vehicle hours of delay; VMT = vehicle miles traveled

Table 2.1.5-18. 2050 No-Build and Build Northbound SR-57 Freeway Mainline Performance

	2050 No-Build						2050 Build					
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
Mainline Location	**Demand**	**D/C**	**LOS**	**Demand**	**D/C**	**LOS**	**Demand**	**D/C**	**LOS**	**Demand**	**D/C**	**LOS**
s/o Orangethorpe Ave Off-ramp	10,570	0.88	F	9,310	0.78	F*	10,780	0.90	F	9,460	0.79	F*
Mainline Corridor Performance Measures	**AM Peak Period**			**PM Peak Period**			**AM Peak Period**			**PM Peak Period**		
s/o SR-91 Off to n/o Orangethorpe Ave Off-ramp – Vehicle Miles Traveled (VMT) (daily, peak hour)	67,000			67,700			65,500			73,800		
s/o SR-91 Off to n/o Orangethorpe Ave Off-ramp – Vehicle Hours of Delay (VHD) (daily, peak hour)	1,320			4,070			170			190		
s/o SR-91 Off to n/o Orangethorpe Ave Off-ramp – Peak Avg Travel Times (minutes)	n/a			n/a			n/a			n/a		

LOS based on 2010 HCM (HCS) where segments are not saturated.

F* denotes saturated conditions where vehicles are in queue due to downstream bottleneck (beyond project limits), based on Caltrans PeMS speed contours of existing conditions and 2050 forecast conditions.

n/a – 2050 travel times could not be reasonably projected or estimated.

D/C = demand-to-capacity; ICU = intersection capacity utilization; LOS = level of service; SB = southbound; NB = northbound; EB = eastbound; WB = westbound; VHD = Vehicle hours of delay; VMT = vehicle miles traveled

Freeway Ramps

Ramp analysis was conducted for the on-ramps and off-ramps along SR-91 and NB SR-57. The 2030 results are summarized in Table 2.1.5-19. Along the SR-91, only the SR-55 ramps have demand that exceed the ramp capacity. At the 2030 opening year, although demand would exceed capacity of the ramp, the WB SR-91 to SB SR-55 Connector off-ramp is projected to experience minor improvements under the Build Alternative (Preferred Alternative) relative to the No-Build Alternative, as measured by the demand-to-capacity (D/C) ratio. The EB SR-91 to SB SR-55 Connector Off-ramp is projected to operate at a less efficient D/C ratio under the No-Build Alternative relative to the Build Alternative (Preferred Alternative), and demand would exceed capacity during both the AM and PM peak period under the Build Alternative (Preferred Alternative) compared with only exceeding capacity during the AM peak hour under the No-Build Alternative.

The 2050 results are summarized in Table 2.1.5-20. Connector ramps at SR-55 and SR-57 are projected to have demands exceeding ramp capacities. At the 2050 design year, demand is expected to exceed capacity at two ramps in the westbound direction under the No-Build Alternative (the WB SR-91 to SB SR-55 Connector Off-ramp and the SB SR-57 to WB SR-91 Connector On-ramp). Under the Build Alternative (Preferred Alternative), demand is expected to exceed capacity on only the WB SR-91 to SB SR-55 Connector Off-ramp, and it would perform at an improved D/C ratio relative to the No-Build Alternative. In the eastbound direction, the EB SR-91 to SB SR-55 Connector Off-ramp is projected to operate at a less efficient D/C ratio under the Build Alternative (Preferred Alternative) relative to the No-Build Alternative. For this ramp, demand would exceed capacity during both the AM and PM peak periods under the Build Alternative (Preferred Alternative) compared with only exceeding capacity during the AM peak hour under the No-Build Alternative.

Although there would be some differences in ramp performance at specific locations under the Build Alternative (Preferred Alternative) relative to the No-Build Alternative, these changes would not be substantially different, and impacts would not be adverse.

Table 2.1.5-19. 2030 No-Build and Build Freeway Ramp Performance

	2030 No-Build		2030 Build	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Location	**D/C**	**D/C**	**D/C**	**D/C**
Westbound SR-91				
Imperial Highway Off-ramp	0.30	0.29	0.29	0.29
NB Imperial Highway On-ramp	0.51	0.35	0.55	0.38
SB Imperial Highway On-ramp	0.53	0.42	0.54	0.42
Lakeview Ave Off-ramp	0.19	0.17	0.20	0.18
NB Lakeview Ave On-ramp	0.25	0.08	n/a	n/a
SB Lakeview Ave On-ramp	0.46	0.52	n/a	n/a
Lakeview Ave On-ramp to SR-91	n/a	n/a	0.42	0.36
Lakeview Ave On-ramp to SR-55	n/a	n/a	0.34	0.29
WB SR-91 to SB SR-55 Connector Off-ramp	0.83	1.08	0.82	1.06
NB SR-55 to WB SR-91 Connector On-ramp	0.73	0.73	0.73	0.73
Tustin Ave Off-ramp	0.35	0.35	0.35	0.35
Tustin Ave On-ramp	0.47	0.49	0.47	0.53
Kraemer Blvd Off-ramp	0.52	0.47	0.53	0.48

	2030 No-Build		2030 Build	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Location	**D/C**	**D/C**	**D/C**	**D/C**
NB Kraemer Blvd On-ramp	0.28	0.24	0.28	0.27
SB Kraemer Blvd On-ramp	0.40	0.57	0.41	0.57
WB SR-91 to SR-57 Connector Off-ramp	0.80	0.73	n/a	n/a
WB SR-91 to NB SR-57 Connector Off-ramp	0.80	0.73	0.54	0.51
WB SR-91 to SB SR-57 Connector Off-ramp	0.81	0.73	0.58	0.50
NB SR-57 to WB SR-91 Connector On-ramp	0.61	0.52	0.61	0.69
SB SR-57 to WB SR-91 Connector On-ramp	0.67	0.90	0.67	0.82
State College Blvd Off-ramp	0.27	0.29	0.37	0.44
State College Blvd On-ramp	0.46	0.63	0.46	0.61
Eastbound SR-91				
State College Blvd Off-ramp	0.44	0.34	0.43	0.34
State College Blvd On-ramp	0.40	0.39	0.45	0.41
EB SR-91 to SR-57 Connector Off-ramp	0.83	0.72	0.84	0.86
EB SR-91 to NB SR-57 Connector Off-ramp	0.68	0.59	0.72	0.76
EB SR-91 to SB SR-57 Connector Off-ramp	0.63	0.55	0.60	0.57
SB SR-57 to EB SR-91 Connector On-ramp	0.54	0.67	0.53	0.71
NB SR-57 to EB SR-91 Connector On-ramp	0.52	0.57	0.60	0.61
Glassell St SB Off-ramp (Glassell St Off-ramp in Build)	0.21	0.18	0.48	0.41
Glassell St SB On-ramp	0.55	0.53	0.55	0.53
Glassell St NB Off-ramp	0.41	0.36	n/a	n/a
Glassell St NB On-ramp	0.22	0.21	0.22	0.21
Tustin Ave Off-ramp	0.56	0.54	0.37	0.37
Tustin Ave On-ramp	0.72	0.74	0.72	0.75
EB SR-91 to SB SR-55 Connector Off-ramp	1.09	0.92	1.19	1.03
NB SR-55 to EB SR-91 Connector On-ramp	0.57	0.53	0.56	0.53
Lakeview Ave Off-ramp	0.36	0.46	0.39	0.46
SB Lakeview Ave On-ramp	0.14	0.12	0.14	0.08
NB Lakeview Ave On-ramp	0.03	0.01	0.03	0.01
Imperial Highway Off-ramp	0.28	0.42	0.28	0.43
SB Imperial Highway On-ramp	0.25	0.18	0.24	0.19
NB Imperial Highway On-ramp	0.24	0.15	0.26	0.14
Northbound SR-57				
NB SR-57 to EB SR-91 Connector Off-ramp	0.26	0.29	0.40	0.41
NB SR-57 to WB SR-91 Connector Off-ramp	0.61	0.52	0.61	0.69
NB SR-57 Off-ramp to Orangethorpe Ave	0.26	0.19	0.33	0.24

Shaded areas indicate demand exceeds capacity
n/a - does not exist in this scenario
D/C = demand-to-capacity; SB = southbound; NB = northbound; EB = eastbound; WB = westbound

Table 2.1.5-20. 2050 No-Build and Build Freeway Ramp Performance

	2050 No-Build		2050 Build	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Location	**D/C**	**D/C**	**D/C**	**D/C**
Westbound SR-91				
Imperial Highway Off-ramp	0.34	0.33	0.33	0.33
NB Imperial Highway On-ramp	0.53	0.37	0.61	0.42
SB Imperial Highway On-ramp	0.57	0.45	0.57	0.45
Lakeview Ave Off-ramp	0.20	0.18	0.22	0.19
NB Lakeview Ave On-ramp	0.26	0.09	n/a	n/a
SB Lakeview Ave On-ramp	0.48	0.54	n/a	n/a
Lakeview Ave On-ramp to SR-91	n/a	n/a	0.44	0.39
Lakeview Ave On-ramp to SR-55	n/a	n/a	0.36	0.32
WB SR-91 to SB SR-55 Connector Off-ramp	0.86	1.14	0.85	1.12
NB SR-55 to WB SR-91 Connector On-ramp	0.77	0.78	0.77	0.77
Tustin Ave Off-ramp	0.36	0.37	0.36	0.37
Tustin Ave On-ramp	0.50	0.52	0.49	0.57
Kraemer Blvd Off-ramp	0.56	0.50	0.56	0.51
NB Kraemer Blvd On-ramp	0.29	0.27	0.32	0.31
SB Kraemer Blvd On-ramp	0.47	0.64	0.48	0.64
WB SR-91 to SR-57 Connector Off-ramp	0.85	0.39	n/a	n/a
WB SR-91 to NB SR-57 Connector Off-ramp	0.84	0.77	0.57	0.54
WB SR-91 to SB SR-57 Connector Off-ramp	0.86	0.78	0.63	0.53
NB SR-57 to WB SR-91 Connector On-ramp	0.68	0.58	0.69	0.80
SB SR-57 to WB SR-91 Connector On-ramp	0.73	1.01	0.73	0.90
State College Blvd Off-ramp	0.30	0.31	0.43	0.50
State College Blvd On-ramp	0.48	0.66	0.48	0.64
Eastbound SR-91				
State College Blvd Off-ramp	0.46	0.34	0.44	0.35
State College Blvd On-ramp	0.42	0.41	0.49	0.44
EB SR-91 to SR-57 Connector Off-ramp	0.87	0.75	0.89	0.91
EB SR-91 to NB SR-57 Connector Off-ramp	0.72	0.62	0.77	0.82
EB SR-91 to SB SR-57 Connector Off-ramp	0.66	0.57	0.62	0.59
SB SR-57 to EB SR-91 Connector On-ramp	0.59	0.70	0.59	0.76
NB SR-57 to EB SR-91 Connector On-ramp	0.55	0.62	0.66	0.68
Glassell St SB Off-ramp (Glassell St Off-ramp in Build)	0.22	0.21	0.49	0.47
Glassell St SB On-ramp	0.69	0.66	0.69	0.66
Glassell St NB Off-ramp	0.43	0.41	n/a	n/a
Glassell St NB On-ramp	0.28	0.27	0.28	0.27
Tustin Ave Off-ramp	0.59	0.58	0.39	0.39
Tustin Ave On-ramp	0.76	0.79	0.76	0.79
EB SR-91 to SB SR-55 Connector Off-ramp	1.18	0.98	1.31	1.12
NB SR-55 to EB SR-91 Connector On-ramp	0.62	0.56	0.61	0.56
Lakeview Ave Off-ramp	0.38	0.48	0.41	0.48
SB Lakeview Ave On-ramp	0.15	0.13	0.15	0.09
NB Lakeview Ave On-ramp	0.03	0.01	0.03	0.01
Imperial Highway Off-ramp	0.30	0.45	0.31	0.46
SB Imperial Highway On-ramp	0.26	0.19	0.26	0.20
NB Imperial Highway On-ramp	0.27	0.16	0.30	0.15

Location	2050 No-Build		2050 Build	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
	D/C	D/C	D/C	D/C
Northbound SR-57				
NB SR-57 to EB SR-91 Connector Off-ramp	0.28	0.31	0.44	0.45
NB SR-57 to WB SR-91 Connector Off-ramp	0.68	0.58	0.69	0.80
NB SR-57 Off-ramp to Orangethorpe Ave	0.28	0.20	0.37	0.27

Shaded areas indicate demand exceeds capacity
n/a - does not exist in this scenario
D/C = demand-to-capacity; SB = southbound; NB = northbound; EB = eastbound; WB = westbound

HOV/HOT Lanes

Opening year 2030 and design year 2050 No-Build and Build HOV performance results for the SR-91 study area are shown in Tables 2.1.5-21 and 2.1.5-22. At opening year 2030, eastbound SR-91 HOV lane operations under the Build Alternative (Preferred Alternative) would be more efficient or the same as the No-Build Alternative with the exception of the HOV lane segment east of Raymond/East Off-ramp, which would operate at a higher D/C ratio. For westbound SR-91 HOV lane segments, operations would improve during the PM peak hour under the Build Alternative (Preferred Alternative) relative to the No-Build Alternative, but would generally be less efficient than the No-Build Alternative during the AM peak hour. The single northbound SR-57 HOV lane segment studied would perform similarly under the Build and No-Build scenarios. Although there would be differences in operations between the Build Alternative (Preferred Alternative) and No-Build Alternative, operations would generally be improved, as all but two HOV lane segments would either have improved operations relative to the No-Build Alternative or would not operate at deficient D/C levels. The eastbound segment west of the State College Boulevard On-ramp during the AM peak and the westbound segment east of the Raymond/East Off-ramp during the AM and PM peak would experience both lower efficiency under the Build Alternative (Preferred Alternative) relative to the No-Build Alternative and operate at a deficient D/C ratio of 0.80 or greater. However, given that the number of segments in which HOV lane operations would improve, impacts would not be adverse under the Build Alternative (Preferred Alternative).

Similar to the opening year, at design year 2050, eastbound SR-91 HOV lane operations under the Build Alternative (Preferred Alternative) would be more efficient or the same as the No-Build Alternative with the exception of the HOV lane segment east of Raymond/East Off-ramp, which would operate at a higher D/C ratio. For westbound SR-91 HOV lane segments, operations would improve during the PM peak hour under the Build Alternative (Preferred Alternative) relative to the No-Build Alternative, but would generally be less efficient than the No-Build Alternative during the AM peak hour. The single northbound SR-57 HOV lane segment studied would perform similarly under the Build and No-Build scenarios. Although there would be differences in operations between the Build Alternative (Preferred Alternative) and No-Build Alternative, operations would generally be improved, as all but three HOV lane segments would either have improved operations relative to the No-Build Alternative or would not operate at deficient D/C levels. The eastbound segments west of the State College Boulevard On-ramp and west of the Glassell Street Off-ramp during the AM peak hour and the westbound segment east of the Raymond/East Off-ramp during the AM and PM peak hours would experience both lower efficiency under the Build Alternative (Preferred Alternative) relative to the No-Build Alternative and operate at a deficient D/C ratio of 0.80 or greater.

However, given that the number of segments in which HOV lane operations would improve, impacts would not be adverse under the Build Alternative (Preferred Alternative).

Table 2.1.5-21. 2030 No-Build and Build HOV Lane Performance

	2030 No-Build		2030 Build	
	AM	PM	AM	PM
Location	D/C	D/C	D/C	D/C
Westbound SR-91				
HOV Lane e/o Kraemer Blvd Off-ramp	0.45	0.41	0.43	0.24
HOV Lane e/o NB Kraemer Blvd On-ramp	0.56	0.47	0.53	0.47
HOV Lane e/o SB Kraemer Blvd On-ramp	0.56	0.47	0.53	0.47
HOV Lane e/o SR-57 Off-ramp	0.56	0.47	0.53	0.47
HOV Lane e/o NB SR57 On-ramp	0.56	0.47	0.53	0.47
HOV Lane e/o SB SR57 On-ramp	0.61	0.52	0.58	0.52
HOV Lane e/o State College Blvd Off-ramp	0.30	0.26	0.29	0.26
HOV Lane e/o State College Blvd On-ramp	0.82	0.69	0.80	0.69
HOV Lane e/o Raymond/East Off-ramp	0.90	0.86	1.06	1.01
Eastbound SR-91				
HOV Lane w/o State College Blvd Off-ramp	1.08	1.03	1.07	1.03
HOV Lane w/o State College Blvd On-ramp	0.77	1.03	0.86	0.84
HOV Lane w/o SR-57 Off Ramp	0.30	0.39	0.34	0.30
HOV Lane w/o SB SR-57 Connector On-ramp	0.44	0.79	0.63	0.57
HOV Lane w/o Glassell St Off-ramp	0.44	0.79	0.67	0.77
HOV Lane w/o SB Glassell St On-ramp	0.45	0.79	0.53	0.64
HOV Lane w/o Tustin Ave Off-ramp	0.44	0.79	0.48	0.63
Northbound SR-57				
HOV Lane b/w SR91 Connector Off & On-ramps	0.38	0.59	0.39	0.59

Shaded areas indicate D/C exceeding 0.80
D/C = demand-to-capacity; e/o = east of; w/o = west of; b/w = between; SB = southbound; NB = northbound; EB = eastbound; WB = westbound

Table 2.1.5-22. 2050 No-Build and Build HOV Lane Performance

	2050 No-Build		2050 Build	
	AM	PM	AM	PM
Location	D/C	D/C	D/C	D/C
Westbound SR-91				
HOV Lane e/o Kraemer Blvd Off-ramp	0.52	0.48	0.50	0.24
HOV Lane e/o NB Kraemer Blvd On-ramp	0.61	0.48	0.57	0.48
HOV Lane e/o SB Kraemer Blvd On-ramp	0.61	0.48	0.57	0.48
HOV Lane e/o SR-57 Off-ramp	0.61	0.48	0.57	0.48
HOV Lane e/o NB SR57 On-ramp	0.61	0.48	0.57	0.48
HOV Lane e/o SB SR57 On-ramp	0.66	0.53	0.62	0.53
HOV Lane e/o State College Blvd Off-ramp	0.33	0.27	0.31	0.27
HOV Lane e/o State College Blvd On-ramp	0.88	0.71	0.85	0.71
HOV Lane e/o Raymond/East Off-ramp	0.94	0.90	1.15	1.09

Location	2050 No-Build		2050 Build	
	AM	PM	AM	PM
	D/C	D/C	D/C	D/C
Eastbound SR-91				
HOV Lane w/o State College Blvd Off-ramp	1.25	1.16	1.25	1.16
HOV Lane w/o State College Blvd On-ramp	0.89	1.16	1.00	0.91
HOV Lane w/o SR-57 Off Ramp	0.35	0.45	0.40	0.33
HOV Lane w/o SB SR-57 Connector On-ramp	0.52	0.91	0.76	0.62
HOV Lane w/o Glassell St Off-ramp	0.52	0.91	0.82	0.88
HOV Lane w/o SB Glassell St On-ramp	0.52	0.91	0.63	0.71
HOV Lane w/o Tustin Ave Off-ramp	0.52	0.91	0.56	0.69
Northbound SR-57				
HOV Lane b/w SR91 Connector Off & On-ramps	0.42	0.64	0.43	0.64

Shaded areas indicate D/C exceeding 0.80
D/C = demand-to-capacity; e/o = east of; w/o = west of; b/w = between; SB = southbound; NB = northbound; EB = eastbound; WB = westbound

Local Arterials and Intersections

Opening year 2030 and design year 2050 No-Build peak hour performance results for the study area intersections are summarized in Table 2.1.5-23. With implementation of the Build Alternative (Preferred Alternative), each of the 11 intersections that are projected to operate at LOS E or F under 2030 No-Build conditions are estimated to experience an improvement in delay under the Build condition. Under the Build Alternative (Preferred Alternative), the East Riverdale Avenue/Lakeview Avenue, Lakeview Avenue/Santa Ana Canyon Road, and Imperial Highway/Santa Ana Canyon Road intersections are all projected to experience improved LOS compared to the LOS E or F performance that is predicted during one or both peak hours under 2030 No-Build conditions.

Similarly in 2050, the 12 intersections that are projected to operate with LOS E or F during one or both of the peak hours under the No-Build condition are projected to improve operations with reduced delays under the Build condition. The following intersections are projected to also improve from LOS E to LOS D under the 2050 Build Conditions:

- SR-91 WB/Tustin Avenue (AM)
- East Riverdale Avenue/Lakeview Avenue (AM)
- Lakeview Avenue/Santa Ana Canyon Road (PM)
- Orangethorpe Avenue/State College Boulevard (PM)
- Nohl Ranch Road/Santiago Blvd/Lincoln Avenue (AM)

Although LOS is projected to be the same between the 2050 No–Build and Build conditions, the Tustin Avenue/Lincoln Avenue and Imperial Highway/Santa Ana Canyon Road intersections, both of which are projected to operate at LOS E or F, would experience minor increases in delay during one or both peak hours.

Table 2.1.5-23. 2030 and 2050 No-Build and Build Arterial Corridors Intersection Performance

Location	Study Intersection	2030 No-Build				2030 Build				2050 No-Build				2050 Build			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
1	SR-91 WB/State College Blvd	11.8	B	13.2	B	12.1	B	14.3	B	11.8	B	14.3	B	12.3	B	16.0	B
2	SR-91 EB/State College Blvd	25.9	C	27.9	C	25.8	C	27.9	C	25.9	C	27.9	C	25.8	C	28.0	C
3	La Palma Ave/Kraemer Blvd	119.7	F	142.6	F	115.6	F	85.6	F	133.8	F	161.7	F	130.1	F	103.3	F
4	SR-91 WB/Kraemer Blvd	16.1	B	12.1	B	16.1	B	12.1	B	20.0	C	12.3	B	20.0	C	14.3	B
5	SR-91 EB/Kraemer Blvd	27.3	C	28.4	C	46.9	D	22.3	C	27.1	C	28.2	C	49.9	D	23.3	C
6	Frontera St/Glassell St	13.6	B	9.5	B	13.6	B	9.2	B	14.1	B	9.8	A	13.6	B	16.7	B
7	La Palma Ave /Tustin Ave	44.7	D	60.8	E	43.1	D	58.4	E	50.3	D	73.2	E	48.2	D	68.6	E
8	SR-91 WB/Tustin Ave	46.8	D	38.5	D	42.2	D	36.6	D	56.5	E	46.8	D	52.5	D	45.7	D
9	SR-91 EB/Tustin Ave	23.6	C	21.9	C	18.4	B	13.9	B	25.9	C	23.3	C	18.9	B	18.3	B
10	East Riverdale Ave/Tustin Ave	24.8	C	30.4	C	24.9	C	29.4	C	26.3	C	33.2	C	26.4	C	31.8	C
11	East Riverdale Ave/Lakeview Ave	55.5	E	63.5	E	40.6	D	53.9	D	63.8	E	76.2	E	49.9	D	62.3	E
12	SR-91 WB/Lakeview Ave	18.3	B	19.0	B	20.6	C	15.6	B	18.9	B	19.6	B	21.4	C	15.8	B
13	Lakeview Ave/Santa Ana Cyn Rd	84.3	F	57.0	E	65.6	E	36.6	D	92.7	F	62.3	E	78.4	E	38.9	D
14	SR-91 EB Off Ramp/Lakeview Ave	15.6	B	17.6	B	18.8	B	19.2	B	15.9	B	18.0	B	19.0	B	19.5	B
15	Orangethorpe Ave/SR-57 NB	30.4	C	38.4	D	32.4	C	40.0	D	31.5	C	39.9	D	33.7	C	46.6	D
16	Orangethorpe Ave/SR-57 SB	35.6	D	43.1	D	33.2	C	42.0	D	33.2	C	52.1	D	35.5	D	42.2	D
17	Orangethorpe Ave/State College Blvd	32.0	C	45.8	D	33.2	C	46.8	D	32.9	C	56.1	E	34.5	C	53.6	D
18	State College Blvd/La Palma Ave	43.1	D	57.3	E	42.3	D	55.1	E	45.4	D	77.5	E	44.0	D	60.7	E
19	State College Blvd/Lincoln Ave	43.2	D	47.7	D	41.4	D	46.0	D	48.4	D	55.6	E	45.0	D	52.4	D
20	SR-57 NB Ramps & Lincoln Ave	23.5	C	23.8	C	22.2	C	23.8	C	22.0	C	24.3	C	23.3	C	24.3	C
21	SR-57 SB Ramps & Lincoln Ave	21.9	C	20.8	C	21.8	C	20.8	C	22.4	C	21.0	C	22.2	C	21.0	C
22	Glassell St/East Riverdale Ave	17.2	B	19.8	B	17.3	B	18.3	B	17.4	B	20.3	C	17.5	B	18.7	B
23	Tustin Ave/SR-55 SB Off-ramp	13.4	B	12.1	B	13.4	B	12.1	B	13.4	B	12.1	B	13.4	B	12.1	B
24	Tustin Ave/Lincoln Ave	121.3	F	129.3	F	115.2	F	127.9	F	133.3	F	134.7	F	124.7	F	138.2	F
25	Nohl Ranch Rd/Santiago Blvd/Lincoln Ave	51.2	D	30.2	C	48.1	D	29.4	C	58.9	E	31.1	C	53.4	D	30.9	C
26	Santiago Blvd/SR-55 NB Ramps	26.7	C	24.1	C	26.1	C	24.2	C	30.1	C	24.3	C	29.9	C	24.5	C
27	La Palma Ave/Lakeview Ave	27.7	C	37.5	D	27.7	C	37.5	D	27.7	C	37.5	D	27.7	C	37.5	D
28	Imperial Hwy/La Palma Ave	62.3	E	55.1	E	58.1	E	53.3	E	71.0	E	60.3	E	60.7	E	55.1	E
29	Imperial Hwy/SR-91 WB Ramps	13.1	B	11.7	B	13.0	B	11.7	B	13.6	B	12.8	B	13.5	B	12.4	B

Location	Study Intersection	2030 No-Build				2030 Build				2050 No-Build				2050 Build			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
30	Imperial Hwy/SR-91 EB Ramps	16.3	B	22.7	C	16.7	B	23.3	C	17.5	B	24.5	C	18.2	B	25.5	C
31	Imperial Hwy/Santa Ana Cyn Rd	63.5	E	80.1	F	62.6	E	79.7	E	72.9	E	87.6	F	73.4	E	93.2	F

** Build Scenario only

Shaded areas indicate exceeding LOS D

LOS = level of service; e/o = east of; w/o = west of; b/w = between SB = southbound; NB = northbound; EB = eastbound; WB = westbound

As shown in Table 2.1.5-24, with proposed improvements to the various ramps, queuing is not predicted to exceed the storage capacities provided by the off-ramps within the study area under the Build Alternative (Preferred Alternative).

Table 2.1.5-25 shows that the LOS for all six CMPHS intersections for both No-Build and Build conditions are projected to operate with LOS C or better for both peak hours.

Table 2.1.5-24. 2030 and 2050 No-Build and Build Future Off-Ramp Queuing

	95th Percentile Queue Length (ft)								
	2030 No-Build		2030 Build		2050 No-Build		2050 Build		Storage
Off-Ramp Location	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**Length (ft)**
SR-91 WB off-ramp to State College Blvd	123	238	127	256	124	281	132	272	1,735
SR-91 EB off-ramp to State College Blvd	158	185	157	187	158	190	151	191	1,850
SR-57 SB off-ramp to Orangethorpe Ave	254	143	210	140	226	133	258	143	1,890
SR-57 NB off-ramp to Orangethorpe Ave	343	398	396	509	379	428	511	580	1,575
SR-91 WB off-ramp to Kraemer Blvd	221	213	221	214	235	221	235	246	2,390
SR-91 EB off-ramp to Glassell St	315	209	324	231	319	218	338	265	2,850
SR-91 WB off-ramp to Tustin Ave	537	510	527	503	585	555	574	547	1,800
SR-91 EB off-ramp to Tustin Ave	420	342	336	56	480	378	361	310	3,255
SR-55 NB off-ramp to Santiago Blvd	226	397	226	403	250	411	250	416	3,200
SR-55 SB off-ramp to Tustin Ave	192	178	192	178	192	178	192	178	2,260
SR-57 SB off-ramp to Lincoln Ave	299	251	293	251	323	265	313	264	2,450
SR-57 NB off-ramp to Lincoln Ave	217	344	162	342	180	374	180	371	1,650
SR-91 WB off-ramp to Lakeview Ave	208	217	112	100	218	231	127	109	1,520
SR-91 EB off-ramp to Santa Ana Cyn Rd	165	230	213	234	178	257	239	253	3,480
SR-91 WB off-ramp to Imperial Hwy	231	222	233	222	241	233	242	234	3,450
SR-91 EB off-ramp to Imperial Hwy	280	464	287	527	306	589	333	618	3,014

SB = southbound; NB = northbound; EB = eastbound; WB = westbound

Table 2.1.5-25. 2030 and 2050 No-Build and Build CMP Highway System Performance

CMP Location	Intersection Location		Existing				2030 No-Build				2030 Build				2050 No-Build				2050 Build			
			AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	Street 1	Street 2	ICU Rating	LOS	ICU Rating	LOS	ICU Rating	LOS	ICU Rating	LOS	ICU Rating	LOS	ICU Rating	LOS	ICU Rating	LOS	ICU Rating	LOS	ICU Rating	LOS	ICU Rating	LOS
1	SR-91 WB Ramps	State College Blvd	0.50	A	0.66	B	0.52	A	0.70	B	0.54	A	0.73	C	0.53	A	0.71	C	0.56	A	0.76	C
2	SR-91 EB Ramps	State College Blvd	0.50	A	0.66	B	0.52	A	0.70	B	0.54	A	0.73	C	0.53	A	0.71	C	0.56	A	0.76	C
3	SR-91 WB Ramps	Tustin Ave	1.02	F	1.00	F	0.59	A	0.58	A	0.59	A	0.58	A	0.62	B	0.60	A	0.62	B	0.60	A
4	SR-91 EB Ramps	Tustin Ave	0.60	A	0.59	A	0.67	B	0.66	B	0.58	A	0.59	A	0.70	B	0.70	B	0.60	A	0.63	B
5	SR-57 NB Ramps	Orangethorpe Ave	0.48	A	0.52	A	0.53	A	0.57	A	0.56	A	0.60	A	0.55	A	0.59	A	0.60	A	0.64	B
6	SR-57 SB Ramps	Orangethorpe Ave	0.52	A	0.51	A	0.56	A	0.57	A	0.55	A	0.55	A	0.58	A	0.59	A	0.56	A	0.56	A

ICU ratings are calculated based on ICU methodology using Synchro.
ICU LOS is based on the 2015 Orange County Congestion Management Program.
ICU = intersection capacity utilization; SB = southbound; NB = northbound; EB = eastbound; WB = westbound

Bicycle and Pedestrian Facilities

Following the completion of project construction activities, there would be no permanent disruption to pedestrian and bicycle travel in the study area. The permanent improvements in the Build Alternative (Preferred Alternative) would not affect the existing Santa Ana River Bike Trail or existing or proposed bike infrastructure in study area. The proposed Class II bike lane improvements on Frontera Street, as described in Chapter 1, Section 1.4.1, would not connect to the existing northbound Class II bike lane because they are outside of the improvement project limits.

No-Build Alternative

None of the improvements proposed under the Build Alternative (Preferred Alternative) would be constructed under the No-Build Alternative.

Freeway Mainline

Tables 2.1.5-13 through 2.1.5-15 show freeway mainline performance for the 2030 No-Build scenario, and Tables 2.1.5-16 through 2.1.5-18 show freeway mainline performance for the 2050 No-Build scenario. As shown in the tables and discussed above, daily peak-period vehicle hours of delay would be higher under the No-Build scenario than the corresponding Build Alternative (Preferred Alternative) scenario for WB SR-91, EB SR-91, and NB SR-57 mainline segments at opening year 2030 and design year 2050.

Travel times within the study area segments on WB SR-91, EB SR-91, and NB SR-57 would also be greater under the No-Build Alternative relative to the Build Alternative (Preferred Alternative), as shown in Tables 2.1.5-13 through 2.1.5-15. Although there are some mainline segments within the study area that are projected to perform at improved D/C ratios under the No-Build Alternative relative to the Build Alternative (Preferred Alternative), these locations are also projected to carry fewer vehicles under the No-Build Alternative and would have a nearly identical LOS to the Build Alternative (Preferred Alternative). For other segments, particularly those on the EB SR-91, operations would be less efficient under the No-Build Alternative, with a greater number of mainline segments projected to perform at an unacceptable LOS F.

The No-Build Alternative would not improve the operational efficiency of study area mainline segments, and roadway users would experience adverse operational impacts.

Freeway Ramps

Table 2.1.5-19 shows freeway ramp performance for the 2030 No-Build and Build scenarios, and Table 2.1.5-20 shows freeway mainline performance for the 2050 No-Build and Build scenario. As shown above, the same ramps under the No-Build Alternative and the Build Alternative (Preferred Alternative) are projected to perform in a deficient manner in which demand exceeds capacity, with the exception of the SB SR-57 to WB SR-91 Connector On-ramp, which would not exceed capacity under the 2050 Build scenario as it would under the No-Build scenario. Because the same ramps would experience demand exceeding capacity under the Build and No-Build scenarios and the D/C ratios at those ramps would be similar, impacts related to ramps performance would not be adverse under the No-Build Alternative.

HOV/HOT Lanes

As discussed above, some HOV lane segments are projected to operate more efficiently under the No-Build Alternative than under the Build Alternative (Preferred Alternative) at opening year 2030 and design year 2050. However, overall HOV lane operations would not be improved

under the No-Build Alternative to the extent that they would under the Build Alternative (Preferred Alternative). Therefore, drivers would experience adverse effects under the No-Build Alternative.

Local Arterials and Intersections

Opening year 2030 and design year 2050 No-Build peak hour performance results for the study area intersections are summarized in Table 2.1.5-23. As shown in the table, the following 2030 No-Build scenario intersections would experience an unacceptable LOS (E or F).

- La Palma Avenue/Kraemer Boulevard (AM/PM)
- La Palma Avenue/Tustin Avenue (PM)
- SR-91 WB/Tustin Avenue (AM)
- East Riverdale Avenue/Lakeview Avenue (AM/PM)
- Lakeview Avenue/Santa Ana Canyon Road (AM/PM)
- Orangethorpe Avenue/State College Boulevard (PM)
- State College Boulevard/La Palma Avenue (PM)
- State College Boulevard/Lincoln Avenue (PM)
- Tustin Avenue/Lincoln Avenue (AM/PM)
- Imperial Highway/La Palma Avenue (AM/PM)
- Imperial Highway/Santa Ana Canyon Road (AM/PM)

The 2050 No-Build conditions intersections that would experience an unacceptable LOS (E or F) include the following:

- La Palma Avenue/Kraemer Boulevard (AM/PM)
- La Palma Avenue/Tustin Avenue (PM)
- SR-91 WB/Tustin Avenue (AM)
- East Riverdale Avenue/Lakeview Avenue (AM/PM)
- Lakeview Avenue/Santa Ana Canyon Road (AM/PM)
- Orangethorpe Avenue/State College Boulevard (PM)
- State College Boulevard/La Palma Avenue (PM)
- State College Boulevard/Lincoln Avenue (PM)
- Tustin Avenue/Lincoln Avenue (AM/PM)
- Nohl Ranch Road/Santiago Boulevard/Lincoln Avenue (AM)
- Imperial Highway/La Palma Avenue (AM/PM)
- Imperial Highway/Santa Ana Canyon Road (AM/PM)

Because the No-Build Alternative would not offer the same level of improvements in intersection operation, drivers would experience adverse impacts.

Bicycle and Pedestrian Facilities

None of the improvements proposed under the Build Alternative (Preferred Alternative) would be constructed under the No-Build Alternative. As such, the No-Build Alternative would not result in permanent adverse impacts related to bicycle and pedestrian travel in the study area.

Temporary Impacts

Build Alternative (Preferred Alternative)

Construction of the Build Alternative (Preferred Alternative) would result in temporary impacts on traffic circulation and pedestrian and bicycle access on and in the vicinity of the project. Those impacts could include short-term closures of freeway and arterial facilities and modifications to the existing facilities as described below. Construction activities expected to require temporary closures of the SR-91 mainline, interchange ramps, and local arterials include the following:

- Installation, moving, and removal of construction barriers (k-rails)
- Pavement restriping
- Falsework erection and removal
- Construction of retaining walls and sound walls
- Widening of undercrossing structures and foundations
- Installation and removal of overhead signs and loop detectors
- Asphalt and concrete pavement construction and overlay operations
- Utility work
- Extension or modifications of drainage channels
- Bridge demolition

Construction of the project, including temporary advanced signage, and short-term lane or ramp closures (which may be required during construction) is expected to begin in August 2026 and extend for a duration of approximately 3.5 years. Thirty temporary full closures of the SR-91 mainline are expected to be required to demolish/reconstruct the La Palma Avenue overcrossing (OC), Kraemer/Glassell OC, Tustin Avenue OC/EB SR-91 to SB SR-55 Connector, and Lakeview Avenue OC.

In addition to the temporary closures described above, the following modifications to the existing freeway mainline, connector and ramp facilities, and arterial streets in the construction zone could be implemented during construction of the Build Alternative (Preferred Alternative):

- Narrowing of the widths of the travel lanes and shoulders
- Reductions in the number of available travel lanes

These modifications would allow for traffic to continue to pass through the project area on SR-91, the ramps, and local arterials during construction, but travelers would experience some delays as they travel on those facilities. The proposed temporary closures of, and modifications to, the freeway and arterial facilities and the potential effects of those closures and modifications under the Build Alternative (Preferred Alternative) are described in the following sections.

Freeway Mainline

During the construction period, temporary closures of the SR-91 mainline would be required and detours around the closed segments would be provided on local arterials in the vicinity of the closures. The temporarily closed mainline segments of SR-91 would result in increased travel times. Preliminary detours that have been developed as part of the October 2017 draft of the Conceptual Traffic Handling Plan are identified in Table 2.1.5-26.

Table 2.1.5-26. Proposed Detours for Mainline Construction-Period Closures

Temporary Mainline Closure	Detour Route
EB-91 @ La Palma Avenue OC	EB SR-91: Merge onto SR-57. Take the first exit onto Orangethorpe Avenue and turn right (east). Turn right on Kraemer Boulevard and continue on N. Kraemer Boulevard (south) until reaching the EB SR-91 onramp. WB SR-91: Take the Kraemer Boulevard exit and travel north on Kraemer Boulevard. Turn left (west) on Orangethorpe Avenue. Merge onto either NB or SB SR-57.
EB-91 @ Kraemer/Glassell OC	EB SR-91: Exit SR-91 at Kraemer Boulevard/Glassell Street and use Kraemer Boulevard/Glassell Street EB on-ramp. WB SR-91: Exit SR-91 and travel north on Kraemer Boulevard, turn left (west) on Orangethorpe Avenue, turn left (south) on State College Boulevard, and turn right (west) to merge onto WB SR-91.
EB-91 @ Tustin Avenue OC/EB SR-91 to SB SR-55 Connector	EB SR-91: Exit SR-91 at Tustin Avenue and turn right (south) on Tustin Avenue to Lincoln Avenue/Nohl Ranch Road. Merge onto either NB or SB SR-55. WB SR-91: Exit SR-91 at Tustin Avenue and use Tustin WB on-ramp
EB-91 @ Lakeview Avenue OC	EB SR-91: Exit SR-91 at Santa Ana Canyon Road/Lakeview Avenue and use Santa Ana Canyon Road/Lakeview Avenue EB on-ramp. WB SR-91: Exit SR-91 at Lakeview Avenue and use Lakeview Avenue WB on-ramp.

Source: Caltrans 2017
OC = overcrossing; SB = southbound; NB = northbound; EB = eastbound; WB = westbound

During construction, the total number of travel lanes on the SR-91 mainline is expected to remain the same as under existing conditions, or be reduced in some areas. In addition, the lane and shoulder widths would be temporarily narrowed to accommodate the placement of construction barriers. Temporary closures of the SR-57 and SR-55 mainline are not anticipated under the proposed project.

Freeway Ramps

The Build Alternative (Preferred Alternative) would require temporary ramp closures; no long-term closures are anticipated at any given ramps. In addition, no two consecutive on- or off-ramps in the same direction would be closed at the same time to minimize inconvenience to the traveling public. Pedestrians and bicyclists are not allowed to travel on the SR-91 on- and off-ramps. The temporary ramp closures and the temporary detours associated with those closures would not affect the existing and future bicycle facilities in the study area. As a result, the ramp closures, delays, and increased travel times as a result of the ramp closures under the Build Alternative (Preferred Alternative) would not affect pedestrian and bicycle facilities. As described in Section 2.1.3, Community Impacts, avoidance and minimization measure **CI-1** would be implemented to reduce impacts related to temporary ramp closures.

Local Arterials and Intersections

Table 1-7 in Chapter 1 summarizes the bridges and structures in the study area that would be widened or replaced as part of the construction of the Build Alternative (Preferred Alternative).

In order to widen or replace these structures, temporary full or partial closures of the State College Boulevard undercrossing (UC), La Palma Avenue OC, Kraemer Boulevard/Glassell Street OC, Tustin Avenue OC, and Lakeview Avenue OC would each affect travel on local roadways by motorists, bicyclists, and pedestrians, resulting in traffic delays.

Detours would be detailed in the Transportation Management Plan (TMP) as part of implementation of measure **PF T-1** (see below). Detours around the temporarily closed overcrossings would result in increased travel times for roadway users, but are not expected to be substantial given the number of alternative routes in the study area. The detours provided for vehicular traffic would also be signed for use by pedestrians and bicyclists. Detours may result in a longer travel path for both pedestrians and bicyclists and could substantially increase their travel times. However, the overcrossings would be closed for very limited periods, which would minimize the effects of the closures on pedestrians and bicyclists. Caltrans Standard Specification 7-1.03 (**CI-2**) would be implemented to ensure access to businesses is maintained throughout construction.

PF T-1 **Transportation Management Plan.** A Transportation Management Plan (TMP) will be developed during final design and will be implemented by the construction contractor during project construction to address short-term traffic circulation and access effects during project construction. Specifically, during final design, a qualified traffic engineer will prepare the TMP, which will include, but not be limited to, the elements described below to reduce traveler delays and enhance traveler safety during project construction. The TMP will be coordinated with local cities and their emergency responders, and approved by the California Department of Transportation (Caltrans), District 12 during final design. The final TMP will be incorporated into the plans, specifications, and estimates.

The purpose of the TMP is to address the short-term traffic and transportation impacts during construction of the project. The objectives of the TMP are to:

- Maintain traffic safety during construction
- Effectively maintain an acceptable level of traffic flow throughout the transportation system during construction
- Minimize traffic delays and facilitate reduction of the overall duration of construction activities
- Minimize detours and impacts to pedestrians and bicyclists
- Foster public awareness of the project and related transportation and traffic impacts
- Achieve public acceptance of construction of the project and the TMP measures

The TMP will contain elements to reduce traveler delay and enhance traveler safety. These elements will be developed during final design and incorporated in the TMP for implementation during project construction.

Bicycle and Pedestrian Facilities

Pedestrians and bicyclists are not allowed to travel on the SR-91 mainline. Although construction activities on the mainline would not directly alter bicycle and pedestrian travel in the study area, temporary closures of overcrossings, and undercrossings would affect bicycle and

pedestrian travel. Designated bicycle facilities that could be closed temporarily include the Class II bike lanes on the La Palma Avenue SR-91 overcrossing and the Class I Santa Ana River Trail/Bicycle Path when the La Palma Avenue overcrossing is replaced and the SR-91 Santa Ana River Bridge is widened. Other bicycle infrastructure identified in Table 2.1.5-11 and local roadways that are not designated as bicycle facilities, but serve bicyclists, could also be temporarily disrupted by project construction activities. In addition, pedestrian facilities in the study area could experience temporary full or partial closures. As specified in measure **PF T-1**, the TMP will communicate these closures to the public and provide alternative routes for cyclists and pedestrians. The closures and associated detours could increase travel times for cyclists and pedestrians, but would be temporary and would not be substantial.

The overcrossings closed temporarily during the construction period would be returned to their existing cross sections no later than the completion of project construction activities. The existing sidewalks that cross SR-91 would also be returned to their original or better conditions no later than the completion of project construction. Specifically, at overcrossings where modifications to the sidewalks are needed as part of the Build Alternative (Preferred Alternative), those modifications would be consistent with ADA accessibility requirements.

Temporary construction activity would occur on the Santa Ana River Bridge requiring a portion of the trail passing under SR-91 in the immediate project vicinity to be closed during construction. Santa Ana River Trail/Bicycle Path access would be closed for a maximum of 8 months, during which time falsework erection and removal, superstructure construction, and other construction activities would occur. Detour route information is provided below in Table 2.1.5-27, and is shown in Figure 4-2 in Appendix A. The trail would be reopened with full use after the construction is completed.

Table 2.1.5-27. Anticipated Detour for Construction-Period Closure

Closure	Detour Route
Santa Ana River Trail/Bicycle Path	NB Santa Ana River Trail: Exit Santa Ana River Trail/Bicycle Path at Tustin Avenue; travel south along Tustin Avenue; turn left on Riverdale Avenue (heading northeast); turn left on Lakeview Avenue and travel north for approximately 800 feet to Santa Ana River Trail/Bicycle Path access ramp (right hand side). SB Santa Ana River Trail: Exit Santa Ana River Trail/Bicycle Path at Lakeview Avenue; travel south along Lakeview Avenue; turn right on Riverdale Avenue (heading southwest); turn right on Tustin Avenue and travel north for approximately 250 feet to Santa Ana River Trail/Bicycle Path access ramp (right hand side).

No-Build Alternative

None of the improvements proposed under the Build Alternative (Preferred Alternative) would be constructed under the No-Build Alternative. As a result, the No-Build Alternative would not result in temporary impacts related to traffic and circulation, or pedestrian and bicycle facilities.

2.1.5.4 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The project features/standardized measures included as part of this proposed project will be consistent with the requirements for discharges from projects in the planning phase. The project features/standardized measures will include methods to address potential short-term (during construction) impacts.

2.1.5.5 REFERENCES

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2.1.6 Visual/Aesthetics

2.1.6.1 REGULATORY SETTING

The National Environmental Policy Act (NEPA) of 1969, as amended, establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings (42 United States Code [USC] 4331[b][2]). To further emphasize this point, the Federal Highway Administration (FHWA), in its implementation of NEPA (23 USC 109[h]), directs that final decisions on projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

The California Environmental Quality Act (CEQA) establishes that it is the policy of the state to take all action necessary to provide the people of the state "with…enjoyment of *aesthetic*, natural, scenic and historic environmental qualities" (CA Public Resources Code [PRC] Section 21001[b]).

2.1.6.2 AFFECTED ENVIRONMENT

This section is based on the *Visual Impact Assessment for State Route 91 Improvement Project Between State Route 57 and State Route 55* (VIA) (July 2018).

The project location and setting provides context for determining the type and severity of changes to the existing visual environment. The terms *visual character* and *visual quality* are used to further describe the existing environment. Visual character includes attributes such as form, line, color, and texture, and is used to describe, not evaluate. A change in visual character cannot be described as having good or bad attributes until it is compared with the viewer response to that change. If there is public preference for the established visual character of a regional landscape and resistance to a project that will contrast that character, then changes in the visual character can be evaluated. Visual quality is evaluated by identifying the vividness, intactness, and unity present in the project corridor. FHWA states that this method should correlate with public judgments of visual quality well enough to predict those judgments. This approach is particularly useful in highway planning because it does not presume that a highway project is necessarily an eyesore; the approach can also help identify specific methods for mitigating each adverse impact that may occur as a result of a project. The project setting is also referred to as the *corridor* or *project corridor*, which is defined as the area of land that is visible from, adjacent to, and outside of the highway right-of-way, and is determined by topography, vegetation, and viewing distance.

The proposed project is located on SR-91 between post mile (PM) 4.7 and PM R10.8, on SR-57 between PM 15.5 and PM 16.2, and on SR-55 between PM 17.4 and PM R17.9 in the cities of Anaheim, Fullerton, Orange, and Placentia. Regionally, the project is located within northern Orange County, California. The landscape is generally flat to gently rolling topography and is primarily characterized by developed and disturbed lands associated with the existing State right-of-way. However, areas surrounding the proposed project corridor include the Chino Hills to the northeast and the Anaheim Hills to the southeast. Land uses within the corridor are primarily urban commercial and industrial, but also include areas of suburban residential, open space (Santa Ana River), recreational, and institutional. In addition, the Santa Ana River bisects

the project site east of Tustin Avenue in a west-east direction. The eastern portion of the project site (along SR-91) includes an approximately 1.6-mile segment of an officially designated State Scenic Highway beginning east of SR-55 and ending at the SR-91/ Lakeview Avenue interchange; refer to Figure 2.1.6-1 (Caltrans 2011). According to the State Scenic Highways Mapping System, a total of approximately 4.5 miles of SR-91 is officially designated as a State Scenic Highway from SR-55 to the Weir Canyon Road interchange. This segment of SR-91 runs along the banks of the Santa Ana River and offers views to mountain ridgelines, canyons, rolling hills, intermittent riparian and chaparral vegetation, and residential and commercial development.

The potential for visual impacts on the area depends on how responsive viewers are to changes resulting from development. Viewer response is a measure or prediction of the viewer's reaction to changes in the visual environment and has two dimensions: viewer exposure and viewer sensitivity. There are two major types of viewers: highway neighbors and highway users. Highway neighbors are the people who have views of the road, including non-residential uses (i.e., commercial, industrial, and medical uses), institutional uses, residential uses, and recreational uses (i.e., Santa Ana River Trail). Highway users are the people who have views from the road, including SR-91 motorists, SR-57 motorists, and local roadway travelers.

The project corridor is defined by visual assessment units (VAUs) for analysis of the proposed project. A VAU is typically defined by the limits of a particular viewshed and will often correspond to a place or district that is commonly known among local viewers. Two VAUs (VAU1 and VAU2) were selected for analysis of the proposed project.

VAU1. VAU1 is located in the western portion of the project area in the cities of Anaheim, Fullerton, and Placentia. VAU1 includes all portions of SR-91 and SR-57 west of Tustin Avenue in the project area. VAU1 is generally flat, with elevations ranging from approximately 177 feet above mean sea level (msl) to 241 feet above msl. VAU1 is surrounded almost entirely by urban development, including multi-story uses such as residential (both single- and multi-family), industrial, commercial, and medical uses. The Santa Ana River runs parallel to the project site in an east-west direction at the eastern extent of VAU1, and is visible particularly from Tustin Avenue. Other hardscape features visible in VAU1 include freeway overcrossings, signage, soundwalls, retaining walls, barriers, fences, and overhead power lines. Anthropogenic (human-made) features (i.e., residential, industrial, commercial, and medical development) dominate views within VAU1; however, landscaped slopes and mature trees are scattered throughout this VAU as well. Distant views of the Anaheim Hills to the southeast are also available at the easternmost extent of VAU1.

One Key View location within VAU1 was selected in consultation with Caltrans District 12 to depict visual changes to the project corridor from the proposed project (Key View 1); refer to Figure 2.1.6-2. Figures 2.1.6-3a through 2.1.6-6b provide a photograph of existing conditions, and with-project conditions, at each respective Key View. A description of Key View 1 is provided below.

- Key View 1 (refer to Figures 2.1.6-3a and 2.1.6-3b) is located in the central portion of VAU1 between North Kraemer Boulevard/Glassell Street and North Tustin Avenue and represents a typical view for eastbound SR-91 motorists. Currently, there is large vegetation along the eastbound SR-91 shoulder that screens a railyard industrial use to the south of SR-91 from motorist views. This vegetation screening would be removed as a result of the proposed lane widening and would result in a change in character/quality.



SOURCE: USGS topo Map, Anaheim and Orange, CA Quadrangles, dated 2015.

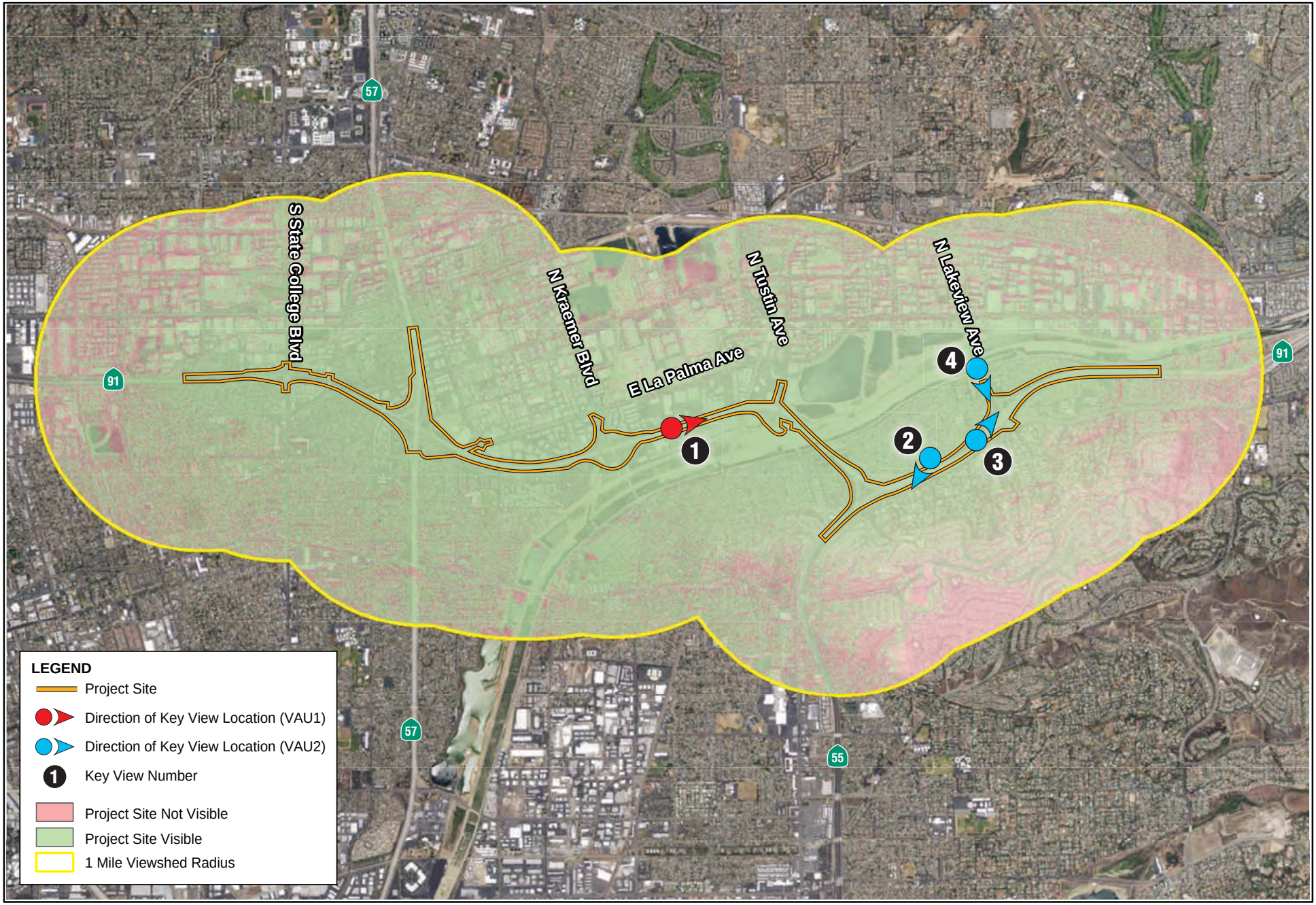
0 4000'

Officially Designated State Scenic Highway

04/2020 JN 145140 MAS

Figure 2.1.6-1

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Source: Intermap Technologies, Eagle Aerial - 2014

NOT TO SCALE

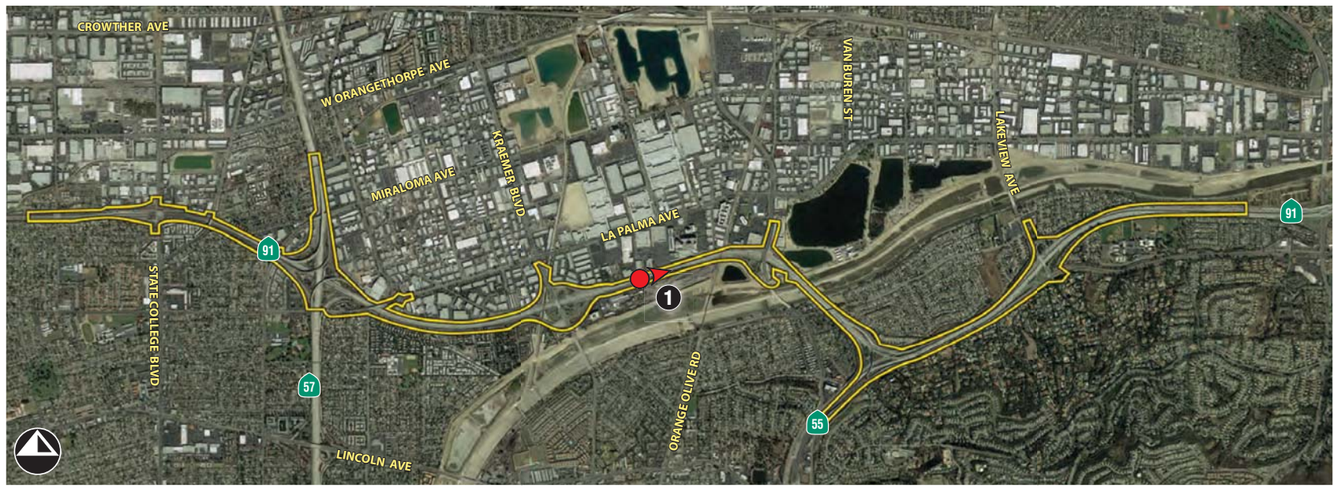
Key View Locations Map

04/2020 JN 145140 MAS

Figure 2.1.6-2

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Direction of Photo
Key View Location
1 Key View Number

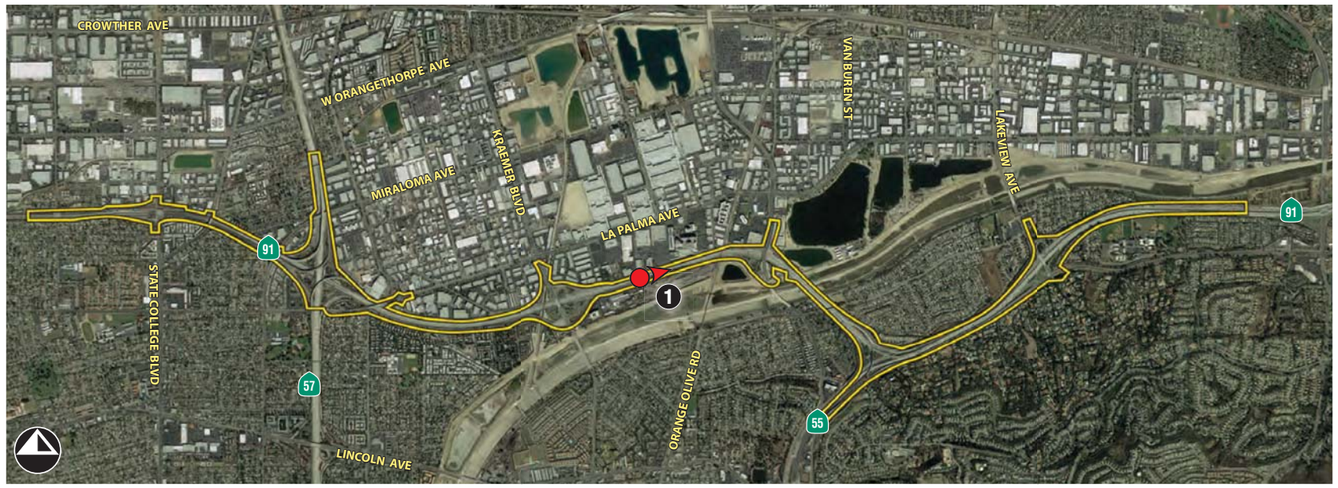
View from SR-91, just east of Tustin Avenue, looking east

Key View 1 - Existing Condition

04/20/20 JN 145140 MAS

Figure 2.1.6-3a

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Direction of Photo
Key View Location

1 Key View Number

View from E Addington Drive, looking southwest towards N Bluerock Street

Key View 1 - Proposed Condition

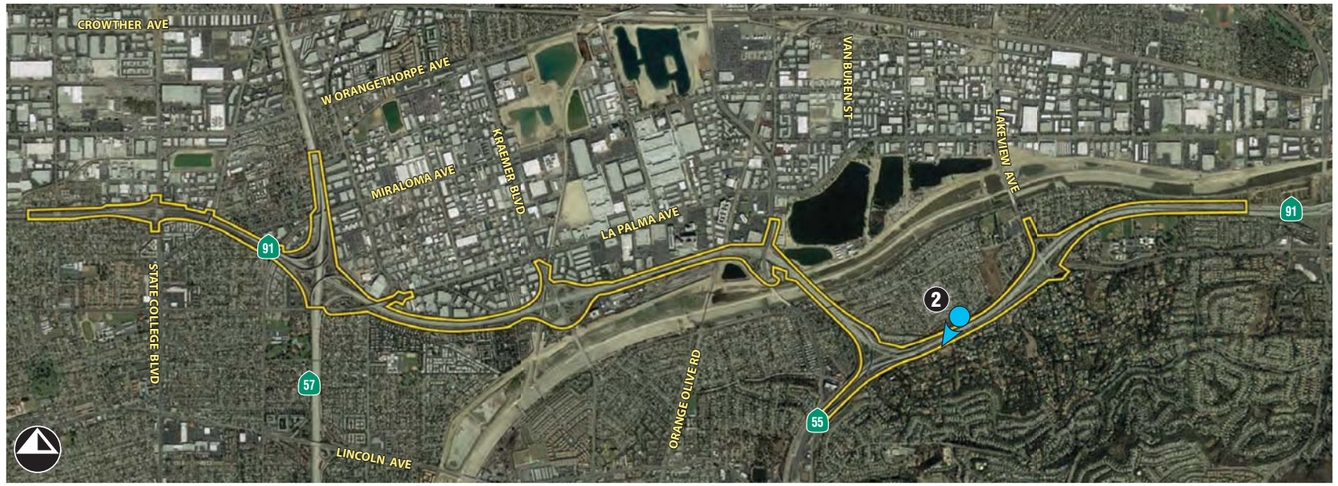
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VAU2. VAU2 is located in the eastern portion of the project area in the cities of Anaheim and Orange. VAU2 includes all portions of SR-91 and SR-55 east of Tustin Avenue in the project area. VAU2 is generally flat to gently rolling, with elevations ranging from 225 to 317 feet above msl. VAU2 is surrounded almost completely by residential (both single- and multi-family) development; however, commercial and institutional uses and the Santa Ana River are also present. Hardscape features visible in VAU2 also include freeway overcrossings, signage, soundwalls, retaining walls, barriers, fences, and overhead power lines, although to a lesser extent than VAU1. VAU2 offers views of landscaped slopes, mature trees, the Santa Ana River, and the Anaheim Hills. Distant views of the Chino Hills to the north are also available at the eastern-most extent of VAU2. VAU2 includes an approximately 1.6-mile segment of an officially designated State Scenic Highway (SR-91) beginning east of the SR-55/SR-91 interchange and ending at the SR-91/ Lakeview Avenue interchange; refer to Figure 2.1.6-1.

Three Key View locations within VAU2 were selected in consultation with Caltrans District 12 to depict visual changes to the project corridor from the proposed project (Key View 2, Key View 3, and Key View 4). A description of these Key Views is provided below.

- Key View 2 (refer to Figures 2.1.6-4a and 2.1.6-4b) is located in the central portion of VAU2 along East Addington Drive. Key View 2 represents a typical view looking southwest towards the project site from single-family residential development and for motorists, bicyclists, and pedestrians traveling along East Addington Drive. An approximately 22-foot soundwall along the westbound SR-91 shoulder currently screens views of the project site.
- Key View 3 (refer to Figures 2.1.6-5a and 2.1.6-5b) is located in the eastern portion of VAU2 along SR-91. Key View 3 represents a typical view for eastbound SR-91 motorists. Currently, Key View 3 offers distant views of the Chino Hills to the north. Views of the project's proposed SR-91/Lakeview Avenue Street interchange improvements, and the new Lakeview Avenue overcrossing bridge structure (approximately 2 feet higher than existing conditions) would be afforded from this Key View. Views of a new drop-down ramp to southbound SR-55 from Lakeview Avenue and associated retaining wall would also be afforded from this Key View. Visual impacts from this view are of increased importance due to SR-91's official State Scenic Highway designation in this area.
- Key View 4 (refer to Figures 2.1.6-6a and 2.1.6-6b) is located in the eastern portion of VAU2 along Lakeview Avenue. Key View 4 represents a typical view looking south towards the project site from single-family residential development and for motorists, bicyclists, and pedestrians traveling south along Lakeview Avenue. Views of the project's proposed SR-91/Lakeview Avenue interchange improvements and new Lakeview Avenue overcrossing bridge structure would be afforded from this Key View. Similar to Key View 3, visual impacts from Key View 4 are of increased importance due to SR-91's official State Scenic Highway designation in this area.

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Direction of Photo
Key View Location
1 Key View Number

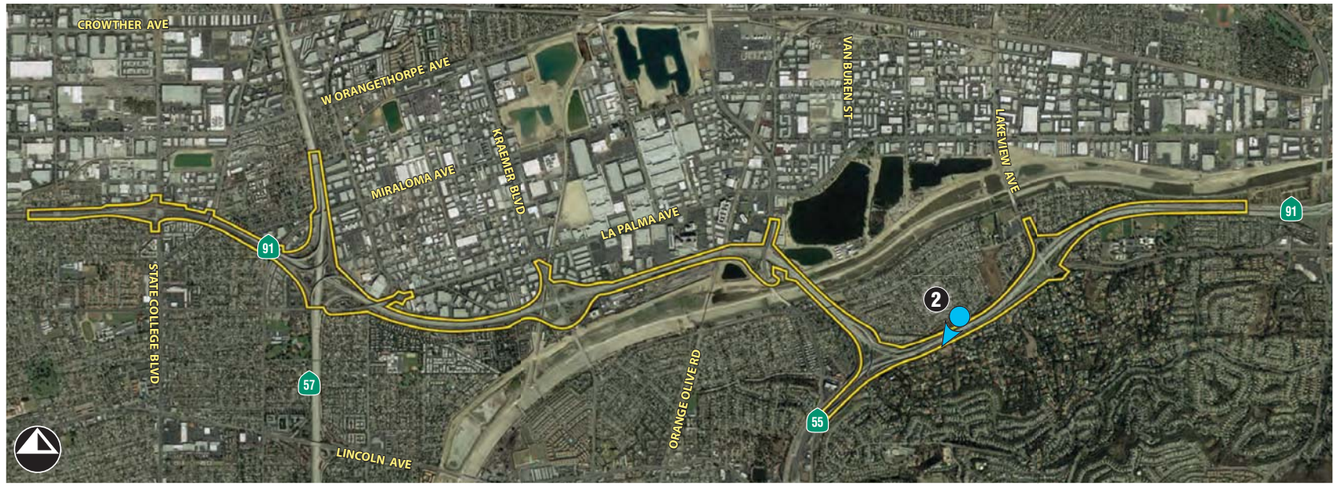
View from E Addington Drive, looking southwest, towards N Bluerock Street

Key View 2 - Existing Condition

04/20/20 JN 145140 MAS

Figure 2.1.6-4a

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Direction of Photo
Key View Location
1 Key View Number

View from E Addington Drive, looking southwest, towards N Bluerock Street

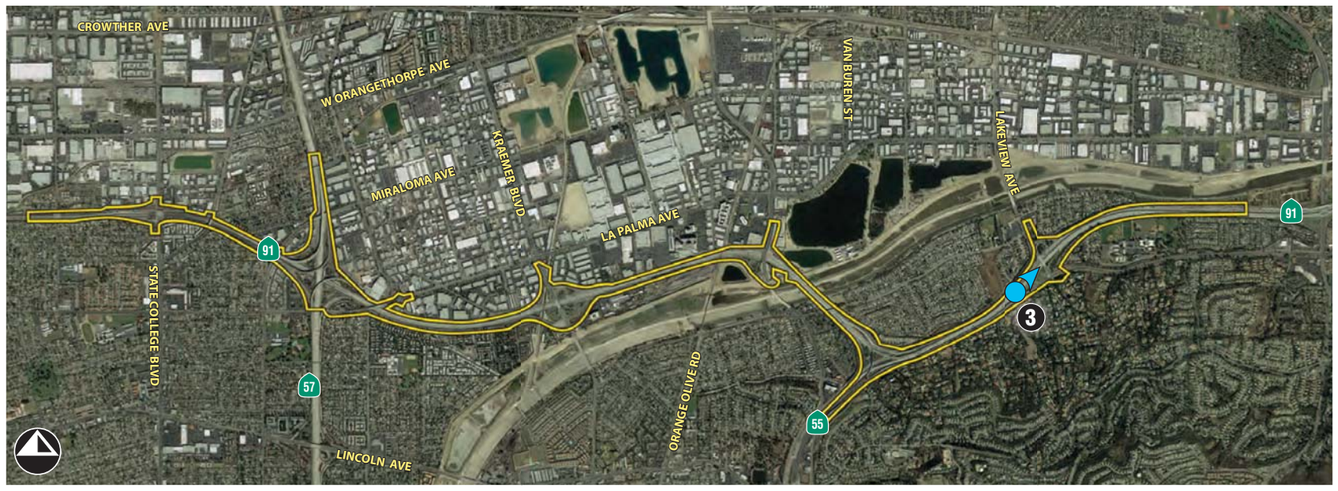
Key View 2 - Proposed Condition

04/20/20 JN 145140 MAS

Figure 2.1.6-4b

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Direction of Photo
Key View Location
1 Key View Number

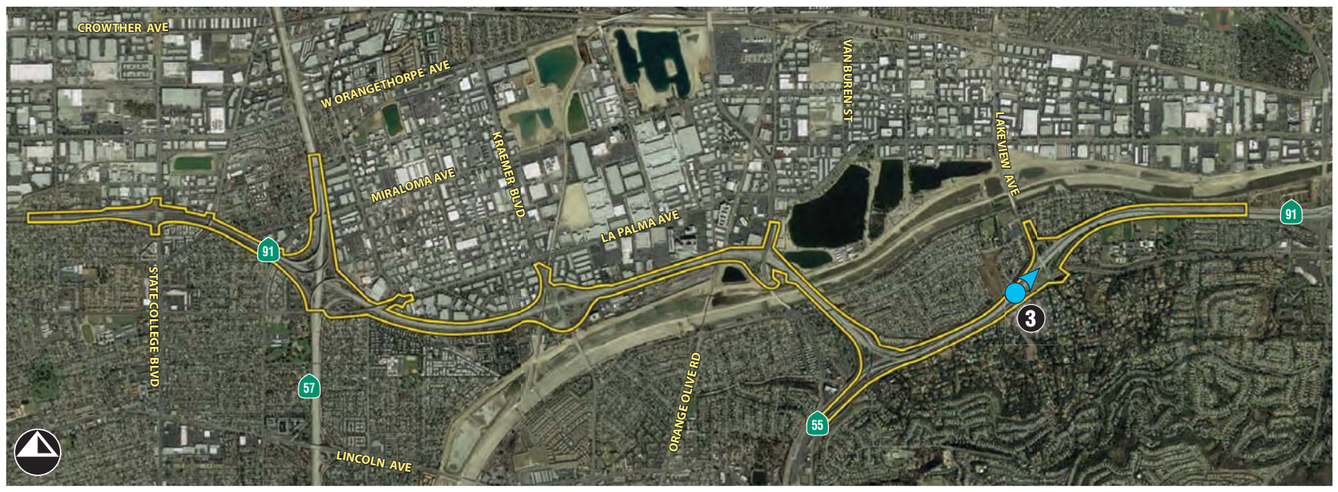
View from SR-91, just north of E Santa Ana Canyon Road, looking west

Key View 3 - Existing Condition

04/20/20 JN 145140 MAS

Figure 2.1.6-5a

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Direction of Photo
Key View Location

1 Key View Number

View from SR-91, just north of E Santa Ana Canyon Road, looking west

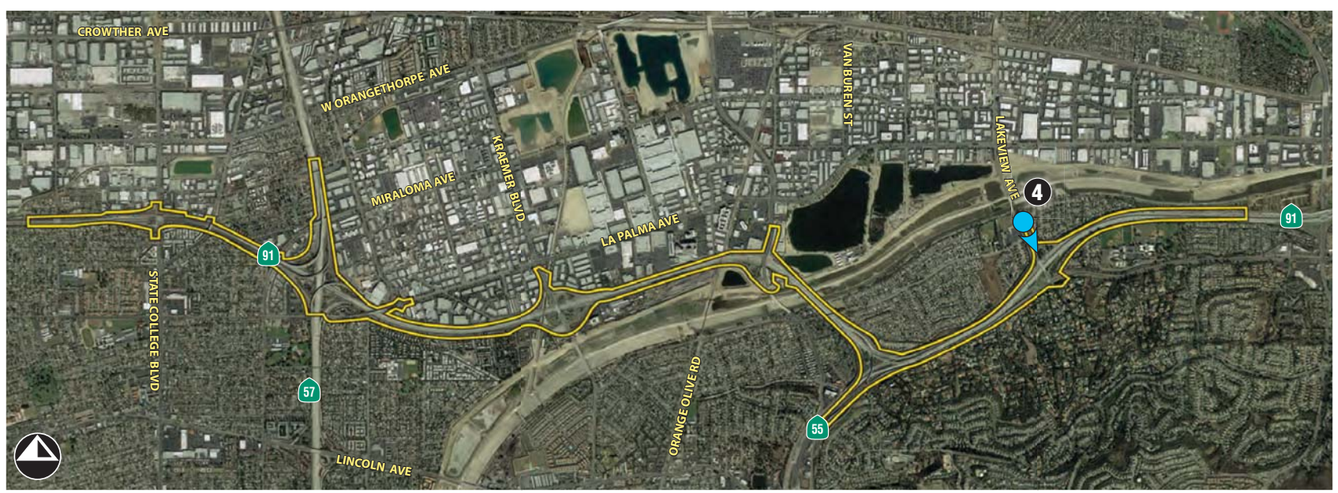
Key View 3 - Proposed Condition

04/20/20 JN 145140 MAS

Figure 2.1.6-5b

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Direction of Photo
Key View Location
1 Key View Number

View from Lakeside Avenue, just south of Riverdale Avenue, looking south

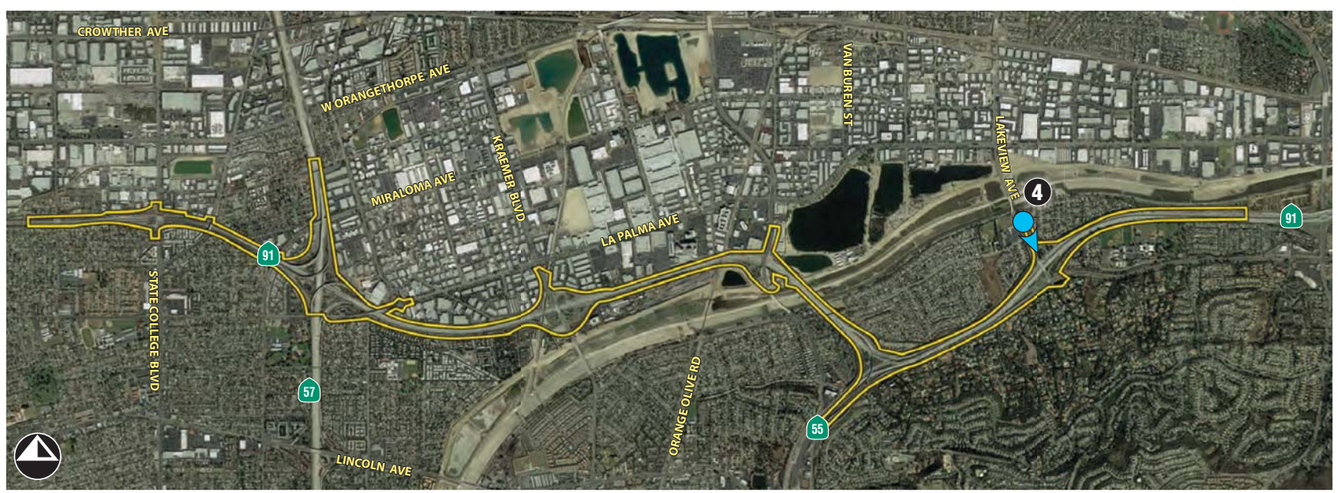
Key View 4 - Existing Condition

04/20/20 JN 145140 MAS

Figure 2.1.6-6a

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Direction of Photo
Key View Location
1 Key View Number

View from Lakeside Avenue, just south of Riverdale Avenue, looking south

Key View 4 - Proposed Condition

04/20/20 JN 145140 MAS

Figure 2.1.6-6b

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2.1.6.3 ENVIRONMENTAL CONSEQUENCES

Permanent Impacts

Build Alternative (Preferred Alternative)

The Build Alternative (Preferred Alternative) would include the SR-91 freeway mainline widening, primarily in the eastbound direction, and modifications to various interchanges, connectors, ramps, overcrossings, and intersections along the project corridor. Each Key View was evaluated for adverse visual impacts by comparing the difference in visual quality with the predicted viewer response for the Build Alternative (Preferred Alternative) (see Table 2.1.6-1).

Table 2.1.6-1. Visual Impact Ratings Using Viewer Response and Resource Change

		Viewer Response (VR)				
Resource Change (RC)		Low (L)	Moderate-Low (ML)	Moderate (M)	Moderate-High (MH)	High (H)
	Low (L)	L	ML	ML	M	M
	Moderate-Low (ML)	ML	ML	M	M	MH
	Moderate (M)	ML	M	M	MH	MH
	Moderate-High (MH)	M	M	MH	MH	H
	High (H)	M	MH	MH	H	H

Source: VIA, page 21.

Key View 1

Key View 1 is located in the central portion of VAU1 between North Kraemer Boulevard/Glassell Street and North Tustin Avenue and represents a typical view for eastbound SR-91 motorists. Eastbound SR-91 motorists would be directly exposed to visual changes along the freeway in VAU1. Hundreds of thousands of motorists travel through the project limits in VAU1 each day. Viewer exposure and duration would ultimately depend on the length of the project site travelled and traffic conditions, particularly during periods of peak travel. Although the speed of travel would determine Key View 1 viewer response, these viewers would likely notice change in this portion of the project site. Thus, overall viewer response would be moderate.

To reduce impacts associated with new views of adjacent rail operations to the south and to ensure the visual character is not substantially degraded in this Key View, measure **VIS-2** requires installation of either an opaque wall (similar to the existing cinderblock wall) or appropriate landscaping (i.e., landscaped berm or trees) sufficient to screen direct views for SR-91 motorists from industrial uses along the project corridor. Implementation of measure **VIS-2** would ensure the visual character of the project area is not substantially degraded, and would result in moderate visual impacts.

Key View 2

Key View 2 is located in the central portion of VAU2 along East Addington Drive and represents a typical view looking southwest towards the project site for single-family residential development and motorists, bicyclists, and pedestrians traveling along East Addington Drive. As such, overall viewer response in Key View 2 would be high.

In order to ensure the visual character is not substantially degraded in this Key View, measure **VIS-3** requires the planting of vines and landscaping in areas where soundwalls are visible from adjacent residential land uses to soften the project's hardscape features and glare and radiant heat from the walls, where feasible. To minimize visual quality loss and the visual disruption from highway construction, measure **VIS-4** would ensure architectural treatments are incorporated to the walls, particularly along the designated State Scenic Highway portion of SR-91. Measure **VIS-4** would also form an Aesthetic Design Review Team (ADRT) led by the Orange County Transportation Authority (OCTA) that includes local agency representatives to ensure the project landscape and structural elements are in compliance with the *Master Plan of Freeway and Transit Corridor Enhancements: Creating a Quality Environment Along Orange County's Transportation Network*. Implementation of measures **VIS-3** and **VIS-4** would ensure the visual character of the project area is not substantially degraded, and would result in low visual impacts.

Key View 3

Key View 3 is the eastern portion of VAU2 along SR-91 and represents a typical view for eastbound SR-91 motorists. Currently, Key View 3 offers distant views of the Chino Hills to the north. Views of the project's proposed SR-91/Lakeview Avenue Street interchange improvements, and the new Lakeview Avenue overcrossing bridge structure (approximately 2 feet higher than existing conditions) would be afforded from this Key View. Views of a new drop-down ramp to southbound SR-55 from Lakeview Avenue and associated retaining wall would also be afforded from this Key View. Visual impacts from this view are of increased importance due to SR-91's official State Scenic Highway designation in this area. Thus, overall viewer response in Key View 3 would be moderate.

In order to ensure the visual character is not substantially degraded in this Key View, measure **VIS-3** would ensure landscaping is installed along SR-91 where feasible to reduce the increased hardscape appearance of the proposed improvements. Measure **VIS-3** would ensure architectural treatments are incorporated to the walls (particularly along the designated State Scenic Highway portion of SR-91), and would include formation of an ADRT to ensure the project landscape and structural elements are in compliance with the *Master Plan of Freeway and Transit Corridor Enhancements: Creating a Quality Environment Along Orange County's Transportation Network*. Measure **VIS-5** would ensure that the existing SR-91 eastbound retaining wall would be replaced in-kind with architectural treatments similar to existing conditions in cooperation with the Caltrans District Architect. Implementation of measures **VIS-3** through **VIS-5** would ensure the visual character of the project area is not substantially degraded, and would result in moderate-low visual impacts.

Key View 4

Key View 4 is in the eastern portion of VAU2 along Lakeview Avenue. Key View 4 represents a typical view looking south towards the project site for single-family residential development and motorists, bicyclists, and pedestrians traveling south along Lakeview Avenue. Views of the project's proposed SR-91/Lakeview Avenue interchange improvements and new Lakeview Avenue overcrossing bridge structure would be afforded from this Key View. Similar to Key View 3, visual impacts from Key View 4 are of increased importance due to SR-91's official State Scenic Highway designation in this area. Thus, overall viewer response in Key View 4 would be moderate.

In order to ensure the visual character is not substantially degraded in this Key View, measure **VIS-3** would require that landscaping be installed along SR-91 where feasible to reduce the increased hardscape appearance of the proposed improvements. To minimize visual quality loss

and the visual disruption from highway construction, measure **VIS-4** would ensure architectural treatments are incorporated to the walls, particularly along the designated State Scenic Highway portion of SR-91. Measure **VIS-4** would include formation an ADRT to ensure the project landscape and structural elements are in compliance with the *Master Plan of Freeway and Transit Corridor Enhancements: Creating a Quality Environment Along Orange County's Transportation Network*. Implementation of measures **VIS-3** and **VIS-4** would ensure the visual character of the project area is not substantially degraded, and would result in moderate visual impacts.

Operation of the proposed project would introduce additional sources of light and glare to the project area from additional safety lighting sources. The project may also require the relocation of two existing high mast stadium lights (HMSL) within Caltrans right-of-way (approximately 10 to 20 feet to the east or west) to allow for the proposed SR-91/SR-57 interchange improvements. Motorists traveling along SR-91 and SR-57 would experience nominal lighting impacts due to high travel speeds and short duration of exposure. In addition, the relocation of the two HMSLs by 10 to 20 feet closer to the center of the interchange is not anticipated to affect any nearby residential uses. Implementation of measure **VIS-1** would minimize light and glare impacts on surrounding sensitive uses.

In addition, the new wall features could result in additional sources of glare. Motorists traveling along these segments would be nominally impacted by potential glare due to high travel speeds and short duration of exposure. The residential uses in the project vicinity would be subject to generally similar sources of light and glare, as compared to existing conditions. To reduce potential light reflectivity and glare impacts from the wall features, measure **VIS-2** would require landscape treatment along walls to soften the hardscape features and glare and radiant heat from the walls, as feasible.

No-Build Alternative

Project improvements would not occur under the No-Build Alternative; therefore, the No-Build Alternative would not alter existing views or visual characteristics of the project area.

Temporary Impacts

Build Alternative (Preferred Alternative)

The Build Alternative (Preferred Alternative) would expose sensitive users to views of the project site. Construction-related vehicle access and staging of construction materials would occur within Caltrans and City right-of-way and disturbed or developed areas along the length of the project site. Project construction would expose surfaces, construction debris, equipment, and truck traffic to nearby sensitive viewers. Construction vehicle access and staging of construction materials would be visible from motorists traveling along the project site as well as residential and non-residential uses located in the project vicinity. These impacts would be short-term and would cease upon project completion. The project would be required to comply with Caltrans Standard Specifications for Construction, which would minimize visual impacts through the use of opaque temporary construction fencing that would be situated around construction staging areas. Thus, the potential visual impacts during construction of the Build Alternative (Preferred Alternative) would not be adverse.

The proposed project would require nighttime construction activities. Nighttime construction lighting could potentially result in light impacts for nearby residents and motorists traveling along the project site. These activities may be required to take place for several months. However, the project area contains existing sources of light (i.e., vehicle headlights, street lights, park lighting,

residential and non-residential lights, etc.). In accordance with Caltrans regulations, nighttime construction will be limited to the hours of 10:00 p.m. to 6:00 a.m. Necessary lighting for safety and construction purposes would be directed away from land uses outside the project area, and contained and directed toward the specific area of construction. With implementation of measure **VIS-1**, construction lighting types, plans, and placement would be reviewed at the discretion of the District Landscape Architect. Implementation of measure **VIS-1** would ensure there would be little to no visual intrusion as a result of temporary construction nighttime lighting.

No-Build Alternative

Project improvements would not occur under the No-Build Alternative; therefore, the No-Build Alternative would not alter existing views or visual characteristics of the project area.

2.1.6.4 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

VIS-1 Construction lighting types, plans, and placement will be reviewed at the discretion of the District Landscape Architect in order to minimize light and glare impacts on surrounding sensitive uses.

VIS-2 The project will install either an opaque wall (similar to the existing cinderblock wall) or appropriate landscaping (i.e., landscaped berm or trees) sufficient to screen direct views from SR-91 motorists from industrial uses along the project corridor. All architectural features will be reviewed and approved by the District Landscape Architect.

VIS-3 To maintain the context of the project area (color, form, and texture) the project will install landscaping that is compatible with the existing landscape along SR-91 in the project vicinity and surrounding area. Where feasible, landscaping will include specimen-sized trees and/or shrub/groundcover mass planting, and landscape treatment along walls to soften the hardscape features and glare and radiant heat from the walls. In areas where soundwalls are visible from adjacent residential land use, vines and landscaping will be utilized to screen views to the wall where feasible. All vine and landscape proposed will conform with the planting policy requirements of Caltrans. The landscape concept, plan, and plant palette will be determined in consultation with, and approved by, the District Landscape Architect during the Plans, Specifications, and Estimate (PS&E) phase. The planting plan will be reviewed and approved by the Caltrans Biologist to be in accordance with the executive order on invasive species.

VIS-4 To minimize visual quality loss and to minimize the visual disruption from the elements of the highway construction, architectural treatments will be incorporated to the walls, particularly along the designated State Scenic Highway portion of SR-91. All wall aesthetics will be approved by the District Landscape Architect. The project sponsor (Orange County Transportation Authority) will administer and chair an Aesthetic Design Review Team (ADRT) that includes local agency representatives to ensure the project landscape and structural elements are in compliance with the aesthetic requirements of the *Master Plan of Freeway and Transit Corridor Enhancements: Creating a Quality Environment Along Orange County's Transportation Network*, with final approval by a Caltrans District 12 Landscape Architect.

VIS-5 To minimize visual quality loss and visual disruption from highway construction elements, the existing SR-91 eastbound retaining wall under the Lakeview Avenue overcrossing bridge structure will be replaced in-kind with architectural treatments similar

to existing conditions. The proposed wall aesthetics will be approved by the District Landscape Architect.

2.1.6.5 REFERENCES

California Department of Transportation. 2011. *California State Scenic Highway Mapping System*. Available: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/. Accessed: January 18, 2018.

Michael Baker International. 2018*. Visual Impact Assessment for State Route 91 Improvement Project Between State Route 57 and State Route 55* (VIA). July.

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2.1.7 Cultural Resources

2.1.7.1 REGULATORY SETTING

The term "cultural resources," as used in this document, refers to the "built environment" (e.g., structures, bridges, railroads, water conveyance systems, etc.), places of traditional or cultural importance, and archaeological sites (both prehistoric and historic), regardless of significance. Under federal and state laws, cultural resources that meet certain criteria of significance are referred to by various terms including "historic properties," "historic sites," "historical resources," and "tribal cultural resources." Laws and regulations dealing with cultural resources include:

The National Historic Preservation Act (NHPA) of 1966, as amended, sets forth national policy and procedures for historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for listing in the National Register of Historic Places (NRHP). Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and to allow the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on those undertakings, following regulations issued by the ACHP (36 Code of Federal Regulations [CFR] 800). On January 1, 2014, the First Amended Section 106 Programmatic Agreement (PA) among the Federal Highway Administration (FHWA), the ACHP, the California State Historic Preservation Officer (SHPO), and the Department went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the ACHP's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA's responsibilities under the PA have been assigned to the Department as part of the Surface Transportation Project Delivery Program (23 United States Code [USC] 327).

The Archaeological Resources Protection Act (ARPA) applies when a project may involve archaeological resources located on federal or tribal land. The ARPA requires that a permit be obtained before excavation of an archaeological resource on such land can take place.

Historic properties may also be covered under Section 4(f) of the U.S. Department of Transportation Act, which regulates the "use" of land from historic properties (in Section 4(f) terminology—historic sites). See Appendix A for specific information about Section 4(f) resources within the project study area.

The California Environmental Quality Act (CEQA) requires the consideration of cultural resources that are historical resources and tribal cultural resources, as well as "unique" archaeological resources. California Public Resources Code (PRC) Section 5024.1 established the California Register of Historical Resources (CRHR) and outlined the necessary criteria for a cultural resource to be considered eligible for listing in the CRHR and, therefore, a historical resource. Historical resources are defined in PRC Section 5020.1(j). In 2014, Assembly Bill 52 (AB 52) added the term "tribal cultural resources" to CEQA, and AB 52 is commonly referenced instead of CEQA when discussing the process to identify tribal cultural resources (as well as identifying measures to avoid, preserve, or mitigate effects to them). Defined in PRC Section 21074(a), a tribal cultural resource is a CRHR or local register eligible site, feature, place, cultural landscape, or object which has a cultural value to a California Native American tribe. Tribal cultural resources must also meet the definition of a historical resource. Unique archaeological resources are referenced in PRC Section 21083.2.

PRC Section 5024 requires state agencies to identify and protect state-owned historical resources that meet the NRHP listing criteria. It further requires the Department to inventory state-owned structures in its rights-of-way. Sections 5024(f) and 5024.5 require state agencies to provide notice to and consult with the SHPO before altering, transferring, relocating, or demolishing state-owned historical resources that are listed on or are eligible for inclusion in the NRHP or are registered or eligible for registration as California Historical Landmarks. Procedures for compliance with PRC Section 5024 are outlined in a Memorandum of Understanding (MOU)[1] between the Department and SHPO, effective January 1, 2015. For most Federal-aid projects on the State Highway System, compliance with the Section 106 PA will satisfy the requirements of PRC Section 5024.

2.1.7.2 AFFECTED ENVIRONMENT

Information from this section is largely based on the *Historic Property Survey Report* (HPSR), *Archaeological Survey Report* (ASR), and *Historical Resources Evaluation Report* (HRER) (ICF 2018a, 2018b, 2018c); the *Supplemental Historic Property Survey Report* (ICF 2018d); and the *Second Supplemental Historic Property Survey Report* (ICF 2019).

Area of Potential Effect

The purpose of the Area of Potential Effect (APE) is to delineate the geographic areas within which an undertaking may directly or indirectly cause alteration in the character or use of historic properties, if any such properties exist. In accordance with Section 106 PA Stipulation VIII.A, the APE for the project was established in April 2018, with a Supplemental APE being established in October 2018 and a second Supplemental APE being approved in September 2019. The APE was established as the limits of proposed disturbance, including the limits of the current and proposed right-of-way, temporary construction easements (TCEs), and staging areas. Partial fee acquisitions, permanent easements, and TCEs along SR-91 would be required to accommodate the proposed improvements. Partial fee acquisitions are expected to be required at five parcels, totaling approximately 0.12 acre. Permanent easements are also anticipated at two parcels, totaling approximately 0.36 acre. TCEs are expected to be required at 16 parcels, totaling approximately 4.91 acres.

The vertical extent of the APE is limited to the depth of ground-disturbing activities, including subsurface shoring, and pile depths. Excavation is expected to reach a depth of five feet for most of the study area. In areas where subsurface shoring is proposed the depth of excavation may reach a depth of up to 35 feet, while piles may extend 30 to 80 feet deep.

Summary of Identification Efforts

Prior to the archaeological field investigation of the project APE, ICF archaeologist Stephen Bryne requested that a literature and records search be conducted at the SCCIC at California State University, Fullerton. The literature and record search was conducted on December 6, 2016.

The literature and records search included a review of all recorded cultural resources, including archaeological sites and historic built environment resources, within a 0.25-mile radius of the project APE as well as a review of cultural resource reports on file. In addition, the California

[1] The MOU is located on the SER at http://www.dot.ca.gov/ser/vol2/5024mou_15.pdf.

Points of Historical Interest, California Historical Landmarks, California Register of Historical Resources, National Register of Historic Places, and California State Historic Resources Inventory were reviewed. Historic maps, including the 1896 and 1942 Anaheim and the 1902 Corona 15 X 15 grid quadrangle maps, were also examined.

The results of the records searches indicate that no archaeological resources exist within the project's APE. A total of 16 resources were found to exist within the 0.25-mile study area buffer. One additional prehistoric site (P-30-000277) is listed on the Orange 7.5-minute topographic map as just outside this study area. However, this resource has been included because other maps associated with resource records and reports for the study area mislabeled the location. The resource records for this prehistoric habitation site indicate that it was destroyed during previous construction activities. In total, four prehistoric resources, one historic linear resource, 10 historic built environment resources, and one set of human remains were identified in the record search buffer. The age of the human remains (P-30-000517) was not indicated within the resource record. One additional archaeological site, the Canal Street Landfill, which was operated by the County of Orange from 1946 to 1958 before being capped, was identified as an archaeological site in the Supplemental HPSR due to its age. However, it was not found to be eligible for listing in the NRHP or CRHR.

In addition to prehistoric and historic cultural resources within the study area, the records search was conducted to identify any previous cultural studies conducted within the project area. A total of 31 previous studies were identified, 14 of which intersect the project APE. The remaining 17 cultural resource studies were conducted within the 0.25-mile study area but do not intersect the project APE.

Native American Consultation

The Native American Heritage Commission (NAHC) was contacted for Section 106 consultation regarding the project on November 19, 2015. The NAHC responded in a letter on December 16, 2015, stating that a search of its Sacred Lands File did not yield any sacred lands or traditional cultural properties within the project area. The NAHC provided a list of Native American contacts who may have further information on resources in the area. Based on this NAHC list, consultation letters and maps of the project area were sent to nine Native American groups on January 3, 2017. The nine Native American groups were contacted through follow-up phone calls and emails.

In response to the mailing, one letter was received from Chairperson Andrew Salas of the Gabrieleño Band of Mission Indians-Kizh Nation. Mr. Salas requested Native American and archaeological monitors for all ground-disturbing activities related to the project. In addition, three responses were received as a result of follow-up phone calls and emails. These include two responses by phone from the Juaneño Band of Mission Indians Acjachemen Nation, one from Tribal Chairperson Matias Belardes and a second from Ms. Joyce Perry, tribal manager. Chairperson Belardes and Ms. Perry both related that the tribe has no concerns regarding the project; however, they would like to be informed of the monitoring results if it occurs. Mr. Robert Dorame of the Gabrielino Tongva Indians of California Tribal Council also responded by phone, stating that the areas along the Santa Ana River are sensitive and that Native American monitors should be present during construction in those areas. He also asked to participate in any Native American monitoring in those areas.

Caltrans submitted a letter to the NAHC on November 20, 2017, requesting a list for AB 52 consultation. A response from NAHC was received on November 22, 2017, that included a list of 15 Native American tribes with traditional lands or cultural places within Orange County. Caltrans

responded by sending letters on November 29, 2017, to the 15 Native American tribes, inviting them to consult under AB 52 and Section 106 of the NHPA. One response was received from the Viejas Band of Kumeyaay Indians, stating that the project has little significance or ties to the tribe.

On June 25, 2018, letters were sent to the two tribes that requested archaeological and Native American monitoring. The letters stated that construction monitoring would not be conducted during project implementation because of the lack of identified cultural resources and extensive development within the APE and adjacent areas. To date, no responses have been received.

State Government

On August 1, 2018, the HPSR, HRER, and ASR were sent to the SHPO to request concurrence that 10 historic built environment resources are not eligible for the NRHP. A letter was received on August 30, 2018, from Julianne Polanco, the State Historic Preservation Officer. In this letter, Ms. Polanco gave concurrence that the following resources are not eligible for listing in the National Register of Historic Places:

- Alpha Jet, 1400 N Baxter Street, Anaheim, CA
- Bekins Moving and Storage, 1415 N Burton Place, Anaheim, CA
- 1400 N Burton Place, Anaheim, CA
- 1423 N State College Boulevard, Anaheim, CA
- 2500 E Miraloma Way, Anaheim, CA
- 1311-1347 N Blue Gum Street, Anaheim, CA
- 2727 E Coronado Street, Anaheim, CA
- Casa La Palma, 2701 E La Palma Avenue, Anaheim, CA
- Village Green, Bound by Frontera Street to the north, N Armando Street to the east, the Santa Ana River to the south, and North Via Porto to the west
- 2950 E Frontera Street, Anaheim, CA

On October 29, 2018, the Supplemental HPSR was sent to the SHPO to request concurrence that the following archaeological resource is not eligible for listing in the NRHP:

- Canal Street Landfill, Anaheim, CA

Local Government

On September 8, 2017, a letter and map were sent to the following entities that may have knowledge of or concerns regarding historic properties in the area: the Anaheim Cultural and Heritage Commission, Anaheim Planning Commission, City of Orange Planning Commission, Orange County Historical Commission, Placentia Historical Committee, and Placentia Planning Commission.

As of December 19, 2017, two responses have been received from these interested parties. A letter dated September 13, 2017, was sent by Christine Nguyen, associate planner with the City of Anaheim Planning and Building Department. Ms. Nguyen's letter concerns six properties located within 1,000 feet of the APE (none are in the APE). The properties at 1471 N. Placentia

Avenue, 202 N Tustin Avenue, 1472 E Burton Street, and 1408 E Burton Street are on the City of Anaheim's Structures of Historic Interest List. In addition, 2651 E. Jackson Avenue and 413 S. Peralta Hills Drive are historical resources that receive a California Mills Act tax credit.

A letter dated October 9, 2017, was sent by Marissa Moshier, historic preservation planner with the City of Orange. Ms. Moshier's letter discusses resources for identifying historic resources within the City of Orange and nearby unincorporated portions of Orange County. The City of Orange's General Plan identified areas of potential sensitivity for historic resources. The areas of potential sensitivity, as well as other local historic resources, are not in the APE.

Local Historic Societies

Project notification letters were sent on September 8, 2017, to the following local history and preservation groups: Anaheim Historical Society; A.S. Bradford House; Orange County Archives, Chris Jepsen, assistant archivist; City of Orange Public Library, History Center; Federation of Orange County Historical Organizations; George Key Ranch; Heritage Center, Jane K. Newell, heritage services manager; Heritage Museum of Orange County, Kevin Cabrera, curator; Old Orange County Museum Society; Old Towne Preservation Association; Orange Community Historical Society; Orange County California Genealogical Society; Orange County Historical Society; Ramon Peralta Adobe.

On September 21, 2017, an email was received from Justin Sikora, Orange County Parks historic resource specialist for the Historic Operations Group, indicating that he was in the process of consulting with colleagues and would be providing information on resources identified within or near the APE. No information has been provided by Mr. Sikora on historic resources to date. As of December 19, 2017, that was the only response received.

Archaeological Field Methods

An archaeologist conducted a cultural resources survey of the APE on August 15 and 16, 2017. The APE consisted of paved surfaces as well as exposed areas with soil within the interchanges and the road shoulder. A windshield survey of the entire APE noted areas that could be safely surveyed on foot. Portions of the APE between the freeway soundwalls were deemed to be unsafe. They have no intact natural stratigraphy and low potential for encountering cultural resources. Therefore, these areas were not included in the pedestrian survey. Where terrain, vegetation, and a safe working environment permitted, the archaeologist walked transects, spaced at 15 meters. Intensive pedestrian surveys were conducted at the SR-91 interchanges at Lakeview Avenue, Tustin Avenue, Kraemer Boulevard, Glassell Street, and North State College Boulevard. The archaeologist examined the ground surface within the APE for the presence of prehistoric artifacts, features, and historic artifacts. The APE was loaded onto ArcGIS Online and accessed from a mobile phone with Collector software, which allowed the archaeologist to navigate to the APE, record existing conditions at each portion of the APE, and take photographs. A total of 120.3 acres were pedestrian surveyed; 219.25 acres were visually inspected from a distance, on foot or by vehicle. The APE was found to be entirely developed, with visibility ranging from 0% in the paved portions of the APE to 100% near the Santa Ana River.

Following approval of the HPSR in July 2018, it was determined that permanent subsurface shoring would need to be installed along the eastbound side of SR-91, east of Glassell Street, at a depth of up to 35 feet. Another cultural resources survey of the APE was conducted by an archaeologist on October 25, 2018, in the area where the subsurface shoring is proposed, as

documented in the Supplemental HPSR. The location of the proposed shoring was identified as being within the previous Canal Street Landfill, which was operated by the County of Orange from 1946 to 1958 before being capped. Due to its age, the Canal Street Landfill was identified as an archaeological site, but was not found to be eligible for listing in the NRHP or CRHR.

Following approval of the Historic Property Survey Report in July 2018 and the first Supplemental HPSR in October 2018, the APE was minimally revised to account for the updated project postmiles as part of the second Supplemental HPSR. No additional resources were identified as a result of this change, and the second Supplemental HPSR was approved in September 2019.

Historic Built Environment

The HRER evaluated 10 built-environment resources that were more than 50 years old, of which none were found to be a historic property for the purposes of NEPA/Section 106 of the NHPA or a historical resource for purposes of the CEQA. There are no historic properties or historical resources in the APE.

Tribal Cultural Resources

A cultural resources records search, a Native American Sacred Lands File search, Native American consultation, and a cultural resources field survey were conducted. Results of the records searches indicate that no archaeological resources have been previously recorded within the APE. A Native American Sacred Lands File search did not indicate the presence of any sacred lands or traditional cultural properties within the project area. Native American consultation did not yield information on any sites or Traditional Cultural Resources within or near the APE. A cultural resource field survey was conducted, covering the entire APE. The APE was found to be entirely developed, with visibility ranging from 0 percent in the paved portions of the APE to 100 percent near the Santa Ana River. No archaeological resources were identified during the survey of the APE for the project, and thus, there do not appear to be any known tribal cultural resources in the APE. However, Mr. Robert Dorame of the Gabrielino Tongva Indians of California Tribal Council responded to consultation attempts, stating that the areas along the Santa Ana River are sensitive and that Native American monitors should be present during construction in those areas. These areas may be considered sensitive for possible tribal cultural resources, should they exist and should they be encountered during project construction.

2.1.7.3 ENVIRONMENTAL CONSEQUENCES

Permanent Impacts

Build Alternative (Preferred Alternative)

Caltrans, pursuant to Section 106 PA Stipulation IX.A, has determined that a finding of *no historic properties affected* is appropriate for this undertaking because there are no historic properties in the APE. As such, permanent impacts are not expected as a result of implementation of the Build Alternative (Preferred Alternative).

If any inadvertent finds should be discovered during construction, **PF CR-1** and **PF CR-2**, standard design elements on all Caltrans projects, would avoid or minimize any potential impacts.

PF CR-1. If cultural materials are discovered during construction, all earthmoving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.

PF CR-2. In the event that human remains are found, the county coroner shall be notified and ALL construction activities within 60 feet of the discovery shall stop. Pursuant to PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the NAHC, which will then notify the most likely descendent (MLD). The person who discovered the remains will contact Jonathan Wright, Caltrans District 12 archaeologist. Further provisions of Public Resources Code Section 5097.98 are to be followed as applicable.

There are no cultural resources that are subject to Section 4(f) in the project vicinity, and thus, there will be no impact on Section 4(f) cultural resources as a result of this Build Alternative (Preferred Alternative).

No-Build Alternative

Under the No-Build Alternative, no project improvements would be implemented; therefore, no operational effects on historical or archaeological cultural resources would result.

Temporary Impacts

Build Alternative (Preferred Alternative)

No temporary impacts on cultural resources are expected as a result of construction activities for the Build Alternative (Preferred Alternative).

No-Build Alternative

Under the No-Build Alternative, no project improvements would be implemented; therefore, no construction effects on historical or archaeological cultural resources would result.

2.1.7.4 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

With implementation of standard Caltrans design elements **PF CR-1** and **PF CR-2**, no avoidance, minimization, or mitigation would be required for cultural resources

2.1.7.5 REFERENCES

ICF. 2018a. *Historic Property Survey Report (HPSR).* July.

———. 2018b. *Archaeological Survey Report (ASR).* July.

———. 2018c. *Historical Resources Evaluation Report (HRER).* July.

———. 2018d. *Supplemental Historic Property Survey Report.* October.

———. 2019. *Second Supplemental Historic Property Survey Report.* September.

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2.2 Physical Environment

2.2.1 Hydrology and Floodplain

2.2.1.1 REGULATORY SETTING

Executive Order (EO) 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. The Federal Highway Administration (FHWA) requirements for compliance are outlined in 23 Code of Federal Regulations (CFR) 650 Subpart A.

To comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments.
- Risks of the action.
- Impacts on natural and beneficial floodplain values.
- Support of incompatible floodplain development.
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values affected by the project.

The base floodplain is defined as "the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year." An encroachment is defined as "an action within the limits of the base floodplain."

2.2.1.2 AFFECTED ENVIRONMENT

This section is based on the *Location Hydraulic Study* (Michael Baker International 2017) prepared for the proposed project.

Regional Hydrology

The project area is under the jurisdiction of the Regional Water Quality Control Board (RWQCB), Santa Ana Region 8. The project segment of SR-91, SR-57, and SR-55 is within the Santa Ana River and San Gabriel River Hydrologic Units, the Lower Santa Ana River and the Anaheim Hydrologic Areas, and the East Coastal Plain Hydrologic Sub-Area (Caltrans 2012). The receiving waters from the project segment are Carbon Creek Channel, the Carbon Canyon Diversion Channel, Santa Ana River Groundwater Recharge Basins, and Santa Ana River Reach 2.

100-Year Floodplains

There are three floodplains within the project limits, as shown on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) (Nos. 06059C0132J, 06059C0151J, and 06059C0152J). They are associated with the Santa Ana River, the Santa Ana River Groundwater Recharge Basins, and the Carbon Canyon Diversion Channel. See Figure 2.2.1-1 for the approximate location of each floodplain.

Santa Ana River

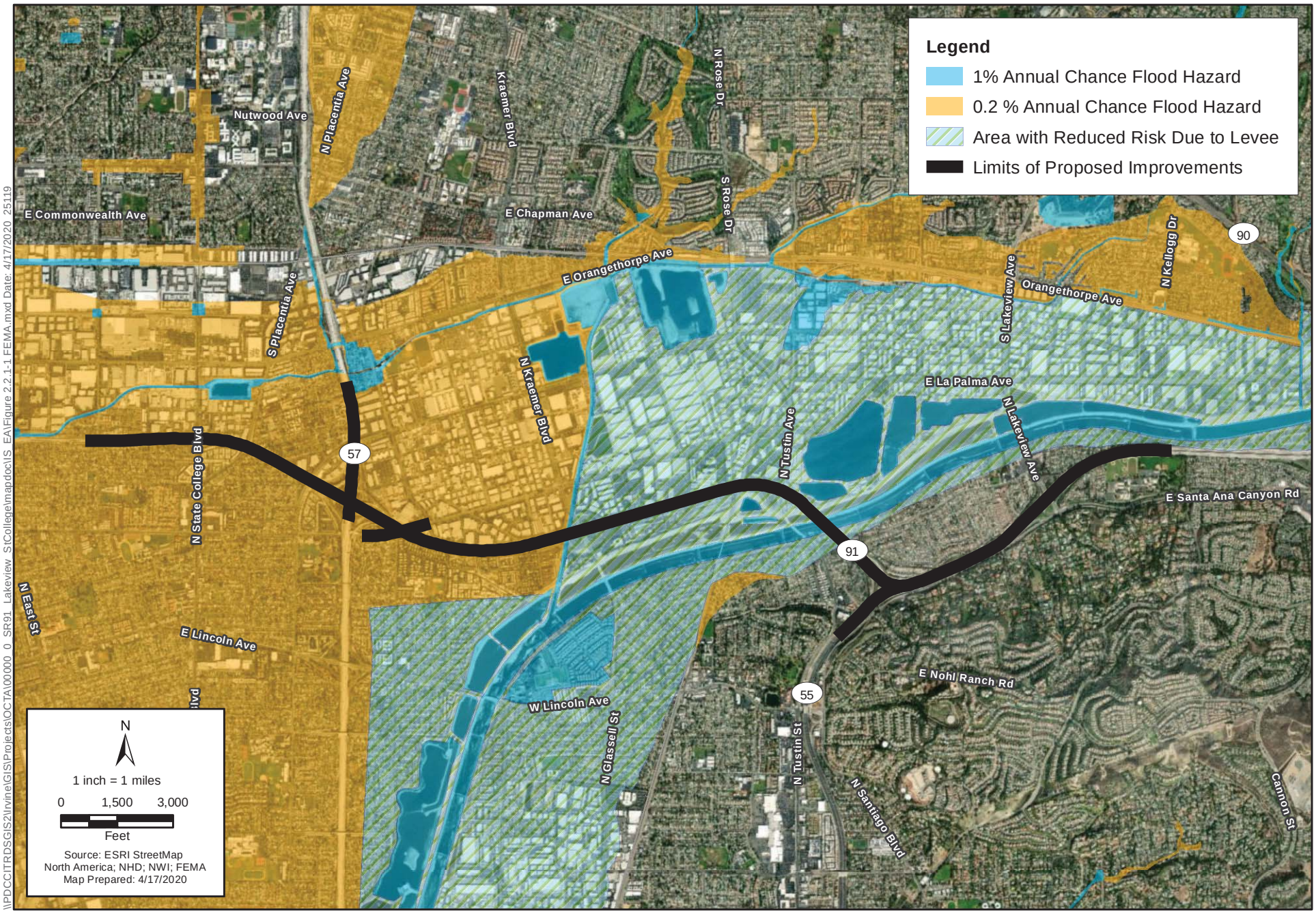
The Santa Ana River originates at the San Bernardino Mountains and traverses past the cities of San Bernardino and Riverside before flowing into the Prado Dam and through the Santa Ana Mountains. It then flows through Orange County and drains into the Pacific Ocean. The river is approximately 96 miles long and drains a watershed of 2,650 square miles. From the origin, the river flows southwest generally via earthen lining until it passes the Santa Ana Mountains. It then flows via a channel with concrete lined walls with an earthen bottom channel with various heights and widths. The Santa Ana River crosses under SR-91 in between the Tustin Avenue and SR-55 interchanges. The portion of the Santa Ana River that remains within the lining of the channel within the SR-91 project area is in Special Flood Hazard Area (SFHA) Zone A, defined as an area with 1% annual chance for (100-year) floods. The existing water surface elevation in the project area ranges from 238.82 feet to 248.36 feet. The areas adjacent to the channel are Zone X, defined as an area with 0.2% annual chance for (500-year) floods. This portion corresponds to FIRM panels 06059C0132J, 06059C0151J, and 06059C0152J.

Santa Ana River Groundwater Recharge Basins

The Santa Ana River Groundwater Recharge Basins originate at Imperial Highway and traverse through the cities of Yorba Linda, Anaheim, and Orange while recharging the Orange County Groundwater Basin. The Santa Ana River Groundwater Recharge Basins cross under SR-91 between the Tustin Avenue and SR-55 intersections. The portion of the Santa Ana River Groundwater Recharge Basins adjacent to the project area is a 1% Annual Chance SFHA Zone A that remains within the lining of the basins. The areas adjacent to the basins are 0.2% Annual Chance Flood Hazard Zone X. This portion corresponds to FIRM panel 06059C0152J.

Carbon Canyon Diversion Channel

The Carbon Canyon Diversion Channel is a diversion channel of the Carbon Canyon Channel. The Carbon Canyon Channel originates at the Santa Ana Mountains and traverses through the Carbon Canyon Dam. From the origin, Carbon Canyon Channel flows southerly via a concrete lined channel. Once Carbon Canyon Channel crosses Chapman Avenue in Yorba Linda, it traverses as a partially improved concrete and earthen lined channel. Once the channel crosses Orangethorpe Avenue in Yorba Linda, Carbon Creek Diversion Channel diverges and flows south toward the Santa Ana River via a partially concrete and earthen lined channel. The Carbon Canyon Channel continues to flow west after the divergence. After the Carbon Canyon Diversion Channel crosses under SR-91, it connects to the Santa Ana River. The portion of Carbon Canyon Diversion Channel within the SR-91 project area is a 1% Annual Chance SFHA Zone A that remains within the lining of the channel. The existing water surface elevation in the project area ranges from 215.44 feet to 222.82 feet. The areas adjacent to the channel are 0.2% Annual Chance Flood Hazard Zone X. This portion corresponds to the FIRM panel 06059C0151J.



\\PDCCITRDSGIS2\Irvine\GIS\Projects\OCTA\00000 0_SR91_Lakeview_StCollege\mapdoc\IS_EA\Figure 2.2.1-1 FEMA.mxd Date: 4/17/2020 25119

Figure 2.2.1-1
Federal Emergency Management Agency Flood Zones in the Project Area
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Natural and Beneficial Floodplain Values

Floodplains and wetlands in their natural or relatively undisturbed state provide natural and beneficial values, including, but not limited to, fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality maintenance, and groundwater recharged. The beneficial uses are identified in the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) for the Santa Ana River, the Santa Ana River Groundwater Recharge Basins, and the Carbon Canyon Diversion Channel. Table 2.2.1-1 summarizes the beneficial uses that apply to Santa Ana River Reach 2 and Carbon Canyon Channel.

Table 2.2.1-1. Summary of Beneficial Uses for Water Bodies Associated with Floodplains

Water Body Name	MUN	IND	PROC	AGR	GWR	REC1	REC2	WARM	WILD	RARE
Santa Ana River Reach 2 – 17th Street in Santa Ana to Prado Dam	-	-	-	✓	✓	✓	✓	✓	✓	✓
Santa Ana River Groundwater Recharge Basins	-	✓	✓	✓	✓	-	-	-	-	-
Carbon Canyon Diversion Channel	-	-	-	-	✓	✓	✓	✓	✓	✓

MUN = Municipal and Domestic Supply; IND = Industrial Service Supply; PROC = Industrial Process Supply; AGR = Agricultural Supply; GWR = Groundwater Recharge; REC1 = Water Contact Recreation; REC2 = Non-contact Water Recreation; WARM = Warm Freshwater Habitat; WILD = Wildlife Habitat; RARE = Rare, Threatened, or Endangered Species
Source: Caltrans 2017

2.2.1.3 ENVIRONMENTAL CONSEQUENCES

Permanent Impacts

Build Alternative (Preferred Alternative)

Hydraulic Analysis

As stated above, the proposed project was evaluated for potential hydraulic impacts from the reconstruction of the bridge that crosses over the Santa Ana River and the bridge and off-ramp that cross the Carbon Canyon Diversion Channel. The Santa Ana River Groundwater Recharge Basins were not analyzed because the proposed project would be outside of the 1% Annual Chance SFHA Zone A associated with these basins.

The water surface elevation of the Santa Ana River would stay within the channel lining with implementation of the Build Alternative (Preferred Alternative). The Build Alternative (Preferred Alternative) would result in a 0.03-foot change in the water surface elevation on the upstream end of the Santa Ana River Bridge and a fractional change in the base flood elevation. The freeboard of the Santa Ana River within the project area meets the 1.5-foot minimum requirement stated in OCFCD Design Manual Addendum 3 and the 2-foot minimum requirement stated in the Caltrans HDM, Section 821.3. The freeboard at the Santa Ana River Bridge is approximately 2.77 feet per OCFCD standards and 8.15 feet per Caltrans standards. There would be minimal change to base flood flow volumes and rates.

The water surface elevation of the Carbon Canyon Diversion Channel would stay within the channel lining with implementation of the Build Alternative (Preferred Alternative). No change in water surface elevation would occur along the channel around the Carbon Canyon Diversion

Channel Bridge. The freeboard of the Carbon Canyon Diversion Channel meets the 1.5-foot minimum requirement stated in the in the Caltrans HDM, Section 821.3. Depth of flow would not be changed. The freeboard from the water surface elevation to the upstream SR-91 bridge soffit is 4.65 feet and to the top of the channel 6.42 feet, neither of which would change with implementation of the Build Alternative (Preferred Alternative). The existing triple 14-foot by 10-foot reinforced concrete box would not be improved as a part of the proposed project. Although the freeboard meets the Caltrans standards, OCFCD classifies this reach as deficient at the bridge and reinforced concrete box. The Caltrans freeboard requirement, that culverts may not have an objectionable Q_{100} backwater (i.e., base flood), is also met. The widening of the Carbon Canyon Diversion Channel Bridge would replace the existing structures of the bridge and therefore would not change the water surface elevation or base flood elevation for the Carbon Canyon Diversion Channel.

The floodwaters for both the Carbon Canyon Diversion channel and Santa Ana River would remain within the channel and river lining with operation of the proposed project. The proposed improvements were classified as minimal risk and would not have an adverse impact on the Santa Ana River or Carbon Canyon Diversion Channel or increase the potential for road flooding at these locations. Therefore, the No-Build Alternative would not result in permanent adverse impacts on hydrology and floodplains in the project area.

100 Year Floodplain Encroachment

Potential Risk from Longitudinal Encroachment

A longitudinal encroachment is an encroachment that is parallel to the direction of flow. The bridges that would be modified as part of the proposed project traverse over the mapped floodplains transversely (i.e., perpendicular to flow). Therefore, there would be no longitudinal encroachment.

Potential Risk to Life and Property

The potential risk to life and property remains unchanged as a result of the proposed improvements. The project would result in marginal increases in water surface elevation in the Santa Ana River that would continue to be contained in the channel. The water surface elevation and hydraulics in Carbon Canyon Diversion Channel would not be affected adversely because of the nature of the improvements. Therefore, the potential for flood inundation due to the influences of the Build Alternative (Preferred Alternative) on the hydraulics is deemed nominal.

Potential Risk to Natural and Beneficial Floodplain Values

The project consists of permanent improvements within floodplain boundaries of the Santa Ana River and the Carbon Canyon Diversion Channel. The project improvements that occur within Zone A floodplains do not pose potential risks to natural and beneficial floodplain values, which are identified in Table 2.2.1-1. The channel conveyance of the Santa Ana River, the Santa Ana River Recharge Basins, and the Carbon Canyon Diversion Channel would be unchanged with implementation of the proposed project. Therefore, any beneficial uses would not be affected.

Potential Risk for Support of Incompatible Floodplain Development

The Build Alternative (Preferred Alternative) would support existing development and increase traffic flows through an area that is primarily fully developed. Implementation of the Build Alternative (Preferred Alternative) would not support additional areas of building that are

incompatible with floodplains. Therefore, the Build Alternative (Preferred Alternative) would not support incompatible floodplain development.

Overall Assessment of Risk

As described above, the Build Alternative (Preferred Alternative) would not pose any appreciable risk related to flooding, loss of life and property, or natural or beneficial floodplain values. The minimal change in base flood elevation and water surface elevation in the Santa Ana River and Carbon Creek Diversion Channel would be consistent with OCFCD requirements, would be contained within the existing river and channel, and would not increase water surface elevations appreciably. There would be no longitudinal encroachment, and risks to life and property, natural and beneficial floodplain values, and probable incompatible development are nominal. Therefore, as defined in 23 CFR 650 Subpart A, the combined assessed risk level of the proposed project would be minimal.

No-Build Alternative

The No-Build Alternative would not include the operation of any of the proposed project improvements. Therefore, the No-Build Alternative would not result in permanent impacts on hydrology and floodplains in the project area.

Temporary Impacts

Build Alternative (Preferred Alternative)

The Build Alternative (Preferred Alternative) was evaluated for potential hydraulic impacts from the reconstruction of the bridge that crosses over the Santa Ana River and the bridge and off-ramp that cross over the Carbon Canyon Diversion Channel. Reconstruction of the existing Santa Ana River Bridge would result in widening the bridge from 209 feet to 221 feet above the channel and abutments outside the Santa Ana River channel lining and the lengthening of the existing pier walls. Lengthening of the existing pier walls would require construction equipment to temporarily work within the 1% Annual Chance SFHA Zone A associated with the Santa Ana River. However, Measure BIO-7 would require that all construction activities occur during the dry season. In the event of rain conditions during construction, the Caltrans Resident Engineer would move all construction equipment outside of the 1% Annual Chance SFHA Zone A associated with the Santa Ana River.

Reconstruction of the existing Carbon Canyon Diversion Channel Bridge would result in widening of the bridge and abutments by 2 feet and no addition of piles. The eastbound Glassell Street off-ramp culvert would be protected in place, and the headwall and wingwalls would be raised. Raising of the headwall and wingwalls would require construction equipment to temporarily work within the 1% Annual Chance SFHA Zone A associated with the Carbon Canyon Diversion Channel. However, with Measure BIO-7, construction activities would occur only during the dry season. In the event of rain conditions during construction, the Caltrans Resident Engineer would move all construction equipment outside of the 1% Annual Chance SFHA Zone A associated with the Carbon Canyon Diversion Channel.

Implementation of project feature/standardized measure **PF WQ-1** would ensure that the proposed project complies with the *NPDES Statewide Stormwater Permit*, the *NPDES General Permit for Stormwater Discharges of Stormwater Runoff Associated with Construction Activities*, and any subsequent permit in effect at the time of construction.

No construction activities would occur within the 1% Annual Chance SFHA Zone A associated with the Santa Ana River Groundwater Recharge Basins. As a result, temporary construction activities under the Build Alternative (Preferred Alternative) would not result in temporary adverse impacts or a significant base floodplain encroachment related to hydrology and floodplains.

No-Build Alternative

The No-Build Alternative would not include the construction of any of the proposed project improvements. Therefore, the No-Build Alternative would not result in temporary impacts on hydrology and floodplains in the project area.

2.2.1.4 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The proposed project would not result in adverse impacts related to floodplains and hydrology; therefore, no additional avoidance, minimization, or mitigation measures are required.

2.2.1.5 REFERENCES

Michael Baker International. 2017. *Location Hydraulic Study.* December.

2.2.2 Water Quality and Stormwater Runoff

2.2.2.1 REGULATORY SETTING

Federal Requirements: Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source[1] unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. This act and its amendments are known today as the Clean Water Act (CWA). Congress has amended the act several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the NPDES permit scheme. The following are important CWA sections:

- Sections 303 and 304 require states to issue water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity that may result in a discharge to waters of the U.S. to obtain certification from the state that the discharge will comply with other provisions of the act. This is most frequently required in tandem with a Section 404 permit request (see below).
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. Regional Water Quality Control Boards (RWQCBs) administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems (MS4s).
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the U.S. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The goal of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”

The USACE issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide Permit may be permitted under one of the USACE’s Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with U.S. Environmental Protection Agency’s (U.S. EPA) Section 404 (b)(1) Guidelines (40 Code of Federal Regulations [CFR] Part 230), and whether the permit approval is in the public interest. The Section 404(b)(1) Guidelines (Guidelines) were developed by the U.S. EPA in conjunction with the USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is

[1] A point source is any discrete conveyance such as a pipe or a man-made ditch.

no practicable alternative which would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA) to the proposed discharge that would have lesser effects on waters of the U.S. and not have any other significant adverse environmental consequences. According to the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent[2] standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to waters of the U.S. In addition, every permit from the USACE, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4. A discussion of the LEDPA determination, if any, for the document is included in the Wetlands and Other Waters section.

State Requirements: Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the CWA and regulates discharges to waters of the state. Waters of the state include more than just waters of the U.S., like groundwater and surface waters not considered waters of the U.S. Additionally, it prohibits discharges of "waste" as defined, and this definition is broader than the CWA definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with the water quality standards. Details about water quality standards in a project area are included in the applicable RWQCB Basin Plan. In California, RWQCBs designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect those uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants. These waters are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

[2] The U.S. EPA defines "effluent" as "wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall."

National Pollutant Discharge Elimination System (NPDES) Program

Municipal Separate Storm Sewer Systems (MS4)

Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of storm water discharges, including Municipal Separate Storm Sewer Systems (MS4s). An MS4 is defined as "any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that is designed or used for collecting or conveying storm water." The SWRCB has identified the Department as an owner/operator of an MS4 under federal regulations. The Department's MS4 permit covers all Department rights-of-way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for five years, and permit requirements remain active until a new permit has been adopted.

The Department's MS4 Permit, Order No. 2012-0011-DWQ (adopted on September 19, 2012 and effective on July 1, 2013), as amended by Order No. 2014-0006-EXEC (effective January 17, 2014), Order No. 2014-0077-DWQ (effective May 20, 2014) and Order No. 2015-0036-EXEC (conformed and effective April 7, 2015) has three basic requirements:

1. The Department must comply with the requirements of the Construction General Permit (see below);
2. The Department must implement a year-round program in all parts of the State to effectively control storm water and non-storm water discharges; and
3. The Department storm water discharges must meet water quality standards through implementation of permanent and temporary (construction) Best Management Practices (BMPs), to the maximum extent practicable, and other measures as the SWRCB determines to be necessary to meet the water quality standards.

To comply with the permit, the Department developed the Statewide Storm Water Management Plan (SWMP) to address storm water pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within the Department for implementing storm water management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices the Department uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of BMPs. The proposed project will be programmed to follow the guidelines and procedures outlined in the latest SWMP to address storm water runoff.

Construction General Permit

Construction General Permit, Order No. 2009-0009-DWQ (adopted on September 2, 2009 and effective on July 1, 2010), as amended by Order No. 2010-0014-DWQ (effective February 14, 2011) and Order No. 2012-0006-DWQ (effective on July 17, 2012). The permit regulates storm water discharges from construction sites that result in a Disturbed Soil Area (DSA) of one acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least one acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than one acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of

regulated construction sites are required to develop Storm Water Pollution Prevention Plans (SWPPPs); to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, and before construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective SWPPP. In accordance with the Department's SWMP and Standard Specifications, a Water Pollution Control Program (WPCP) is necessary for projects with DSA less than one acre.

Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the U.S. must obtain a 401 Certification, which certifies that the project will be in compliance with state water quality standards. The most common federal permits triggering 401 Certification are CWA Section 404 permits issued by the USACE. The 401 permit certifications are typically obtained from the appropriate RWQCB, dependent on the project location, and are required before the USACE issues a 404 permit. OCTA has coordinated the 401 Certification to be obtained through the State Water Resources Control Board for the M2 freeway projects. This project is Project I for the M2 (or OC Go) freeway projects.

In some cases, the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as WDRs under the State Water Code (Porter-Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

Regional and Local Requirements

The proposed project would extend minimally beyond the Caltrans right of way into the cities of Orange and Anaheim. The Orange County NPDES Permit requires roadway projects that increase or replace over 5,000 square feet must comply with the Water Quality Management Plan requirements (including the Green Streets requirements). However, the proposed project would not increase or replace over 5,000 square feet, so no regional or local requirements are applicable.

2.2.2.2 AFFECTED ENVIRONMENT

This section is based on the *Water Quality Assessment Report* (Michael Baker International 2018) prepared for the proposed project.

Surface Water

The proposed project is located in the San Gabriel River and Santa Ana River watersheds. Located in both the Santa Ana River watershed and the San Gabriel River watershed are the Lower Santa Ana River Hydrologic Sub-Areas (801.11, 801.15, and 845.61), which cover over 310,000 acres or 484 square miles. The Santa Ana River Watershed is bound by the San

Gabriel and San Bernardino Mountains to the north, the San Jacinto Mountains to the east and the Santa Ana Mountains to the south. The northern portion of the watershed drains to the Santa Ana River, which traverses 100 miles from its headwaters to the Pacific Ocean. As the Santa Ana River navigates through San Bernardino, Riverside, and Orange counties, it collects water from highly urbanized areas, agricultural lands, and open space. The San Gabriel River watershed is bound by the San Gabriel Mountains to the north, most of San Bernardino and Orange County to the east, the division of the Los Angeles River from the San Gabriel River to the west, and the Pacific Ocean to the south. The San Gabriel River watershed headwaters originate in the San Gabriel Mountains, which eventually drain south through the city of Long Beach to the Pacific Ocean. Figure 2.2.2-1 shows the proposed project and its location in the watershed.

When stormwater falls within the proposed project area, it sheet flows or is captured by Caltrans storm drains, culverts, curbs or gutters. Underground pipes direct this flow to the local city and/or county flood control drainage network. The stormwater is either treated or untreated through existing BMPs and then discharges into the following waterbodies: Carbon Canyon Channel, Carbon Canyon Diversion Channel, the Santa Ana River Groundwater Recharge Basins, and the Santa Ana River Reach 2. Table 2.2.2-1 lists the two Existing BMPs located within the proposed project area.

Table 2.2.2-1. Existing Biofiltration Swales along Route 91 West

BMP Identification Number	Post Mile	Latitude	Longitude	Status	Project EA Number
SWORA091-N005086	5.086	33.854172	-117.892501	Constructed	IMMS
SWORA091-W008400	8.4	33.851136	-117.83794	Constructed	IMMS

Source: Michael Baker International 2018

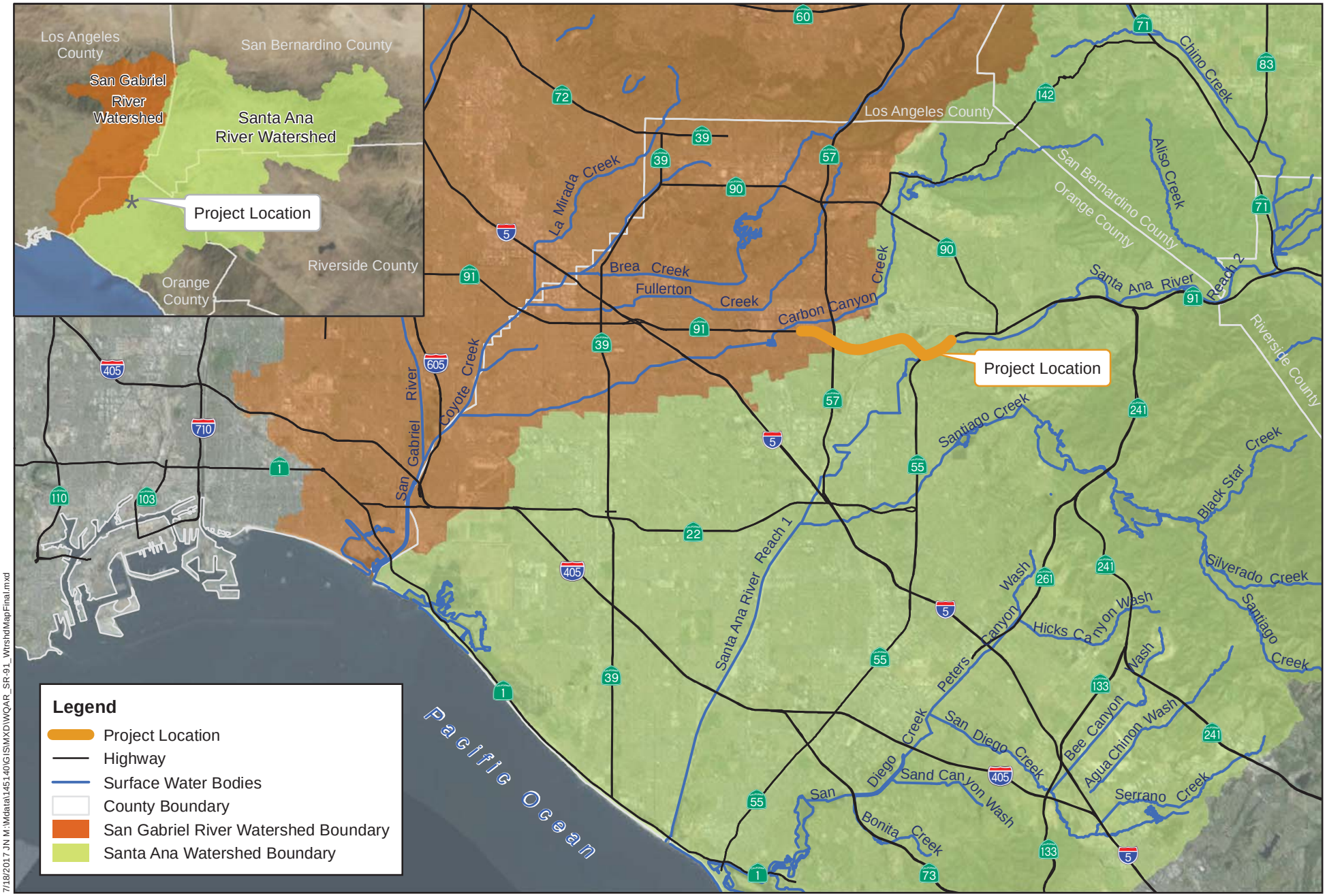
Water from the Santa Ana River is diverted into the Groundwater Recharge Basins north of the Santa Ana River in Anaheim. Table 2.2.2-2 and Figure 2.2.2-1 identify the portion of the proposed project, the water body, and the watershed that it drains to from the western boundary to the eastern boundary.

Table 2.2.2-2. Summary of Proposed Project Sub-Watersheds and Discharge Water Bodies

Proposed Project Sub- Watersheds	Discharge Water Body Name	Flowpath to Pacific Ocean
San Gabriel River Watershed		
State College Boulevard Intersection to N. Kraemer Blvd/Glassell Street Intersection	Carbon Creek Channel	Carbon Creek Channel Coyote Creek San Gabriel River Reach 1 San Gabriel Estuary San Pedro Bay Pacific Ocean
Santa Ana River Watershed		
N. Kraemer Blvd/Glassell Street Intersection to the Santa Ana River Bridge (North Bank)	Carbon Canyon Diversion Channel	Carbon Canyon Diversion Channel Santa Ana River Reach 2 Santa Ana River Reach 1 Pacific Ocean
Santa Ana River Bridge (North Bank) to the Lakeview Avenue Intersection	Santa Ana River	Santa Ana River Reach 2 Santa Ana River Reach 1 Pacific Ocean

Source: Michael Baker International 2018

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SR-91 CORRIDOR PROJECT

Project Watershed and Surface Waterbodies Map

Source: ESRI, State of California GIS data, San Bernardino County Flood Control District, Riverside County Flood Control District

Figure 2.2.2-1

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The Santa Ana RWQCB's Basin Plan includes surface water quality objectives for waters within its jurisdiction to protect the beneficial uses of those waters. Water quality objectives must comply with the state antidegradation policy (State Board Resolution No. 68-16), which is designed to maintain high-quality waters while allowing some flexibility if beneficial uses are reasonably affected.

The narrative surface water quality objectives for all inland waters in the Santa Ana Region, as documented in the Basin Plan, are provided in Table 6 of the *Water Quality Assessment Report*. Beneficial uses are identified in the Basin Plan for the nearest named water bodies that the proposed project discharges to, Santa Ana River Reach 2 and Carbon Canyon Channel. No beneficial uses were identified in the Basin plan for Carbon Canyon Diversion Channel and the Santa Ana River Groundwater Recharge Basins. Table 2.2.2-3 summarizes the beneficial uses that apply to Santa Ana River Reach 2 and Carbon Canyon Channel.

Table 2.2.2-3. Summary of Receiving Waterbodies Surface Beneficial Uses

Waterbody Name	MUN	AGR	GWR	REC1	REC2	WARM	WILD	RARE
Santa Ana River Reach 2 – 17th Street in Santa Ana to Prado Dam	-	✓	✓	✓	✓	✓	✓	✓
Carbon Canyon Creek	✓	-	✓	✓	✓	✓	✓	✓

MUN = Municipal and Domestic Supply; AGR = Agricultural Supply; GWR = Groundwater Recharge; REC1 = Water Contact Recreation; REC2 = Non-contact Water Recreation; WARM = Warm Freshwater Habitat; WILD = Wildlife Habitat; RARE = Rare, Threatened, or Endangered Species

Source: Michael Baker International 2018

The flow path from the proposed project to the Pacific Ocean was used to determine what water bodies could potentially be impacted by the proposed project. Precipitation that falls within the proposed project boundary will ultimately discharge into Carbon Creek Channel, Carbon Canyon Diversion Channel, Santa Ana River Groundwater Recharge Basins, and Santa Ana River Reach 2. None of these waterbodies are listed on the 2017 303(d) List as an impaired waterbody (State Water Resources Control Board 2017). No TMDLs have been established for any of these pollutants. Table 2.2.2-4 below summarizes the named water bodies that could potentially be impacted by the proposed project in their order of contact with the proposed project's discharges to the Pacific Ocean.

Table 2.2.2-4. Summary of 303(d) Listed Constituents and TMDL Constituents

Water Body Name	303(d) List Constituent	Approved TMDLs
San Gabriel River Watershed		
Carbon Creek Channel	None	None
Coyote Creek	Ammonia Dissolved Copper Diazinon Indicator Bacteria Lead Toxicity pH	Copper
San Gabriel River Reach 1	Coliform Bacteria pH	Copper
San Gabriel River Estuary	Copper Dioxin Nickel Dissolved Oxygen	Copper
San Pedro Bay (Near/Off Shore Zones)	Chlordane Dichlorodiphenyltrichloroethane (DDT) Polychlorinated biphenyls (PCBs) Sediment Toxicity	None
Pacific Ocean	None	None
Santa Ana River Watershed		
Carbon Canyon Diversion Channel	None	None
Santa Ana River Reach 2	None	None

Water Body Name	303(d) List Constituent	Approved TMDLs
Santa Ana River Groundwater Recharge Basins	None	None
Santa Ana River Reach 1	None	None
Pacific Ocean	None	None

Source: Michael Baker International 2018

Groundwater

As designated by the RWQCB (Region 8), the proposed project area is within the Orange County Groundwater Management Zone, which includes the Coastal Plain of Orange County Groundwater Basin (Coastal Plain). The Orange County Water District manages groundwater in the Coastal Plain. The Coastal Plain covers approximately 350 square miles (approximately 224,000 acres), and it is bounded by the Puente and Chino Hills, the Santa Ana Mountains, and on the south in the San Joaquin Hills. The nearest groundwater well with current groundwater level and quality data (Well Number 338509N1178361W001) recorded in November 2016 the depth to groundwater as approximately 52 feet. Recharge is derived from percolation of Santa Ana River flow, infiltration of precipitation, injection into wells, and the Santa Ana River Recharge Basins, a series of recharge facilities located upstream and downstream of the proposed project area. The purpose of these percolation basins is to facilitate groundwater recharged intended for irrigation, industrial, and municipal uses. According to California's Groundwater Bulletin 118, groundwater in the Coastal Plain of Orange County Groundwater Basin typically has high levels of sodium-calcium bicarbonate with a total dissolved solids concentration range of 232 milligrams per liter (mg/L) to 661 mg/L.

The narrative groundwater quality objectives for the Santa Ana Region, as designated in the Basin Plan, are provided in Table 8 of the *Water Quality Assessment Report*. The beneficial uses for groundwater in the Orange County Groundwater Management Zone where the proposed project is located include Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Industrial Service Supply (IND), and Industrial Process Supply (PROC).

2.2.2.3 ENVIRONMENTAL CONSEQUENCES

Permanent Impacts

Build Alternative (Preferred Alternative)

The Build Alternative (Preferred Alternative) would change the existing impervious surface area of 223 acres to 239 acres, resulting in a permanent increase of 16 acres. The additional impervious area would increase the volume of runoff during a storm, which would more effectively transport pollutants to receiving waters. The additional impervious surface would also increase the total amount of pollutants in storm water and non-storm water runoff and the amount of pollutants traveling to on-site drainages and downstream receiving waters. Pollutants of concern during operation of the proposed project include copper, lead, pesticides, sediment, and nutrients. Pollutants in runoff from the widened roadway would include sediment, oils and grease, and metals, similar to the contaminants from the existing operation of SR-91.

Currently, some stormwater runoff within the proposed project limits is untreated and some is treated through existing BMPs. As detailed in PF WQ-5, Design and Treatment BMPs would be implemented to target constituents of concern in storm water runoff from the new impervious surface area to the maximum extent practical. Design Pollution Prevention BMPs are measures

that focus on reducing or eliminating runoff and controlling sources of pollutants during operation of the proposed project. Treatment BMPs utilize treatment mechanisms to remove pollutants that have entered stormwater runoff prior to discharge off site. Table 2.2.2-5 identifies the proposed Treatment Control BMPs located within the proposed project area.

Table 2.2.2-5. Proposed Biofiltration Swales along Route 91 West

BMP Identification Number	Post Mile	Latitude	Longitude	Status	Project EA Number
SWORA091-W005230	5.23	33.854545	-117.889846	Proposed	12-0C570

Source: Michael Baker International 2018

Additional Treatment Control BMPs located within Caltrans' right-of-way as a part of the proposed project would be evaluated and selected from the Caltrans SWMP guidance and its Project Planning and Design Guide (PPDG) approved BMP list. In addition to biofiltration swales, Treatment Control BMPs may include design pollution prevention (DPP) infiltration areas, detention and infiltration devices, media filters, pervious pavement, and multi-chamber treatment train (MCTT). Biofiltration strips are vegetated sections of land over which storm water flows as sheet flow. Biofiltration swales are vegetated channels that convey storm water. Both biofiltration strips and swales remove pollutants by filtration through grass, sedimentation, adsorption of soil particles, and infiltration through soil. Biofiltration strips and swales are effective at removing debris and solid particles, and some removal of dissolved constituents. An infiltration basin is a shallow artificial pond designed to infiltrate storm water through permeable soils into the groundwater aquifer and remove pollutants as the storm water percolates through the soil.

PF WQ-5. Caltrans-approved treatment BMPs will be implemented consistent with the requirements of NPDES Permit and Waste Discharge Requirements for the State of California, Department of Transportation, Order No. 2012-0011-DWQ, NPDES No. CAS00003, and any subsequent permits in effect at the time of construction. Treatment BMPs may include design pollution prevention infiltration areas, infiltration devices, biofiltration strips and swales, detention devices, media filters, multi-chamber treatment train, wet basin, open graded friction course, and pervious pavement.

Design Pollution Prevention BMPs identified as features in the proposed project include preservation of existing vegetation and slope/surface protection systems—including benching/terracing, slope rounding, and reducing gradients (4:1 slopes or flatter) (**PF WQ-4**).

PF WQ-4. Design pollution prevention BMPs will be implemented such as preservation of existing vegetation, slope/surface protection systems (benching/terracing, slope rounding, reducing gradients [incorporate 4:1 slopes or flatter]).

The Design and Treatment BMPs would target the pollutants of concern described above. Because Treatments BMPs would treat pollutants of concern from the additional runoff from the project-related increase of impervious surface, the Build Alternative (Preferred Alternative) would not further impact the San Gabriel of Santa Ana River watersheds or cause or contribute to a violation of water quality standards or objectives for surface or downstream receiving waters in the study area. In addition, because the proposed BMPs would remove pollutants of concern from the additional storm water runoff, the proposed project would not contribute

pollutants in quantities that would create a condition of nuisance or adversely affect beneficial uses of waters of the State.

No-Build Alternative

The No-Build Alternative would not include the operation of the proposed project improvements and therefore would not result in adverse temporary impacts to water quality and stormwater runoff in the study area.

Temporary Impacts

Build Alternative (Preferred Alternative)

Pollutants of concern during construction include sediments, metals, trash, petroleum products, concrete waste (dry and wet), sanitary waste, and chemicals. Each of these pollutants on its own or combination with other pollutants can have a detrimental effect on water quality. Construction activities, including demolition, minor grading, driveway, retaining walls, and bridge construction, would disturb a total area of 49.2 acres. The proposed project involves grading and earth-moving activities, both of which expose soil and therefore increase potential for soil erosion compared to existing conditions. In addition, during a storm event, soil erosion could occur at an accelerated rate. Grading and earth-moving equipment would also be a source of chemical, liquid, and petroleum products (such as paints, solvents, and fuels) if the equipment leaks. Concrete-related waste may be spilled or leaked on the project site. Therefore, grading and earth-moving activities for the proposed project have the potential to transport chemical and concrete-related waste via storm runoff into receiving waters.

Temporary or portable sanitary facilities provided for construction workers would be a source of sanitary waste that could be transported to downstream receiving waters. Construction workers would also generate trash and debris (i.e., food wrappers and construction waste) that could also be transported to receiving waters. If water is detained at the construction site, it has the potential to reach ambient air temperature and, if discharged to receiving waters, could contribute to the increase in water temperatures which could adversely impact water quality.

Dewatering is not anticipated during construction of the proposed project since excavations are not expected to exceed 30 to 80 feet in depth. As specified in PF WQ-3, in the event that groundwater and any other non-stormwater dewatering activities are necessary during construction of the Build Alternative (Preferred Alternative), these activities are subject to the requirements of the Regional Board Dewatering Permit (Order No. R8-2015-0004 [NPDES No. CAG998001]. A separate permit would be required if dewatering is necessary.

PF WQ-3. If dewatering is required, construction site dewatering must comply with the General Waste Discharge Requirements for Discharges to Surface Waters That Pose an Insignificant (DE MINIMUS) Threat to Water Quality (Order No. R8-2015-0004, NPDES No. CAG998001) and any subsequent updates to the permit at the time of construction. This permit addresses temporary dewatering operations during construction. Dewatering BMPs must be used to control sediment and pollutants, and the discharges must comply with the WDRs issued by the Santa Ana RWQCB.

Under the Construction General Permit, Caltrans would be required to prepare a SWPPP and implement the construction BMPs detailed in the SWPPP during construction to minimize erosion and prevent spills, as detailed in **PF WQ-1** and **PF WQ-2**. The SWPPP would be

developed by a Qualified SWPPP Developer and construction BMPs selected and implemented to target pollutants of concern during construction. Construction BMPs would include, at a minimum, soil stabilization, sediment control, wind erosion control, stormwater and non-stormwater treatment BMPs, and waste management and materials pollution controls. When construction BMPs are properly designed, implemented, and maintained to address pollutants of concern, the pollutants of concern would be retained on the project site so they would not reach receiving waters. The proposed temporary construction site BMPs to address the potential effects of sediment runoff while constructing the project per Caltrans' *Construction Manual* (2017) would be included as avoidance and minimization features. The following would be documented in the SWPPP prepared for the proposed project as a minimum and implemented during construction:

- Soil Stabilization
- Sediment Control
- Wind Erosion Control
- Stormwater and Non-Stormwater Treatment BMPs
- Waste Management and Materials Pollution Controls

Because the construction BMPs would be designed to retain sediment and other pollutants on the project site so they would not reach receiving waters, storm water discharges and authorized non-storm water discharges not anticipated to cause or contribute to any violations of applicable water quality standards or objectives, or adversely impact human health or the environment.

PF WQ-1. The proposed project will comply with the provisions of the Caltrans *NPDES Statewide Storm Water Permit* (Order No. 2012-0011-DWQ, as amended by Order WQ 2014-0006-EXEC, Order WQ 2014-0077-DWQ, and Order WQ 2015-0036-EXEC, NPDES No. CAS000003) and the *NPDES General Permit for Storm Water Discharges of Stormwater Runoff Associated with Construction Activities* (Order No. 2009-0009-DWQ, as amended by 2012-0006- DWQ), and any subsequent permit in effect at the time of construction.

PF WQ-2. A SWPPP shall be prepared and implemented to address all construction-related activities, equipment, and materials that have the potential to impact water quality. The SWPPP shall identify the sources of pollutants that may affect the quality of stormwater and include the construction site BMPs to control pollutants such as sediment control, catch basin inlet protection, construction materials management, and non-stormwater BMPs. Additional BMP reference material is contained within the Caltrans *Project Planning and Design Guide* (2016) and Caltrans *Construction Manual* (2017). These include, but are not limited to temporary sediment control, temporary soil stabilization, scheduling, waste management, materials handling, and other non-stormwater BMPs.

No-Build Alternative

The No-Build Alternative would not include the construction of the proposed project improvements and therefore would not result in adverse temporary impacts to water quality and stormwater runoff in the study area.

2.2.2.4 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The project features/standardized measures included as part of this proposed project will be consistent with the requirements for discharges from projects in the planning phase. The project features/standardized measures will include methods to address potential short-term (during construction) and long-term (post- construction/maintenance) impacts; therefore, no additional avoidance, minimization, or mitigation measures are required.

2.2.2.5 REFERENCES

Michael Baker International. 2018. *Water Quality Assessment Report – State Route 91 Improvement Project Between State Route 57 and State Route 55.* August

California Department of Transportation (Caltrans). 2016. *Storm Water Quality Handbook – Project Planning and Design Guide, CTSW-RT-16-314.11.1*. February.

———. 2017. *Construction Manual.* July.

State Water Resources Control Board. 2017. *2014/2016 Integrated Report (Clean Water Act Section 303(d) List/305(b) Report.* October 3, 2017.

2.2.3 Geology/Soils/Seismicity/Topography

2.2.3.1 REGULATORY SETTING

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects "outstanding examples of major geological features." Topographic and geologic features are also protected under the California Environmental Quality Act (CEQA).

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. Structures are designed using the Department's Seismic Design Criteria (SDC). The SDC provides the minimum seismic requirements for highway bridges designed in California. A bridge's category and classification will determine its seismic performance level and which methods are used for estimating the seismic demands and structural capabilities. For more information, please see the Department's Division of Engineering Services, Office of Earthquake Engineering, Seismic Design Criteria.

2.2.3.2 AFFECTED ENVIRONMENT

This section discusses the existing geologic and soils conditions along the project segment of the State Route (SR-91, SR-55, and SR-57) and provides analyses of the potential impacts of the proposed project that are related to geology and soils. This section also addresses the potential for structural damage to project facilities due to the local geology underlying the project site, as well as slope stability, ground settlement, soils, grading, and seismic conditions. This section summarizes information provided in the following reports:

- *Revised Structure Preliminary Geotechnical Report, SR-91 Westbound/SR-57 Northbound Connector Tunnel, Bridge No. 55-0448Y* (Earth Mechanics, Inc. 2017a)
- *Revised Structure Preliminary Geotechnical Report, Tustin Avenue Overcrossing (Replace), Bridge No. 55-0414* (Earth Mechanics, Inc. 2017b)
- *Revised Structure Preliminary Geotechnical Report, Santa Ana River Bridge (Widen), Bridge No. 55-0106R/L* (Earth Mechanics, Inc. 2017c)
- *Revised Structure Preliminary Geotechnical Report, Kraemer Boulevard Overcrossing (Replace), Bridge No. 55-0404* (Earth Mechanics, Inc. 2017d)
- *Revised Structure Preliminary Geotechnical Report for Non-Standard Retaining Walls* (Earth Mechanics, Inc. 2017e)
- *Structure Preliminary Geotechnical Report*, *State College Boulevard Undercrossing (Widen), Bridge No. 55-0852* (Earth Mechanics, Inc. 2017f)
- *Structure Preliminary Geotechnical Report*, *Lakeview Avenue/Southbound SR-55 On-Ramp (New), Bridge No. 55-XXXX* (Earth Mechanics, Inc. 2017g)
- *Structure Preliminary Geotechnical Report*, *Lakeview Avenue Overcrossing (Replace), Bridge No. 55-0475* (Earth Mechanics, Inc. 2017h)
- *Structure Preliminary Geotechnical Report*, *Retaining Wall No. 345, Ground Anchor Wall at Placentia Avenue Overcrossing* (Earth Mechanics, Inc. 2017i)

- *Structure Preliminary Geotechnical Report*, *La Palma Avenue Overcrossing (Replace), Bridge No. 55-0418* (Earth Mechanics, Inc. 2017j)
- *District Preliminary Geotechnical Report*, *SR-91 Improvement Project* (Earth Mechanics, Inc. 2017k)
- *Preliminary Materials Report*, *SR-91 Improvement Project* (Earth Mechanics, Inc. 2018)

National Natural Landmarks and Other Geographic and Topographic Features

National Natural Landmarks (NNLs) designated by the United States Department of the Interior are areas that contain important resources such as natural habitats and unusual geological formations. There are no NNLs or unique or unusual geologic features within or in the vicinity of the disturbance limits for the Build Alternative (Preferred Alternative). The nearest NNL to the proposed project is the approximately 36,400-acre (ac) Irvine Ranch NNL, which is generally bounded by SR-91 on the north, the Orange County/Riverside County boundary on the east, the City of Irvine to the south, and the Cities of Tustin, Orange, and Anaheim to the west (National Park Service 2018). At its closest point, the proposed project is approximately 4.7 miles (mi) northwest of the nearest part of the Irvine Ranch NNL.

SR-91 traverses a developed area with no unique or unusual geologic features within or adjacent to the project segment.

Local Geology, Topography, and Soils

There are 11 geomorphic provinces in California, as defined by the California Geological Survey (CGS). Geomorphic provinces are geologic regions with distinct landforms and geology. The project segment is in the northern Peninsular Ranges geomorphic province of southern California.

The project area is located within an embayment (a recess in a coastline forming a bay) on the east central part of the Los Angeles Basin, a large, relatively flat, low-lying, coastal plain surrounded by mountains on the north, east, and southeast. The western margin of the basin is bordered by the sea and the Palos Verdes Hills. The floor of the basin slopes gradually southwesterly from about 300–600 feet elevation along the margins of the surrounding hills to sea level along the coastline. The generally flat-lying nature and gradual inland rise of the Basin floor is disrupted by an alignment of northwest-southeast trending, low-elevation hills along the Newport-Inglewood Structural Zone (NISZ). The areas on either side of the NISZ are essentially flat and comprise the Downey-Tustin plain on the northeast and the Torrance Plain on the southwest. The site area is near the transition between the Downey and the Tustin plains.

Northeast of the project corridor, the Santa Ana Mountains rise to an elevation of about 5,500 feet. The ground upon which the project is located slopes gently to the southwest. The elevation of project features ranges from about 175 on the west end to 320 feet on the east end.

Stratigraphy

Geologic materials directly underlying the site consist of predominantly sand, gravel, and/or cobbles associated with the thick alluvial fan and outwash deposits derived from the Santa Ana Mountains. The young fan deposits consist of unconsolidated to slightly consolidated silt, sand, gravel, and boulder deposits derived from volcanic and sedimentary units of the Santa Ana Mountains. Old and very old alluvial fan deposits consist of moderately to well-consolidated gravel and cobble deposits within a dirty sand matrix. The alluvial clasts

correspond closely to the sedimentary and basement-complex types found nearby in the Santa Ana Mountains.

Based on regional geological maps, these materials are up to about 300 feet thick and are underlain by older Quaternary-age alluvium of the La Habra and Coyote Hills formations. The combined thickness is on the order of 1,000 feet. These formations are underlain by Tertiary-age marine formations of the San Pedro, Fernando, and Puente formations to depths on the order of 11,000 feet, which in turn are underlain by early Tertiary formations. Mesozoic-age crystalline basement rocks are at depths of about 15,000 feet.

Geologic Structures

The Los Angeles Basin is a deep structural basin comprising two major downward folds (synclines) separated by the NISZ uplift; the Paramount syncline is east of the NISZ under the Downey-Tustin Plain, and the Gardena syncline is west of the NISZ under the Torrance Plain. The Paramount syncline is the larger and deeper syncline with basement rocks as deep as about 30,000 feet. As described above, the basin is rimmed by marginal elevated plains that rise about a hundred feet to as much as a couple hundred feet above the general level of the basin floor. These elevated plains and the Coyote Hills are underlain by fault-bounded, upward folds (anticlines) that are prolific oil fields.

Soils

Subsurface soil conditions vary across the project site. Soils along the project segment are classified by the Natural Resources Conservation Service (NRCS) as follows:

- **Group A:** There are Group A soils along the project segment along SR-91 to the east of the SR-57 interchange. Group A soils are generally characterized as having low runoff potential when thoroughly wetted and consist chiefly of sand or gravel with gravel or sand textures.
- **Group B:** There are Group B soils along the majority of the project segment. Group B soils are generally characterized as having moderate infiltration rates when thoroughly wetted and consist chiefly of moderately deep to deep, moderately well to well drained sandy-loam soils with moderately fine to moderately coarse textures.
- **Group C:** There are Group C soils along the project segment to the east of the SR-91/55 interchange. Group C soils are generally characterized as having slow infiltration rates when thoroughly wetted and consist chiefly of silty-loam soils with a layer that impedes downward movement of water, or soils with moderately fine to fine textures.
- **Group D:** There are Group D soils along the project segment to the south of SR-91 near its intersection with Lakeview Avenue. Group D soils have very slow infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, soils with a high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material (Natural Resources Conservation Service 2017).

Faulting and Seismicity

The entire southern California region is seismically active due to the influence of several earthquake fault systems resulting from interaction between the Pacific and North American crustal plates. An active fault is defined by the State of California as a "…sufficiently active and well defined fault that has exhibited surface displacement within the last 11,000 years."

A potentially active fault is defined by the State as a "…fault with a history of movement between 11,000 and 1.6 mya [million years ago]."

The project area is not located in an Alquist-Priolo Earthquake Fault Zone, and there are no known active or potentially active faults that are mapped as crossing or in the immediate vicinity of SR-91, SR-55, or SR-57. The principal seismic hazard in this area is ground shaking resulting from local and distant earthquakes occurring along one of several major active or potentially active faults in southern California that could damage the transit facilities and structures. Table 2.2.3-1 summarizes the distance from nearby faults to the project site.

Table 2.2.3-1. Fault Data

Fault	Fault Type	Approx. Distance to Fault from SR-91/Kraemer Blvd, R_{rup} (miles)
Yorba Linda (Seismicity)	R	1.5
Peralta Hills	R	0.8
Puente Hills (Coyote Hills)	R	3.8
Elsinore Fault Zone (Whittier Section)	SS	5.3
Elsinore (Glen Ivy) Rev	SS	10.8

Source: Earth Mechanics, Inc. 2017a–j
Notes: R = Reverse; SS = Strike Slip

Landslides

Landslides are rock, earth, or debris flows on slopes due to gravity that are a major geologic hazard because they are widespread and can cause substantial damage to life and property. Although landslides commonly occur in connection with other major natural disasters such as earthquakes, volcanoes, wildfires, and floods, they can occur on any terrain given the right soil, moisture, and angle/slope conditions. Steep bare slopes, clay-rich rock, deposits of stream or river sediment, and heavy rains can contribute to landslides.

There are no seismically induced, mapped landslides or other landslides and mudflows within or in the vicinity of the project segment.

Liquefaction, Lateral Spreading, and Seismic Settlement

Soil liquefaction occurs when saturated, loose soils lose strength due to excess water pressure buildup in the soils during an earthquake. The spaces between the soil particles are completely filled with water. As the shaking action of an earthquake progresses, the soil grains are rearranged and the soil densifies within a short period of time. The water in the spaces between the soil particles is trapped and does not have adequate time to dissipate. As the water pressure builds up rapidly, the strength of the soils is greatly reduced. When liquefaction occurs, the strength of the soil and the ability of the soil to support building and bridge foundations are reduced. The potential impacts of liquefaction may include settlement of the ground surface, additional forces pushing on retaining walls or pushing down on foundation piles as a result of soil settlement above the liquefied layers, reduction of the shear strength of the liquefied soil, reduced load-carrying capacity, sand boils, and lateral spreading.

The primary factors affecting the possibility of liquefaction are the intensity and duration of the earthquake shaking, the soil type, the relative density of that soil, the pressures of material above that soil, and the depth to groundwater. The soils most susceptible to liquefaction are clean, loose, uniformly graded, fine-grained sands, nonplastic silts that are saturated, and silty sands.

Seismically induced settlement consists of dry dynamic settlement (above the level of the groundwater) and liquefaction-induced settlement (below the groundwater level). Settlement occurs primarily in loose to moderately dense sandy soil as a result of the loss of volume during and shortly after an earthquake.

Soils along the project segment consist of predominantly cobbles, gravels, silts, and sands associated with the thick alluvial fan and outwash deposits derived from the Santa Ana Mountains. The groundwater well that is nearest to the project area and with current groundwater level and quality data (Well Number 338509N1178361W001) recorded in November 2016 that the depth to groundwater was approximately 52 feet. The California Geological Survey (1998a and 1998b) has determined that the project corridor between La Palma Avenue and SR-55 has the potential for liquefaction. In addition, the project area along the Santa Ana River has the potential for liquefaction.

Water Resources

Surface and groundwater are discussed briefly in this section as they relate to potential geological and geotechnical conditions such as liquefaction. Detailed discussions of surface water and groundwater and provided in Section 2.2.1, Hydrology and Floodplains, and Section 2.2.2, Water Quality and Storm Water Runoff.

Surface Waters

Major rivers within the basin are the Los Angeles, San Gabriel, and Santa Ana Rivers, which enter the basin through gaps in the surrounding mountains and drain southerly across the basin floor. Surface water bodies in the vicinity of the project segment include Carbon Canyon Channel, Carbon Canyon Diversion Channel, the Santa Ana River Groundwater Recharge Basins, and the Santa Ana River Reach 2. The Santa Ana River Groundwater Recharge Basins in the vicinity of SR-91, SR-55, and SR-57 are not considered to be large inland bodies of water.

There are no large bodies of water upstream of the project segment that could result in inundation of the area. The nearest large upstream body of water is in the Prado Basin, which is held behind Prado Dam approximately 10 mi northeast of the project area.

Seiches are large waves generated in enclosed bodies of waters, such as lakes, in response to ground shaking. Tsunamis are waves generated in larger bodies of water as a result of fault displacement of major ground movement. As mentioned above, there are no large enclosed bodies of water near the project site. The Pacific Ocean is approximately 14 mi southwest of the western end of the project segment. As a result, the existing potential risks to the SR-91, SR-55, and SR-57 related to seiches, tsunamis, and seismically induced inundation are considered negligible.

Groundwater

The historical highest groundwater depth near the project area is from 10 feet below grade at the Santa Ana River to more than 40–50 feet below grade at the eastern and western end of the project. The geotechnical studies for the 11 structures that would be revised as part of the proposed project measured a groundwater table range of +155 feet to +246 feet below the project structures. In the winter season or after periods of locally intense rain or stormwater runoff, fluctuations in the groundwater level, localized zones of perched water, and/or an increase in soil moisture may occur.

Contaminated Soils

As described in detail in Section 2.2.5, Hazardous Waste/Materials, aerially deposited lead (ADL) is generally encountered in unpaved areas (or formerly unpaved areas) adjacent to older roads, primarily as a result of deposition from historical vehicle emissions. In addition, the SR-91, SR-57, and SR-91/SR-55 interchange were constructed in the 1960s and 1970s. Thus, the existence of ADL in the building material of these structures is a possibility. Adjacent unpaved surficial soils may contain ADL. Other potential areas of soil contamination associated with individual land uses adjacent to the project area are discussed in Section 2.1.5.

Mineral Resources

Within the project area, no mineral extraction activities occur. In accordance with the California Surface and Mining Reclamation Act of 1975, the California Department of Conservation, State Mining and Geology Board has identified the project area as being located in a Mineral Resource Zone 2 (MRZ-2) generally north of the SR-91/SR-55 interchange and a Mineral Resource Zone 3 (MRZ-3) generally south of the interchange. Land designated as MRZ-2 is defined as having adequate information that indicates significant mineral deposits are present or a high likelihood exists for their presence. Land designated as MRZ-3 is defined as containing mineral deposits the significance of which cannot be evaluated from available data (California Department of Conservation 1981). Within the City of Anaheim, the City's General Plan identifies three subareas within its MRZ-2 land as "sectors," each of which are identified as containing mineral resources of regional significance. Of these sectors, Sector F is located within the project area. Sector F includes aggregate sand and gravel deposits in the Warner Basin located near the intersection of La Palma Avenue and Tustin Avenue. (City of Anaheim 2004).

2.2.3.3 ENVIRONMENTAL CONSEQUENCES

Permanent Impacts

Build Alternative (Preferred Alternative)

National Natural Landmarks and Other Geographic and Topographic Features

There are no NNLs or unique or unusual geologic features within or in the vicinity of the disturbance limits for the Build Alternative (Preferred Alternative). As a result, the Build Alternative (Preferred Alternative) would not result in permanent impacts on NNLs or unique or unusual geologic features.

Local Geology, Topography, and Soils

The Build Alternative (Preferred Alternative) would not result in permanent substantive changes in the area topography because the improvements would generally be constructed at or close to the same grade as the existing transportation facility.

To the south of the project limits east of the SR-91 and SR-55 interchange are soils of high clay content that may be compressible and/or expansive. Removal and treatment of these clay-laden soils would be recommended in the *Final Geotechnical Design Repor*t (required in Measure GEO-1, which is provided later in this section) and would substantially reduce this effect to below a level of significance.

The soil and rock material excavated (cut) during construction of the Build Alternative (Preferred Alternative) is expected to be used as fill elsewhere in the project limits during construction. Soil material would also be imported to the project site in areas needing additional fill material. Any

soil imported to the project site for use as fill will be certified as clean prior to its use on the project site.

Faulting and Seismicity

Moderate to severe seismic shaking is likely to occur in the project area during the life of the improvements provided by the Build Alternative (Preferred Alternative). As a result, the improvements provided by the Build Alternative (Preferred Alternative) would be subject to effects associated with seismic shaking that could damage bridge and ramp structures or the road surfaces. Because the proposed project is not crossed by a known fault or is not in an Alquist-Priolo Earthquake Fault Zone, the project improvements are not expected to be exposed to effects associated with fault displacement and ground rupture. Design and construction of the project improvements consistent with the Caltrans Highway Design Manual (HDM) and other required standards, and recommendations from the Final Geotechnical Design Report, as required in Measure GEO-1 provided later in this section, would substantially reduce the potential for seismic damage to the project facilities.

Landslides

Because there are no mapped landslides within or in the vicinity of the project segment, the design and operation of the project improvements provided by the Build Alternative (Preferred Alternative) would not be affected by known landslides.

Liquefaction, Lateral Spreading and Seismic Compaction

As described earlier, the project area along the Santa Ana River has the potential for liquefaction. The Santa Ana River Bridge structure would be remodeled as part of the proposed project. Liquefaction could potentially occur at the western abutment of this bridge. Although geotechnical analysis shows the presence of potentially liquefiable soil pockets, they are localized and not continuous across the project site. The maximum liquefaction-induced (seismic) settlement would be less than 3 inches. The magnitude of seismic settlement would induce downdrag forces on the piles. The seismic stability of the abutment end slopes would not be considered to be a design issue. Furthermore, design and construction of the project improvements would be consistent with the Caltrans HDM and other required standards and recommendations from the Final Geotechnical Design Report (such as the use of piles, and removal and recompaction of low-density, near-surface soils). This would substantially reduce the potential effects of liquefaction, lateral spreading, and seismic settlement on the Santa Ana River Bridge.

Water Resources

Potential long-term impacts under the Build Alternative (Preferred Alternative) that are related to erosion and may affect the traveling public or the project facilities can be substantially reduced based on the implementation of landscaping and other best management practices (BMPs). Refer to Section 2.2.2 for additional discussion regarding operations-related water quality issues and mitigation, including BMPs. Given the distances of the Prado Basin from the project segment, it is unlikely that a failure of the Prado Dam would result in inundation impacts on the improvements provided in the Build Alternative (Preferred Alternative). There are no large bodies of water in the project vicinity that could result in seiches or tsunami. As a result, the improvements provided in the Build Alternative (Preferred Alternative) would not be affected by inundation, seiches, or tsunami. As discussed earlier, groundwater along the project segment of SR-55 is relatively deep and may fluctuate after periods of intense rainfall or due to other factors. The widened bridge structures in the Build Alternative (Preferred Alternative) would be

supported on piles embedded with deep foundations. Piles would be driven or drilled, depending on the potential for a wet construction and caving soils. The pile foundations will be designed consistent with the Caltrans Bridge Design Specifications and the Final Foundation Reports, which will reduce the impact of groundwater and groundwater fluctuation on the bridge foundation piles.

Contaminated Soils

Lead is no longer used in gasoline, so there is no potential for continued deposition of ADL in soils adjacent to the project segment. There are no existing agricultural properties immediately adjacent to the project segment; therefore, deposition of pesticides in soils adjacent to the freeways is not expected to occur during operation of the Build Alternative (Preferred Alternative). As a result, the operation of the Build Alternative (Preferred Alternative) would not result in impacts related to ADL or pesticides.

Mineral Resources

The proposed project would be located within a MRZ-2, as designated by the California Department of Conservation. It would also be located within Sector F, as designated by the City's General Plan. However, these areas are developed with commercial and office uses and their practical value to provide mineral resources is somewhat limited. Therefore, implementation of the Build Alternative (Preferred Alternative) would not adversely affect mineral resources in the MRZ-2 area or the Sector F site designated as regionally significant.

No-Build Alternative

Under the No-Build Alternative, the permanent impacts discussed above for the Build Alternative (Preferred Alternative) would not occur because none of the permanent improvements provided in the Build Alternative (Preferred Alternative) would be implemented and operated under this alternative.

Temporary Impacts

Build Alternative (Preferred Alternative)

Construction of the Build Alternative (Preferred Alternative) may temporarily disturb soil within the project footprint. Construction activities in temporary construction easements (TCEs) outside the freeway right-of-way would temporarily disturb soils in those areas. Excavated soil in the construction areas would be exposed, and, as a result, there would be an increased potential for soil erosion during construction compared to existing conditions. During a storm event, soil erosion could occur at an accelerated rate. The anticipated total area disturbed during construction would be 49.2 acres. In addition, the surficial and mostly sandy soils within the project limits are susceptible to gullying, piping, and accelerated erosion on steep slopes. Most embankment side slopes within the project limits were graded at an inclination of 2H:1V and covered with sparse to moderate vegetation. Erosion on the slope faces was observed to be minimal. As part of GEO-1, prompt revegetation of graded slopes within the project footprint would be performed to minimize erosion, and runoff would be diverted from the slope face using earthen berms and/or concrete swales at the top of slope.

During all construction activities for the Build Alternative (Preferred Alternative), the construction contractor would be required to adhere to the requirements of the General Construction Permit and to implement erosion and sediment control BMPs specifically identified in the project Storm Water Pollution Prevention Plan (SWPPP) to keep sediment from moving off site into receiving

waters and impacting water quality in those waters. Refer to Section 2.2.2 for additional information regarding construction-related water quality impacts and mitigation.

Worker safety hazards resulting from erosion during construction of the Build Alternative (Preferred Alternative) would be minimized based on implementation of the requirements in the General Construction Permit and erosion and sediment control BMPs in the SWPPP.

Construction activities for the Build Alternative (Preferred Alternative) could be affected by ground motion from seismic activities, possible ground rupture, liquefaction, and landslides. Implementation of safe construction practices and compliance with Caltrans and the California Division of Occupational Safety and Health (Cal-OSHA) requirements would minimize the impacts to worker safety during construction activities.

Disturbance of unpaved areas adjacent to the SR-91 mainline and ramps and the arterial streets crossing SR-91 could disturb ADL in the soils. Refer to Section 2.2.5 for discussion of the potential effects associated with disturbance of soils containing ADL and pesticides during construction of the Build Alternative (Preferred Alternative) and the measures addressing those effects.

There are no NNLs or unique or unusual geologic features within or in the vicinity of the disturbance limits for the Build Alternative (Preferred Alternative). As a result, the construction of the Build Alternative (Preferred Alternative) would not impact NNLs or unique or unusual geologic features.

There are no active, potentially active, or inactive volcanoes in Orange County. Therefore, no impacts related to volcanoes would occur during construction of the Build Alternative (Preferred Alternative).

Due to the distance of the Prado Basin from the project segment, it is unlikely that a failure of Prado Dam would result in inundation impacts on the project segment during construction of the Build Alternative (Preferred Alternative). There are no large bodies of water in the project vicinity that could result in seiches or tsunami. As a result, no effects related to inundation, seiches, or tsunami would occur during construction of the Build Alternative (Preferred Alternative).

No-Build Alternative

Under the No-Build Alternative, the temporary construction-related impacts discussed above for the Build Alternative (Preferred Alternative) would not occur because there would be no construction of project improvements under this alternative.

2.2.3.4 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The following measures avoid and/or minimize the potential geological and seismic effects of the Build Alternative (Preferred Alternative).

GEO-1: During final design, a Final Geotechnical Design Report will be prepared as required by Topic 113 in the California Department of Transportation (Caltrans) Highway Design Manual (HDM) (May 2012 or more recent version). A Foundation Report will also be prepared for each bridge structure along the segments of State Route (SR-) 91, SR-55, and SR-57 that will be widened as part of the Build Alternative (Preferred

Alternative). These reports will document soil-related constraints and hazards such as slope instability, settlement, liquefaction, or related secondary seismic impacts that may be present along the project segment. The performance standard for these reports will be the Caltrans Geotechnical Manual (2012 or most recent version) standards as they apply to the project features and structures. These reports will include but not be limited to:

- Evaluation of expansive soils and recommendations regarding construction procedures and/or design criteria to minimize the effects of these soils on the construction of the project and to minimize effects related to expansive soils on project facilities in the long term.
- Confirmation of potential liquefiable areas within the project limits and recommendations for mitigation.
- Evaluation of the corrosion potential of soils along segments of the project alignment not previously tested.
- Demonstration that the design of all retaining walls is geotechnically suitable for project area soils.
- Demonstration that side slopes can be designed and graded so that surface erosion of the engineered fill is not increased compared to existing conditions.

The measures recommended in the Final Geotechnical Design Report and Foundation Reports will be incorporated in the final design and project specifications.

During construction, the construction contractor will implement the measures recommended in the Final Geotechnical Design Report and Foundation Reports as included in the project specifications.

GEO-2: A quality assurance/quality control (QA/QC) plan will be maintained during construction. The QA/QC plan will include observing, monitoring, and testing by the Project Geotechnical Engineer and/or Project Geologist prior to and during construction to confirm that the geotechnical/geologic recommendations from the Final Geotechnical Design Report, Foundation Reports, and standard design and construction practices are fulfilled by the construction contractor, or if different site conditions are encountered, appropriate changes are made to accommodate such issues. The Geotechnical Engineer will submit weekly reports during all project-related grading, excavation, and construction activities.

GEO-3: The construction contractor will be required to certify that any fill material imported to the project site is clean prior to the use of that material in project construction.

Refer to Appendix D, Environmental Commitments Record, for additional measures related to soil erosion, including BMPs. Appendix D also describes additional measures related to hazardous materials and wastes.

Because the construction and operation of the Build Alternative (Preferred Alternative) would not result in any impacts related to NNLs, other geographic or topographic features, landslides,

volcanoes, or inundation by flood waters, tsunami, or seiches, no mitigation for those environmental risks is required.

2.2.3.5 REFERENCES

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2.2.4 Paleontology

2.2.4.1 REGULATORY SETTING

Paleontology is a natural science focused on the study of ancient animal and plant life as it is preserved in the geologic record as fossils.

A number of federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized projects.

16 United States Code (USC) 431–433 (the "Antiquities Act") prohibits appropriating, excavating, injuring, or destroying any object of antiquity situated on federal land without the permission of the Secretary of the Department of Government having jurisdiction over the land. Fossils are considered "objects of antiquity" by the Bureau of Land Management, the National Park Service, the Forest Service, and other federal agencies.

16 USC 461–467 established the National Natural Landmarks program. Under this program, property owners agree to protect biological and geological resources such as paleontological features. Federal agencies and their agents must consider the existence and location of designated National Natural Landmarks, and of areas found to meet the criteria for national significance, in assessing the effects of their activities on the environment under the National Environmental Policy Act.

16 USC 470aaa (the Paleontological Resources Preservation Act) prohibits the excavation, removal, or damage of any paleontological resources located on federal land under the jurisdiction of the Secretaries of the Interior or Agriculture without first obtaining an appropriate permit. The statute establishes criminal and civil penalties for fossil theft and vandalism on federal lands.

23 USC 305 authorizes the appropriation and use of federal highway funds for paleontological salvage as necessary by the highway department of any state, in compliance with 16 USC 431–433 above and state law.

Under California law, paleontological resources are protected by the California Environmental Quality Act (CEQA).

2.2.4.2 AFFECTED ENVIRONMENT

The primary source used in the preparation of this section is the *Paleontological Identification Report/Paleontological Evaluation Report* (PIR/PER) completed for this project in March 2018 (Department of PaleoServices, San Diego Natural History Museum).

As defined here, paleontological resources (i.e., fossils) are the buried remains and/or traces of prehistoric organisms (i.e., animals, plants, and microbes). Body fossils such as bones, teeth, shells, leaves, and wood, as well as trace fossils such as tracks, trails, burrows, and footprints, are found in the geological rock units (formations) within which they were originally buried. The primary factor determining whether an object is a fossil is not how the organic remain or trace is preserved (e.g., "petrified"), but rather the age of the organic remain or trace. Although typically it is assumed that fossils must be older than ~10,000 years (i.e., the generally accepted end of the

last glacial period of the Pleistocene Epoch), organic remains of early Holocene age can also be considered to represent fossils because they are part of the record of past life.

Fossils are considered important scientific and educational resources because they serve as direct and indirect evidence of prehistoric life and are used to understand the history of life on Earth, the nature of past environments and climates, the membership and structure of ancient ecosystems, and the pattern and process of organic evolution and extinction. In addition, fossils are considered to be non-renewable resources because typically the organisms they represent no longer exist. Thus, once destroyed, a particular fossil can never be replaced.

Regional Geological Setting

The proposed project alignment lies in the northernmost part of the Peninsular Ranges Geomorphic Province of California at the junction of the Transverse Ranges and Peninsular Ranges. Specifically, the project alignment is located within the Los Angeles Basin, a large alluvial coastal plain underlain by a deep structural trough that has been receiving sediment intermittently since Late Cretaceous time, most notably during nearly continuous marine deposition from the late Miocene to early Pleistocene.

The Los Angeles Basin is actively being deformed by a diversity of thrust faults and strike-slip faults that have divided the Basin into a series of Blocks. The project alignment is located within the southeastern portion of the Central Block (Central Plain), which is bounded to the east by the Whittier Fault Zone, to the north by the Santa Monica Fault, to the west by the Newport-Inglewood Fault Zone, and to the south by the Santa Ana Mountains. The Central Plain of the Basin is characterized by the coalesced floodplains and alluvial fans of the Santa Ana and San Gabriel rivers. Prior to construction of concrete storm channels, the active channels of these rivers meandered across the Central Plain depositing their seasonal bed loads of sediment eroded from the San Gabriel and Santa Ana mountains to the east.

The project alignment occurs in association with the active channel of the Santa Ana River, where the river flows westward into the Central Plain through a bottleneck point between the Peralta Hills (and greater Santa Ana Mountains) to the south, and the Chino Hills to the north. The eastern portion of the project alignment abuts the northwestern slopes of the Peralta Hills, extending westward out onto young alluvial fan deposits of the floodplain (Figure 2.2.4-1). The uplands of the Peralta Hills are composed of folded and faulted Miocene, Pliocene, and Pleistocene-age sedimentary rock units that were deposited under deep marine to shallow marine conditions in the Los Angeles Basin. Uplift and deformation of these hills is due to movement along the Peralta Hills Thrust Fault to the south, and other related faults of the Whittier Fault Zone. Locally, the Pliocene to early Pleistocene-aged Fernando Formation directly underlies the project alignment (Figure 2.2.4-1), and is overlain by nonmarine rocks of Pleistocene- to Holocene-age, which were deposited by the Santa Ana River in response to changes in base level associated with the rise and fall of global sea level during cycles of Quaternary glacial and interglacial conditions, combined with localized uplift along the Whittier Fault Zone.

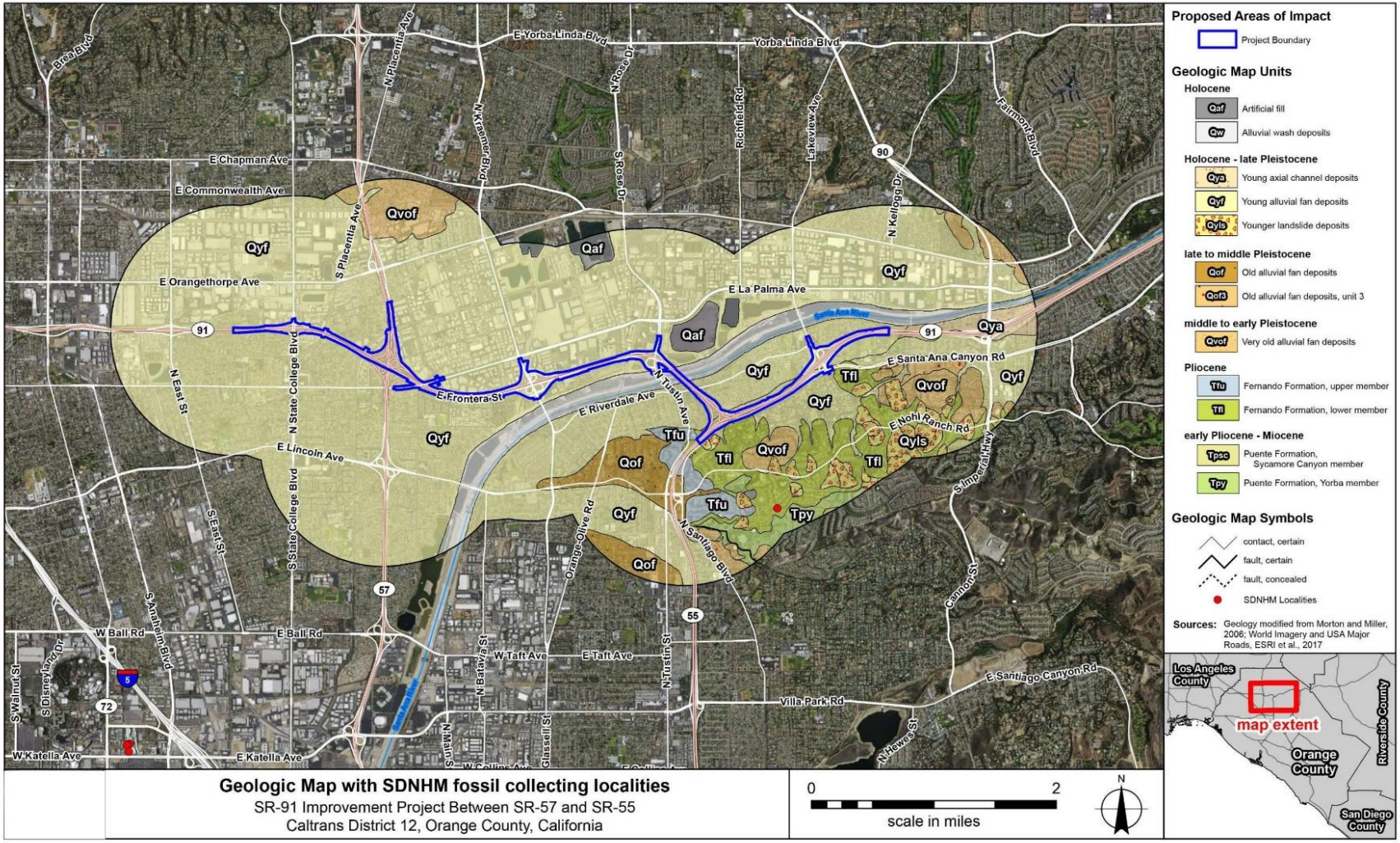


Figure 2.2.4-1. Geologic Map

Paleontological Records Search & Literature Search

A formal paleontological records search of the fossil collections at the San Diego Natural History Museum (SDNHM) was conducted to determine if any known paleontological collection localities exist within a 5-mile radius of the project alignment. Additionally, online searches of the University of California Museum of Paleontology paleontological collections database and the Natural History Museum of Los Angeles County Invertebrate Paleontology collection's database were accessed.

In order to learn more about the specific geologic rock units underlying the project area and their fossil content, a review was conducted of relevant published geologic maps and reports, peer-reviewed papers, and other relevant literature (e.g., field trip guidebooks, unpublished dissertations, and archived paleontological mitigation reports). This approach was followed in recognition of the direct relationship between paleontological resources and the geologic rock units within which they are entombed. Knowing the geologic history of a particular area and the fossil productivity of geologic rock units that occur in that area, it is possible to predict where fossils would be expected to occur.

Field survey

A field survey of the proposed project was conducted by B. Amelia Pludow and Patrick J. Sena of the SDNHM Department of PaleoServices on November 28, 2016. The purpose of the survey was to field check the results of the literature and record searches. Due to the nature of the project alignment, the field survey primarily consisted of a windshield survey conducted by driving the alignment. However, the survey also included inspection of exposures close to the project alignment in order to gather information concerning the geology and stratigraphy of the strata specifically underlying the project, as well as to explore for any fossils that may be present at the surface.

During the survey, the field crew was equipped with standard field equipment (e.g., rock hammer, camera, hand lens, tape measure), a Garmin Handheld GPS unit, and relevant project plans and documents. Collected field data included waypoints that were keyed to field notes and photographs.

Results

The Paleontological Potential Map (Figure 2.2.4-2) is provided below, and Table 2.2.4-1 summarizes the potential for paleontological resources.

Table 2.2.4-1. Summary of Paleontological Potential Analysis

Geologic Rock Unit	Age	Paleontological Potential
Artificial fill (af)	Less than 100 years	No Potential
Very young wash deposits (Qw)	Holocene	Low Potential (0–10 feet) High Potential (≥10 feet)
Young alluvial floodplain deposits (Qya)	Holocene-Pleistocene	Low Potential (0–10 feet) High Potential (≥10 feet)
Fernando Formation (Tfl, Tfu)	Pleistocene-Pliocene	High Potential

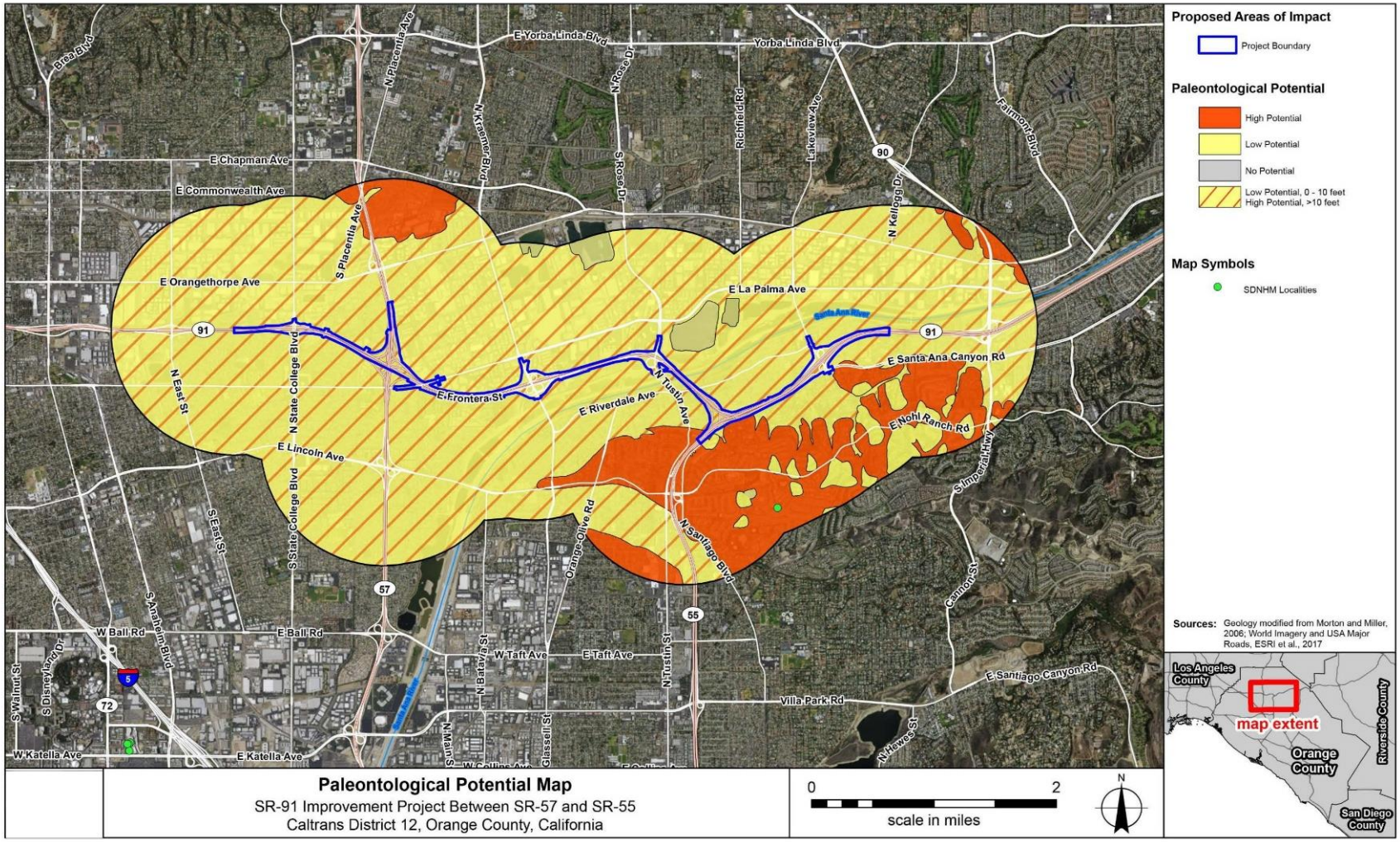


Figure 2.2.4-2. Paleontological Potential Map

The paleontological records search, literature search, and field survey conducted by the Department of PaleoServices, SDNHM indicate that the project alignment is underlain by Holocene- to late Pleistocene-age young alluvial fan deposits and very young wash deposits along the majority of the alignment, and the lower member of the early Pleistocene- to Pliocene-age Fernando Formation near the base of the Peralta Hills, along State Route 55 (SR-55). Additionally, many of the on-ramps and off-ramps along the project alignment are constructed from artificial fill. The young alluvial fan deposits and very young wash deposits are assigned a low paleontological potential rating from 0–10 feet below existing grade and a high paleontological potential rating for depths greater than 10 feet below existing grade. For the wash deposits, it is assumed that the upper layers have been heavily modified by dredging and channelization of the Santa Ana River, and for the alluvial fan deposits, the upper 10 feet are presumed to be Holocene in age. For both the wash deposits and alluvial fan deposits, there is potential that the deposits are Pleistocene in age at depths greater than 10 feet below the ground surface. The Fernando Formation is assigned a high paleontological potential based on the known occurrence of important marine invertebrate and vertebrate fossils within the formation. Artificial fill is assigned a low paleontological potential based on the lack of contextual data for any fossils that may be discovered.

2.2.4.3 ENVIRONMENTAL CONSEQUENCES

Permanent

Build Alternative (Preferred Alternative)

Construction may impact paleontological resources where excavations will disturb the Fernando Formation (at the surface and at depth), or Pleistocene-age alluvial deposits at depth (i.e., excavations that will extend greater than 10 feet below existing grades at locations mapped as alluvial fan deposits or alluvial wash deposits). Widening of the southern portion of the eastbound State Route 91 (SR-91) to SR-55 connector may require excavations into the Fernando Formation at the surface. The majority of excavation required for structures proposed under the Build Alternative (Preferred Alternative) are not anticipated to exceed 10 feet. Drilled piles may extend beyond 50 feet; depth is dependent upon site conditions encountered by the contractor and recommended by a geotechnical engineer. Furthermore, excavation activities at the SR-91 westbound and State Route 57 (SR-57) southbound connector are expected to reach a depth of 35 feet; however, the existing slope is non-native soil that is used as fill for the existing connector. The project components that are likely to require earthwork that extends 10 feet deep or more include the installation of permanent subsurface shoring, structures, box culverts, retaining walls, and underground utilities. All other project components, as currently proposed, are not anticipated to adversely impact paleontological resources.

Development and implementation of a Paleontological Mitigation Plan is necessary for the Build Alternative (Preferred Alternative), as outlined in measure **PAL-1**.

No-Build Alternative

Under the No-Build Alternative, no adverse impacts would occur on paleontological resources; therefore, no permanent impacts would occur.

Temporary

Build Alternative (Preferred Alternative)

There are no temporary impacts on paleontological resources. Any impacts on such resources during the construction period, if they occur, would be considered permanent impacts and are discussed under the permanent impacts heading below.

No-Build Alternative

Under the No-Build Alternative, temporary construction-related impacts on paleontological resources would not occur.

2.2.4.4 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The following measure will be implemented for the project and will address impacts related to paleontological resources, should any be encountered during construction.

PAL-1: Caltrans will ensure that a Paleontological Mitigation Plan (PMP) is prepared and adhered to during widening of the southern portion of the eastbound SR-91 to SR-55 connector, and construction of all bridge support columns or structures, and certain box culverts, retaining walls, and utilities. At a minimum the PMP will include the following instructions:

- A qualified principal paleontologist (MS or PhD in paleontology or geology familiar with paleontological procedures and techniques) will be retained to prepare a PMP following the Department's Standard Environmental Reference (SER) if auguring or foundation construction will penetrate 5 feet or more into undisturbed sediment.
- The paleontologist will be present to consult with construction contractors at pre-grading meetings.
- Paleontological monitoring under the direction of the qualified principal paleontologist will be performed for subsurface construction activities involving sensitive geologic formations.
- When fossils are discovered, the paleontologist (or paleontological monitor) will recover them. Construction work in these areas will be halted or diverted to allow recovery of fossil remains in a timely manner.
- Fossil remains collected during the monitoring and salvage portion of the mitigation program will be cleaned, repaired, sorted, and cataloged.
- Prepared fossils, along with copies of all pertinent field notes, photos, and maps, will then be deposited in a scientific institution with paleontological collections.

A final report will be completed that outlines the results of the mitigation program.

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2.2.5 Hazardous Waste/Materials

2.2.5.1 REGULATORY SETTING

Hazardous materials, including hazardous substances and wastes, are regulated by many state and federal laws. Statutes govern the generation, treatment, storage and disposal of hazardous materials, substances, and waste and also the investigation and mitigation of waste releases, air and water quality, human health, and land use.

The primary federal laws regulating hazardous wastes/materials are the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 and the Resource Conservation and Recovery Act (RCRA) of 1976. The purpose of CERCLA, often referred to as "Superfund," is to identify and clean up abandoned contaminated sites so that public health and welfare are not compromised. The RCRA provides for "cradle to grave" regulation of hazardous waste generated by operating entities. Other federal laws include:

- Community Environmental Response Facilitation Act (CERFA) of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act (TSCA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

In addition to the acts listed above, Executive Order (EO) 12088, *Federal Compliance with Pollution Control Standards*, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

California regulates hazardous materials, waste, and substances under the authority of the California Health and Safety Code and is also authorized by the federal government to implement RCRA in the state. California law also addresses specific handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning issues related to hazardous waste. The Porter-Cologne Water Quality Control Act also restricts disposal of wastes and requires cleanup of wastes that are below hazardous waste concentrations but could affect surface and groundwater quality. California regulations that address waste management and prevention and cleanup of contamination include Title 22, Division 4.5, Environmental Health Standards for the Management of Hazardous Waste; Title 23, Waters; and Title 27, Environmental Protection.

Worker and public health and safety are key issues when addressing issues related to hazardous materials that may affect human health and the environment. Proper management and disposal of hazardous material is vital if it is found, disturbed, or generated during project construction.

2.2.5.2 AFFECTED ENVIRONMENT

This section is based on the *Hazardous Waste Initial Site Assessment (ISA) for the SR-91 Improvement Project Between SR-57 and SR-55* (Kleinfelder 2017); the *Technical Memorandum ISA Amendment SR-91 Improvement Project Between SR-57 and SR-55* (Kleinfelder 2019); and the *Phase II Site Investigation Report, Option 2, SR-91 Improvement Project Between SR-57 and SR-55 Former Canal Street/Newkirk Landfill, 3400 East Frontera Street, Anaheim* (Kleinfelder 2020). The project intends to improve traffic operations along State Route 91 (SR-91) in the cities of Anaheim, Fullerton, Orange, and Placentia. Proposed improvements would include SR-91 freeway mainline widening, primarily in the eastbound direction, and modifications to various interchanges, connectors, ramps, and intersections (a distance of approximately 6 miles).

As part of the ISA, three regulatory agencies were contacted for documentation regarding environmental conditions present at the proposed project area and adjoining properties/facilities with the potential to impact environmental conditions within the proposed project limits. The California Department of Toxic Substances was contacted for information on hazardous permitted, corrective action facilities, and properties that could represent a hazardous waste impact on the proposed project. The State Water Resources Control Board was contacted for information from the Underground Storage Tank (UST) Program regarding environmental cleanup activities at leaking UST and non-UST sites. The National Pipeline Mapping System was contacted for information regarding hazardous materials pipelines that could be present within the project limits.

Several hazardous materials were identified in the ISA as environmental concerns with some potential to affect the project. They are described in detail below. In addition, one former landfill facility was identified as having the potential to affect soil and/or groundwater in one larger parcel made up of three assessor's parcel numbers (APNs) (360-071-14, 360-071-28 and 360-071-24) that is to be used by the project as a permanent easement/temporary construction easement under the Build Alternative (Preferred Alternative).

Results of the Initial Site Assessment

Based on information obtained in the ISA, the following site was identified as having potential to affect one larger parcel made up of three APNs that would require a permanent easement and temporary construction easement (TCE) in order to construct the project:

DBW Metals Recycling/SA Recycling (formerly Canal Street Landfill, Orange County Steel Salvage, Remedy Environmental Services, Adams Steel, and Adams International Metals), 3200/3400 East Frontera Street.

The site currently and historically occupied APNs 360-071-14, 360-071-28, and 360-071-24 and was identified in the ISA as being part of the Land Disposal Site, Leaking Underground Storage Tank, Spills Leaks Investigation and Cleanup, and EnviroStor databases. The aforementioned site is associated with a former landfill site that currently is a recycling facility and rail yard. According to the ISA, solid waste accepted at the former landfill site included industrial, commercial, and agricultural waste. Current contaminants of concern include metals, petroleum hydrocarbons, and volatile organic compounds in on-site soil. Because of the historic and current land uses, the aforementioned larger parcel was characterized by the ISA as a potential hazardous waste exposure risk to implementation of the project.

The Standard Environmental Reference (SER) includes a Risk Table that lists example land uses and conditions that are grouped into high, medium, and low risk categories with regard to: 1) the likelihood of hazardous materials, hazardous waste, or contamination being present; 2) the potential level of impacts that these uses may have on the project cost, scope, and schedule; and 3) the associated risk of future liability to the state based on potential contamination being present. Based on the Risk Table, the DBW Metals Recycling/SA Recycling site is considered a high-risk site because it includes the following uses: recycling centers; landfills; and railroad yards.

In addition to the hazardous waste conditions associated with the larger parcel, several other conditions were identified in the ISA as environmental concerns with some potential to affect the project:

- Aerially deposited lead (ADL). Based on a review of historical sources, SR-91, State Route 57 (SR-57), and the SR-91/State Route 55 (SR-55) interchange were constructed in the 1960s, 1970s, and 1960s, respectively. Thus, the existence of ADL in said interchanges is a possibility.
- Bridge structures. There may be lead-based paint in bridges constructed before 1979. Painted surfaces were observed on the bridge structures at La Palma Avenue overcrossing (OC) and the Tustin Avenue OC. Painted surfaces should be tested for the presence of lead-based paint (LBP). Additionally, bridge structures should be analyzed for the presence of asbestos-containing materials (ACMs). The use of asbestos in many building products was banned by the U.S. Environmental Protection Agency (EPA) by the late 1970s. ACMs represent a concern when they are subject to damage that results in the release of fibers. ACMs may be found in expansion joint material; as such, it is possible that ACMs exist in bridge structures to be affected by the project. Thus, LBP and ACM surveys should be performed during the early stage of the design.
- A groundwater contamination plume is present along SR-91 between approximately SR-57 on the east and Interstate 5 (I-5) on the west. This plume is outside the project footprint and is not anticipated to impact construction activities. Also, a second (smaller) groundwater contamination plume is present north of the SR-91/SR-57 interchange, south of Orangethorpe Avenue. The smaller plume extends slightly beneath the project footprint near SR-57 and La Jolla Avenue. However, groundwater contamination from this plume is not anticipated to be encountered during construction activities.
- In 2014, SR-91 was resurfaced and restriped from the Los Angeles County/Orange County line to Lakeview Avenue as part of a different project. Because the use of yellow pigment containing lead chromate in yellow traffic paint and thermoplastic material was banned in 1997 and 2004, respectively, the striping is considered non-hazardous and testing of the yellow traffic striping/markings may not be required. The age of the striping material will be determined during the early stage of the design.

Results of the Phase II Initial Site Assessment

A Phase II Site Investigation was completed for the Former Canal Street/Newkirk Landfill at 3400 East Frontera Street (APNs 360-071-14, 360-071-28, and 360-071-24) in January 2020. Soil samples were collected from five borings within the landscaped area between the eastbound SR-91 and the DBW/SA recycling property, which are shown on Figure 2.2.5-1. Due to the discovery of hazardous materials, this site is considered high-risk. The investigation found that contaminated landfill material was present between 4.5 feet and 15.5 feet below ground surface. Soil analytical results found that soluble lead concentrations that exceed California

hazardous waste levels were present in the landfill material. A sample from one boring also found polychlorinated biphenyl (PCB) concentrations in exceedance of California hazardous waste levels. Concentrations of diesel-range and oil-range total petroleum hydrocarbons (TPHs), volatile organic compounds (VOCs), and dioxins/furans were also present in the landfill material. However, the levels of these contaminants were far below the levels that would be classified as hazardous waste. No groundwater was encountered; therefore, groundwater monitoring was not conducted.

Results of the ISA Addendum

The ISA Addendum was prepared to address the post mile (PM) limits between PM R10.4 and PM R10.8 to allow for the installation of an overhead sign as part of the proposed project. Based on the review of the updated database records search, and the site reconnaissance of the proposed overhead sign location, additional potential hazardous waste impacts were not noted. However, the general potential hazardous waste impact relating to ADL soils identified in Kleinfelder's 2018 ISA report is pertinent to the proposed overhead sign location.

2.2.5.3 ENVIRONMENTAL CONSEQUENCES

Permanent Impacts

Build Alternative (Preferred Alternative)

Routine maintenance activities during operation of the Build Alternative (Preferred Alternative) would be required to follow applicable regulations with respect to the use, storage, handling, transport, and disposal of potentially hazardous materials. Therefore, operation of the Build Alternative (Preferred Alternative) would not result in adverse impacts related to hazardous waste or materials.

No-Build Alternative

The No-Build Alternative would not result in the disturbance or removal of any soils, groundwater, or structures and, therefore, would not result in permanent impacts related to hazardous waste and materials.

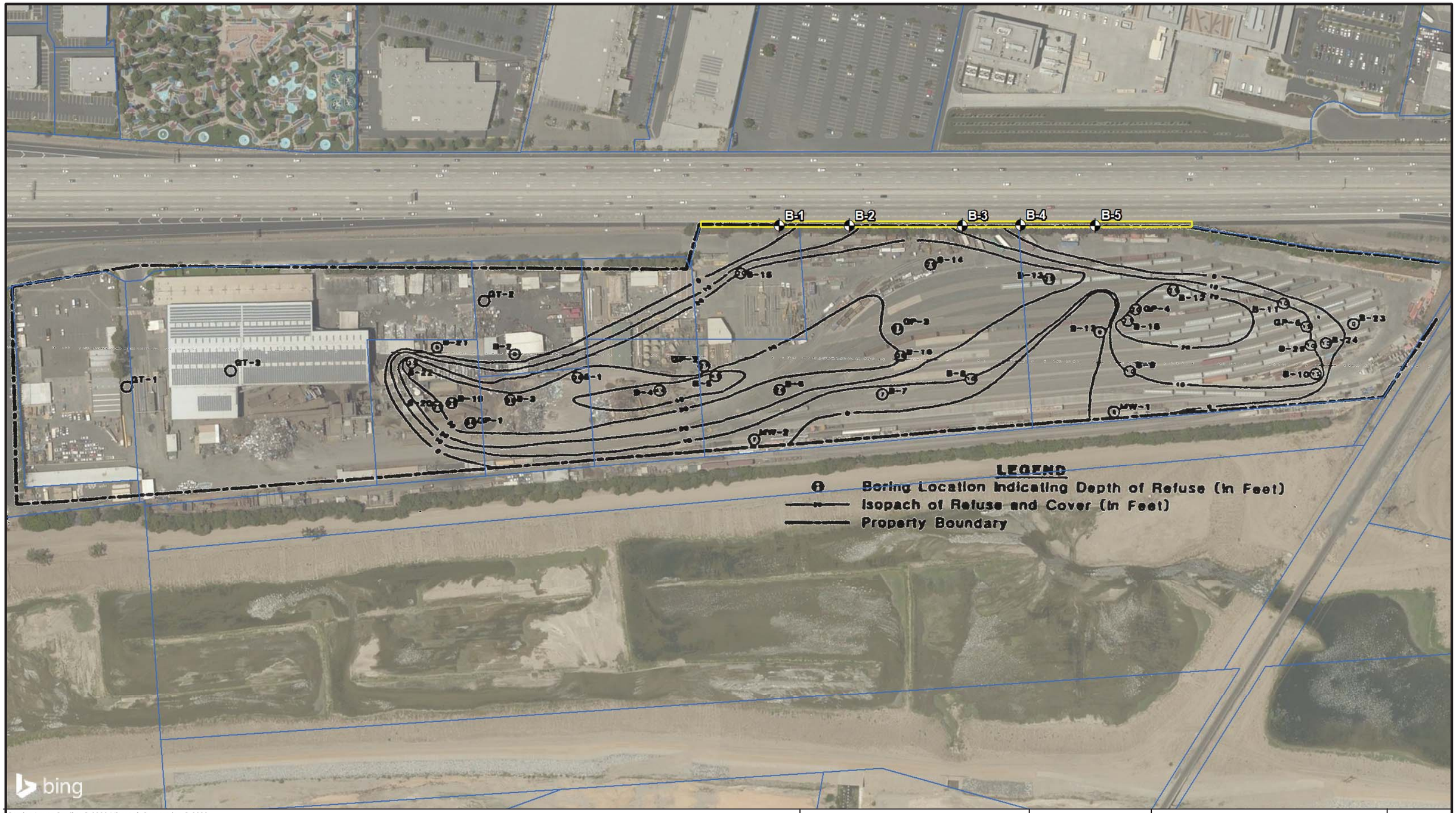
Temporary Impacts

Build Alternative (Preferred Alternative)

Temporary impacts related to hazardous materials/wastes during project construction could occur within the disturbance limits for all the Build Alternative (Preferred Alternative) and on parcels identified for partial acquisition, as described in the following sections.

Hazardous Materials/Wastes during Construction

Construction of the Build Alternative (Preferred Alternative) would involve routine handling of hazardous materials such as fuel, solvents, paints, oils, and grease. Such handling must be compliant with applicable federal and state regulations and Caltrans policies regarding the use, storage, handling, disposal, and transport of those materials. As a result, the Build Alternative (Preferred Alternative) would not result in adverse impacts related to the use of hazardous materials or the generation of hazardous wastes during construction.



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0 50 100 200 Feet

LEGEND

- Boring Location
- Property Acquisition Area
- Parcel Line

NOTE: The results of the field investigation were inconsistent with this mapping.

PROJECT NO.:	20154942
DRAWN:	04/2020
DRAWN BY:	RA
CHECKED BY:	TN
FILE NAME:	20154942_Landfill.mxd

Figure 2.2.5-1
Landfill Extent

SR-91 IMPROVEMENT PROJECT BETWEEN
SR-57 AND SR-55 12-ORA-91 PM 4.8/R10.4;
12-ORA-57 PM 15.6/16.1; AND 12-ORA-55 PM 17.5/R17.9
CITIES OF ANAHEIM, FULLERTON, ORANGE, AND
PLACENTIA, CALIFORNIA - EFIS IS: 12-0002-0098; EA 0K9800

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Contamination Associated with Hazardous Waste Sites

Because of the historic and current uses located at 3200/3400 East Frontera Street (APNs 360-071-14, 360-071-28, and 360-071-24), there is a potential risk of hazardous waste exposure during construction activities within and adjacent to this property. In accordance with measure **HAZ-1,** the known contaminated landfill material will be excavated during the construction phase and disposed of at a Class I landfill facility. While the soil within the upper four feet of the site was not classified as hazardous, it will not be reused due to the presence of PCBs, dioxins/furans, and debris. Therefore, this non-hazardous soil will be disposed of at a Class II or III landfill. The total cost for remediation (excavation) of the contaminated soil is anticipated to range from $536,000 to $1,829,000. As required by **HAZ-7**, the area beneath the SR-91 roadway area, adjacent to 3200/3400 East Frontera Street is recommended for further drilling and sampling during the design phase to verify the extent of contamination.

Aerially Deposited Lead

ADL from historical use of leaded gasoline exists along roadways throughout California. The presence of soils with elevated concentrations of lead as a result of ADL is likely on the State Highway System right of way within the limits of the Build Alternative (Preferred Alternative). Soil that is determined to contain lead concentrations exceeding stipulated thresholds must be managed under the July 1, 2016, ADL Agreement between Caltrans and the California Department of Toxic Substances Control. This ADL Agreement allows such soils to be safely reused within the project limits as long as all requirements of the ADL Agreement are met.

Because of the age of SR-91, SR-57, and the SR-91/SR-55 interchange construction, there is a potential for ADL to exist within these areas. Soil sampling for the presence of ADL should be performed in unpaved locations that were not already tested in the Phase II Site Investigation within the proposed limits of work along SR-91 at 3200/3400 East Frontera Street (APNs 360-071-14, 360-071-28, and 360-071-24) during the early stage of the design. Implementation of measures **HAZ-1** and **HAZ-2** would require that soils contaminated with ADL be handled, treated, and disposed of properly. As a result, the Build Alternative (Preferred Alternative) would not result in adverse impacts related to ADL exposure to construction personnel and the surrounding environment.

Pavement Marking Materials

Yellow traffic striping and pavement-marking materials (paint, thermoplastic, permanent tape, and temporary tape) removed during construction is considered non-hazardous because SR-91 between the Los Angeles County/Orange County line to Lakeview Avenue was resurfaced and restriped as part of a different project in 2014. With implementation of project feature/standardized measure **PF HAZ-3**, the Build Alternative (Preferred Alternative) would not result in adverse impacts related to yellow traffic striping and pavement marking materials.

PF HAZ-3 Removal of the yellow traffic striping/markings, and other colors of paint, shall be performed in accordance with Caltrans' Standard Special Provision XE "84-9.03_A10-30-15_2018."

Asbestos-Containing Materials and Lead-Based Paint Related to Bridge Structures

Based on the construction dates of the bridges, ACMs and LBP may be present in bridge structures proposed to be demolished or modified as part of the Build Alternative (Preferred Alternative). ACMs represent a concern when they are subject to damage that results in the release of fibers. Measure **HAZ-4** specifically requires proper testing, removal, and disposal of ACMs. Project feature/standardized measure **HAZ-5** addresses potential exposure impacts

associated with LBP. As a result, the Build Alternative (Preferred Alternative) would not result in adverse impacts related to ACMs and LBP.

Previously Unidentified Contamination

Although not anticipated, should affected soil (as evidenced by staining and/or odors) be encountered during construction activities, implementation of measure **PF HAZ-6** would be required.

PF HAZ-6 Although not anticipated in other areas of the project site, should impacted soil (as evidenced by staining and/or odors) be encountered during construction activities, the Resident Engineer overseeing construction shall stop work until a hazardous waste specialist is able to assess the soil for proper handling.

No-Build Alternative

The No-Build Alternative would not result in the disturbance or removal of any soils, groundwater, or structures and, therefore, would not result in temporary impacts related to hazardous waste and materials.

2.2.5.4 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The measures below will avoid and/or minimize potential effects related to hazardous materials and hazardous wastes.

HAZ-1 Any landfill material encountered during construction activities at the facility at 3200/3400 East Frontera Street (APNs 360-071-14, 360-071-28, and 360-071-24) shall be disposed of at a Class I landfill that accepts California hazardous waste. Soil within the upper four feet at this location shall be disposed in a Class II or III landfill.

HAZ-2 Soil sampling for the presence of aerially deposited lead (ADL) shall be performed in the areas of excavation within the project limits during the early stage of design, except within the proposed project limits along SR-91 at APNs 360-071-14, 360-071-28, and 360-071-24, which were previously tested in the Phase II Site Investigation. Results of the sampling shall be used to determine the disposal and/or reused methods for the excavated material.

HAZ-4 Affected bridges structures shall be tested for the presence of asbestos-containing materials during the early phase of the design in accordance with United States Environmental Protection Agency National Emission Standards for Hazardous Air Pollutants and South Coast Air Quality Management District regulations.

HAZ-5 Painted surfaces on the La Palma Avenue overcrossing and Tustin Avenue overcrossing shall be tested during the early stage of the design for the presence of lead-based paint in accordance with California Department of Public Health and California Department of Occupational Safety and Health regulations.

HAZ-7 Additional drilling and sampling beneath the SR-91 roadway area, adjacent to 3200/3400 East Frontera Street (APNs 360-071-14, 360-071-28, and 360-071-4), shall be completed during the design phase to verify contamination.

2.2.5.5 REFERENCES

Kleinfelder. 2017. *Hazardous Waste Initial Site Assessment (ISA) for the SR-91 Improvement Project Between SR-57 and SR-55, 12-ORA-91 PM 4.8/R10.4,12-ORA-57 PM 15.6/16.1, and 12-ORA-55 PM 17.5/R17.9, in the cities of Anaheim, Fullerton, Orange, and Placentia, California*. Prepared for California Department of Transportation.

Kleinfelder. 2019. *Technical Memorandum Supplemental Initial Site Assessment SR-91 Improvement Project Between SR-57 and SR-55 SR-91 PM 4.7/R10.8; SR-57 PM 15.5/16.2 and SR-55 PM 17.4/R17.9.* Prepared for California Department of Transportation.

Kleinfelder. 2020. *Phase II Site Investigation Report, Option 2, SR-91 Improvement Project Between SR-57 and SR-55 Former Canal Street / Newkirk Landfill, 3400 East Frontera Street, Anaheim, California.* Prepared for California Department of Transportation.

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2.2.6 Air Quality

2.2.6.1 REGULATORY SETTING

The Federal Clean Air Act (FCAA), as amended, is the primary federal law that governs air quality while the California Clean Air Act (CCAA) is its companion state law. These laws, and related regulations by the United States Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (ARB), set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and state ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM)—which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM_{10}) and particles of 2.5 micrometers and smaller ($PM_{2.5}$)—and sulfur dioxide (SO_2). In addition, national and state standards exist for lead (Pb), and state standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety, and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under the National Environmental Policy Act (NEPA). In addition to this environmental analysis, a parallel "Conformity" requirement under the FCAA also applies.

Conformity

The conformity requirement is based on FCAA Section 176(c), which prohibits the U.S. Department of Transportation (USDOT) and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to State Implementation Plan (SIP) for attaining the NAAQS. "Transportation Conformity" applies to highway and transit projects and takes place on two levels: the regional (or planning and programming) level and the project level. The proposed project must conform at both levels to be approved.

Conformity requirements apply only in nonattainment and "maintenance" (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. U.S. EPA regulations at 40 Code of Federal Regulations (CFR) 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for NAAQS and do not apply at all for state standards regardless of the status of the area.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for CO, NO_2, O_3, PM_{10} and $PM_{2.5}$, and in some areas (although not in California), SO_2. California has nonattainment or maintenance areas for all of these transportation-related "criteria pollutants" except SO_2, and also has a nonattainment area for Pb; however, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on emission analysis of Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all transportation projects planned for a region over a period of at least 20 years (for the RTP) and 4 years (for the FTIP). RTP and FTIP conformity uses travel demand and emission models to determine whether or not the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the FCAA and the

SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA) make the determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the FCAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept and scope and the "open-to-traffic" schedule of a proposed transportation project are the same as described in the RTP and FTIP, then the proposed project meets regional conformity requirements for purposes of project-level analysis.

Project-level conformity is achieved by demonstrating that the project comes from a conforming RTP and TIP; the project has a design concept and scope[1] that has not changed significantly from those in the RTP and TIP; project analyses have used the latest planning assumptions and EPA-approved emissions models; and in PM areas, the project complies with any control measures in the SIP. Furthermore, additional analyses (known as hot-spot analyses) may be required for projects located in CO and PM nonattainment or maintenance areas to examine localized air quality impacts.

2.2.6.2 AFFECTED ENVIRONMENT

This section is based on the Air Quality Assessment prepared for the project (Michael Baker International 2018) and the Air Quality Conformity Analysis (Michael Baker International 2019).

Topography and Climate

The project site lies within the South Coast Air Basin (Basin), comprising Orange County; the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties; and the San Gorgonio Pass area of Riverside County. The South Coast Air Quality Management District (SCAQMD) is responsible for attaining state and federal ambient air quality standards in the Basin.

The Basin is characterized as having a "Mediterranean" climate (a semi-arid environment with mild winters, warm summers, and moderate rainfall). The Basin is a 6,600-square-mile area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. Its terrain and geographical location determine the distinctive climate of the Basin (i.e., a coastal plain with connecting broad valleys and low hills).

The general region lies in the semi-permanent, high-pressure zone of the eastern Pacific. As a result, the climate is mild and tempered by cool sea breezes. The climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The extent and severity of the air pollution problem in the Basin is a function of the area's natural physical characteristics (weather and topography) as well as man-made influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and/or dispersion of pollutants throughout the Basin.

The average annual temperature varies little throughout the Basin, averaging about 75 degrees Fahrenheit. However, with a less pronounced oceanic influence, the eastern inland portions of the Basin show greater variability in annual minimum and maximum temperatures. All portions of the Basin have had recorded temperatures of more than 100 degrees in recent years. January is usually the coldest month at all locations, while July and August are usually the

[1] "Design concept" means the type of facility that is proposed, such as a freeway or arterial highway. "Design scope" refers to those aspects of the project that would clearly affect capacity and thus any regional emissions analysis, such as the number of lanes and the length of the project.

hottest months of the year. Although the Basin has a semiarid climate, the air near the surface is moist because of the presence of a shallow marine layer. Except for infrequent periods when dry continental air is brought into the Basin by off-shore winds, the ocean effect is dominant. Periods with heavy fog are frequent; low stratus clouds, occasionally referred to as “high fog,” are a characteristic climate feature. Annual average relative humidity is 70% at the coast and 57% in the eastern part of the Basin. Precipitation in the Basin is typically nine to 14 inches annually and rarely in the form of snow or hail because of the typically warm weather. The frequency and amount of rainfall is greater in the coastal areas of the Basin.

Within the project vicinity, the cities of Anaheim and Orange experience fairly mild weather, with average temperatures typically ranging from 47 degrees Fahrenheit in the winter to 89 degrees Fahrenheit in the summer and from 46 degrees Fahrenheit in the winter to 85 degrees Fahrenheit in the summer, respectively. In Anaheim, on average, the warmest month is August, with a mean temperature of 89 degrees Fahrenheit, and the coolest month is generally December, with an average of 47 degrees Fahrenheit. In Orange, on average, the warmest month is August, with a mean temperature of approximately 85 degrees Fahrenheit, and the coolest month is generally December, with a mean average of 46 degrees Fahrenheit. The project vicinity experiences the greatest amount of precipitation in the month of February.

The presence and intensity of sunlight are factors in the formation of photochemical smog. Under the influence of the ultraviolet radiation of sunlight, certain original, or “primary,” pollutants (mainly reactive hydrocarbons and oxides of nitrogen [NO_X]) react to form “secondary” pollutants (primarily oxidants). Because this process is time dependent, secondary pollutants can be formed many miles downwind from the emission sources. Given the prevailing daytime winds and time-delayed nature of photochemical smog, oxidant concentrations are highest in the inland areas of Southern California.

Under ideal meteorological conditions, irrespective of topography, pollutants emitted into the air are mixed and dispersed into the upper atmosphere. However, the Southern California region frequently experiences temperature inversions in which pollutants are trapped, accumulating close to the ground. The inversion, a layer of warm, dry air overlaying cool, moist marine air, is a normal condition in the southland. The cool, damp, and hazy sea air, capped by coastal clouds, is heavier than the warm, clear air that acts as a lid through which the marine layer cannot rise. The height of the inversion is important in determining pollutant concentrations. When the inversion is approximately 2,500 feet above sea level, the sea breezes carry the pollutants inland, escaping over the mountain slopes or through the passes. At a height of 1,200 feet, the terrain prevents the pollutants from entering the upper atmosphere, resulting in settlement in the foothill communities. Below 1,200 feet, the inversion puts a tight lid on pollutants, concentrating them in a shallow layer over the entire coastal basin. Usually, inversions are lower before sunrise than they are during the daylight hours. Mixing heights for inversions are lower in the summer and more persistent, being partly responsible for the high levels of ozone observed during summer months in the Basin. Smog in Southern California is generally the result of these temperature inversions, combining with coastal day winds and local mountains to contain the pollutants for long periods of time and allowing them to form secondary pollutants by reacting with sunlight. The Basin has limited ability to disperse these pollutants because of low wind speeds. The area in which the proposed project is located has clear skies and sunshine; however, it is still susceptible to air inversions, which trap a layer of stagnant air near the ground where it is further loaded with pollutants. These inversions result in haziness, which is caused by moisture, suspended dust, and a variety of chemical aerosols emitted by trucks, automobiles, furnaces, and other sources.

Monitored Air Quality

The SCAQMD operates several air quality monitoring stations throughout the Basin. The project site is located within Source Receptor Area (SRA) 17 (Central Orange County). The communities within an SRA are expected to have similar climate and ambient air pollutant concentrations. The Anaheim – Pampas Lane Monitoring Station (ARB ID 30178; EPA AQS ID 060590007) is the closest monitoring station to the site (approximately 2.8 miles to the southwest), within SRA 17. This station monitors CO, ozone (O_3), NO_X, PM_{10}, and $PM_{2.5}$. The data collected at this station are considered to be representative of the air quality experienced on-site. Air quality data from 2012 to 2016 are provided in Table 2.2.6-1.

Table 2.2.6-1. Local Air Quality Levels at Anaheim – Pampas Lane Monitoring Station (ARB ID 30178; EPA AQS ID 060590007)

Pollutant	Primary Standard California	Primary Standard Federal	Year	Maximum Concentration[1]	Number of Days State/Federal Std. Exceeded
Carbon Monoxide (CO)[2] (1-hour)	20 ppm for 1 hour	35 ppm for 1 hour	2012 2013 2014 2015 2016	2.96 ppm 3.35 3.05 3.07 2.61	0/0 0/0 0/0 0/0 0/0
Ozone (O_3)[2] (1-hour)	0.09 ppm for 1 hour	N/A	2012 2013 2014 2015 2016	0.079 ppm 0.084 0.111 0.100 0.103	0/0 0/0 2/0 1/0 2/0
Ozone (O_3)[2] (8-hour)	0.07 ppm for 8 hours	0.070 ppm for 8 hours	2012 2013 2014 2015 2016	0.067 ppm 0.070 0.081 0.080 0.074	0/0 0/0 6/6 1/1 4/4
Nitrogen Dioxide (NO_2)[2] (1-hour)	0.18 ppm for 1 hour	0.100 ppm for 1 hour	2012 2013 2014 2015 2016	0.067 ppm 0.082 0.076 0.059 0.064	0/0 0/0 0/0 0/0 0/0
Particulate Matter (PM_{10})[2,3] (24-hour)	50 µg/m^3 for 24 hours	150 µg/m^3 for 24 hours	2012 2013 2014 2015 2016	48.0 µg/m^3 77.0 85.0 59.0 74.0	0/0 1/0 2/0 0/0 0/0
Fine Particulate Matter ($PM_{2.5}$)[2,4] (24-hour)	No Separate State Standard	35 µg/m^3 for 24 hours	2012 2013 2014 2015 2016	50.1 µg/m^3 37.8 45.0 45.8 44.4	NM/4 NM/1 NM/4 NM/3 NM/1

ppm = parts per million; PM_{10} = particulate matter 10 microns in diameter or less; µg/m^3 = micrograms per cubic meter; $PM_{2.5}$ = particulate matter 2.5 microns in diameter or less; NM = Not Measured; NA = Not Applicable

Notes:

[1] Maximum concentration is measured over the same period as the California standard.

[2] Measurements taken at the Anaheim – Pampas Lane Monitoring Station at 1630 West Pampas Lane, Anaheim, California 92802.

[3] PM_{10} exceedances are based on state thresholds established prior to amendments adopted on June 20, 2002.

[4] PM_{10} and $PM_{2.5}$ exceedances are derived from the number of samples exceeded, not days.

Source: Michael Baker International 2018

Sensitive Land Uses

Sensitive land uses are more susceptible to the effects of air pollution; these uses include schools, medical centers and similar health care facilities, child care facilities, and parks and playgrounds. A radius of 500 feet, or 150 meters, from the edge of the nearest travel lane is used to determine whether any sensitive land uses would be in the vicinity of the project. Table 2.2.6-2 lists the sensitive land uses in the vicinity of the proposed project. This includes four schools/playgrounds, one medical center/health care facility, one child care facility, and one park. These sensitive land use are also shown in Figure 2.2.6-1.

Table 2.2.6-2. Sensitive Land Uses in the Project Area

Land Use Type	Address	Distance from Edge of Pavement on SR-91 or SR-55 (feet)
Medical Center/Health Care Facility	3440 E La Palma Avenue, Anaheim	269 N
Medical Center/Health Care Facility	3460 E La Palma Avenue, Anaheim	663 N
School/Playground	3111 N Tustin Street, Orange	Adjacent W
School/Playground	5125 E Gerda Drive, Anaheim	Adjacent S
School/Playground	5001 E Gerda Drive, Anaheim	500 SE
School/Playground	1220 N State College Boulevard, Anaheim	275 S
Child Care Facility	1220 N State College Boulevard, Anaheim	275 S
Park	115 N Pinney Drive, Anaheim	Adjacent S

SR = State Route
NSEW = north, south, east, west

Attainment Status

As noted earlier, the six criteria pollutants are O_3, CO, particulate matter (PM) (including both $PM_{2.5}$ and PM_{10}), NO_2, SO_2, and lead. The primary standards for these criteria pollutants are shown in Table 2.2.6-3, along with a brief description of the health effects associated with exposures to these pollutants and the typical sources. The NAAQS are two-tiered, primarily to protect public health but secondarily to prevent degradation to the environment (e.g., impairment of visibility, damage to vegetation and property).

Air quality monitoring stations are maintained by the local air districts and state air quality agencies. Data collected at permanent monitoring stations are used by the U.S. EPA to identify regions as “attainment,” “nonattainment,” or “maintenance” areas, depending on whether the regions meet the requirements stated in the primary NAAQS. Nonattainment areas have additional restrictions, as required by the U.S. EPA. In addition, different classifications of nonattainment (e.g., marginal, moderate, serious, severe, extreme) are used to classify each air basin in the state on a pollutant-by-pollutant basis. The classifications are used as a foundation for creating air quality management strategies that improve air quality and comply with the NAAQS. In addition to listing the criteria pollutants’ primary standards, health effects, and typical sources, the Basin’s attainment status for each of the criteria pollutants is also listed in Table 2.2.6-3.

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\\PDCCITRDSGIS2\Irvine\GIS\Projects\OCTA\00000_0_SR91_Lakeview_StCollene\mapdocs\IS_EA\Figure 2.2.6-1 AQSensitive.mxd Date: 4/17/2020_25119

N

0 0.25 0.5

Miles

Source: ESRI Imagery (2016)

Legend

- Monitoring Station
- Sensitive Land Use Location
- Limits of Proposed Improvements
- City Boundary

Figure 2.2.6-1
Nearby Land Uses Sensitive to Air Quality
SR-91 Improvement Project Between SR-57 and SR-55
EA0K9800; EFIS ID 12-0002-0098; 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Table 2.2.6-3. State and Federal Criteria Air Pollutant Standards, Effects, Sources, and Attainment

Pollutant	Averaging Time	State[1] Standard	Federal[2] Standard	Principal Health and Atmospheric Effects	Typical Sources	State Project Area Attainment Status	Federal Project Area Attainment Status
Ozone (O_3)	1 hour	0.09 ppm[3]	--- [4]	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage and cancer. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include many known toxic air contaminants. Biogenic VOC may also contribute.	Low-altitude ozone is almost entirely formed from reactive organic gases/volatile organic compounds (ROGs/VOCs) and nitrogen oxides (NOx) in the presence of sunlight and heat. Common precursor emitters include motor vehicles and other internal combustion engines, solvent evaporation, boilers, furnaces, and industrial processes.	Nonattainment	Extreme Nonattainment
	8 hours	0.070 ppm	0.070 ppm (4^{th} highest in 3 years)				
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen. CO also is a minor precursor for photochemical ozone. Colorless, odorless.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.	Attainment	Attainment/Maintenance
	8 hours	9.0 ppm [1]	9 ppm				
	8 hours (Lake Tahoe)	6 ppm	---				

Pollutant	Averaging Time	State[1] Standard	Federal[2] Standard	Principal Health and Atmospheric Effects	Typical Sources	State Project Area Attainment Status	Federal Project Area Attainment Status
Respirable Particulate Matter (PM_{10})[5]	24 hours	50 µg/m^3 [3 6]	150 µg/m^3 (expected number of days above standard < or equal to 1)	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many toxic and other aerosol and solid compounds are part of PM_{10}.	Dust- and fume-producing industrial and agricultural operations; combustion smoke and vehicle exhaust; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources.	Nonattainment	Attainment/ Maintenance[7, 8]
	Annual	20 µg/m^3	---				
Fine Particulate Matter ($PM_{2.5}$)[5]	24 hours	---	35 µg/m^3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter – a toxic air contaminant – is in the $PM_{2.5}$ size range. Many toxic & other aerosol and solid compounds are part of $PM_{2.5}$.	Combustion, including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning. Also formed through atmospheric chemical and photochemical reactions involving other pollutants, including NOx, sulfur oxides (SOx), ammonia, and ROG.	Nonattainment	Serious Nonattainment
	Annual	12 µg/m^3	12.0 µg/m^3				

Pollutant	Averaging Time	State[1] Standard	Federal[2] Standard	Principal Health and Atmospheric Effects	Typical Sources	State Project Area Attainment Status	Federal Project Area Attainment Status
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm	0.100 ppm[9]	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain and nitrate contamination of stormwater. Part of the "NOx" group of ozone precursors.	Motor vehicles and other mobile or portable engines, especially diesel; refineries; industrial operations.	Attainment	Attainment/Maintenance
	Annual	0.030 ppm	0.053 ppm				
Sulfur Dioxide (SO_2)	1 hour	0.25 ppm	0.075 ppm[10] (99th percentile over 3 years)	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing; some natural sources, such as active volcanoes. Limited contribution possible from heavy-duty diesel vehicles if ultra-low sulfur fuel not used.	Attainment	Unclassified/Attainment
	3 hours	---	0.5 ppm[11]				
	24 hours	0.04 ppm	0.14 ppm (for certain areas)				
	Annual	---	0.030 ppm (for certain areas)				
Lead (Pb)[12]	Monthly	1.5 µg/m^3	---	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also a toxic air contaminant and water pollutant.	Lead-based industrial processes such as battery production and smelting, lead paint, and leaded gasoline. Aerially deposited lead from older gasoline use may exist in soils along major roads.	Attainment	Attainment
	Calendar Quarter	---	1.5 µg/m^3 (for certain areas)				
	Rolling 3-month average	---	0.15 µg/m^3 [13]				

Pollutant	Averaging Time	State[1] Standard	Federal[2] Standard	Principal Health and Atmospheric Effects	Typical Sources	State Project Area Attainment Status	Federal Project Area Attainment Status
Sulfate	24 hours	25 µg/m^3	---	Premature mortality and respiratory effects. Contributes to acid rain. Some toxic air contaminants attach to sulfate aerosol particles.	Industrial processes, refineries and oil fields, mines, natural sources like volcanic areas, salt-covered dry lakes, and large sulfide rock areas.	Attainment	N/A
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm	---	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea. Strong odor.	Industrial processes such as: refineries and oil fields, asphalt plants, livestock operations, sewage treatment plants, and mines. Some natural sources like volcanic areas and hot springs.	Unclassified	N/A
Visibility-Reducing Particles (VRP)	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70%	---	Reduces visibility. Produces haze. NOTE: Not directly related to the regional haze program under the federal Clean Air Act, which is oriented primarily toward visibility issues in national parks and other "Class I" areas. However, some issues and measurement methods are similar.	See particulate matter, above. May be related more to aerosols than to solid particles.	Unclassified	N/A
Vinyl Chloride[14]	24 hours	0.01 ppm	---	Neurological effects, liver damage, cancer. Also considered a toxic air contaminant.	Industrial processes	Unclassified	N/A

Source: Michael Baker International 2018.

[1] State standards are "not to exceed" or "not to be equaled or exceeded" unless stated otherwise.

[2] Federal standards are "not to exceed more than once a year" or as described above.

[3] ppm = parts per million

[4] Prior to 6/2005, the 1-hour ozone NAAQS was 0.12 ppm. Emission budgets for 1-hour ozone are still in use in some areas where 8-hour ozone emission budgets have not been developed, such as the S.F. Bay Area.

[5] Prior to June 2005, the 1-hour O_3 NAAQS was 0.12 ppm. Emission budgets for 1-hour O_3 are still in use in some areas where 8-hour O_3 emission budgets have not been developed. Annual $PM_{2.5}$ NAAQS tightened from 15 µg/m^3 to 12 µg/m^3 in December 2012 and secondary annual standard set at 15 µg/m^3.

[6] µg/m^3 = micrograms per cubic meter

[7] The U.S. EPA eliminated the annual PM_{10} standard in its final rule revision in October 2006.

[8] The U.S. EPA redesignated the Basin as Attainment/Maintenance on July 26, 2013.

[9] The 65 µg/m^3 $PM_{2.5}$ (24-hour) NAAQS was not revoked when the 35 µg/m^3 NAAQS was promulgated in 2006. The 15 µg/m^3 annual $PM_{2.5}$ standard was not revoked when the 12 µg/m^3 standard was promulgated in 2012. The 0.08 ppm 1997 ozone standard is revoked FOR CONFORMITY PURPOSES ONLY when area designations for the 2008 0.75 ppm standard become effective for conformity use (7/20/2013). Conformity requirements apply for all NAAQS, including revoked NAAQS, until emission budgets for newer NAAQS are found adequate, SIP amendments for the newer NAAQS are approved with a emission budget, EPA specifically revokes conformity requirements for an older standard, or the area becomes attainment/unclassified. SIP-approved emission budgets remain in force indefinitely unless explicitly replaced or eliminated by a subsequent approved SIP amendment. During the "interim" period, prior to availability of emission budgets, conformity tests may include some combination of build vs. No-Build, build vs. baseline, or compliance with prior emission budgets for the same pollutant.

[10] Final 1-hour NO_2 NAAQS published in the *Federal Register* on 2/9/2010, effective 3/9/2010. Initial area designation for California (2012) was attainment/unclassifiable throughout. Project-level hot-spot analysis requirements do not currently exist. Near-road monitoring starting in 2013 may cause re-designation to nonattainment in some areas after 2016.

[11] EPA finalized a 1-hour SO_2 standard of 75 ppb (parts per billion [thousand million]) in June 2010. Nonattainment areas have not yet been designated as of 9/2012.

[12] Secondary standard, set to protect public welfare rather than health. Conformity and environmental analysis address both primary and secondary NAAQS.

[13] The ARB has identified vinyl chloride and the particulate matter fraction of diesel exhaust as toxic air contaminants. Diesel exhaust particulate matter is part of PM_{10} and, in larger proportion, $PM_{2.5}$. Both the ARB and U.S. EPA have identified lead and various organic compounds that are precursors to ozone and $PM_{2.5}$ as toxic air contaminants. There are no exposure criteria for adverse health effect due to toxic air contaminants, and control requirements may apply at ambient concentrations below any criteria levels specified above for these pollutants or the general categories of pollutants to which they belong.

[14] Lead NAAQS are not considered in transportation conformity analysis.

Regional air quality is defined by whether the area has attained or not attained state and federal standards, as determined by monitoring. Nonattainment areas are required to prepare plans and implement measures to bring the region into attainment. As shown in Table 2.2.6-3, the Basin is an attainment or maintenance area for CO, NO_2, and SO_2 under both state and federal standards. The Basin is a nonattainment area for O_3 and $PM_{2.5}$ under both state and federal standards. The Basin is a nonattainment area for PM_{10} under state standards and maintenance area under federal standards (see Table 2.2.6-4). Table 2.2.6-4 shows the status of U.S. EPA–approved SIPs that are relevant to the proposed project, including the SIP objective and the status of budget adequacy findings by the U.S. EPA on submitted implementation plans.

Table 2.2.6-4. Status of State Implementation Plans Relevant to the Project Area

Name/Description	Status
Ozone	South Coast 1-hour NAAQS approved South Coast 1997 8-hour NAAQS approved South Coast 2008 8-hour NAAQS budgets adequate*
PM_{10}	South Coast maintenance approved*
$PM_{2.5}$	South Coast 1997 NAAQS approved South Coast 2006 annual NAAQS budgets adequate*
CO	South Coast maintenance approved*
NO_2	South Coast maintenance adequate*
SO_2	n/a
Lead	n/a

Sources: EPA 2018a, 2018b; SCAG 2016

Naturally Occurring Asbestos

Chrysotile and amphibole asbestos (such as tremolite) occur naturally in certain geologic settings in California, most commonly in association with ultramafic rocks and along associated faults. Asbestos is a known carcinogen, and inhalation of asbestos may result in the development of lung cancer or mesothelioma. ARB recently revised its asbestos limit for crushed serpentinite and ultramafic rock in surfacing applications from 5% to less than 0.25% and adopted a new rule that requires best practices dust control measures for activities that disturb rock and soil containing naturally occurring asbestos (NOA).

2.2.6.3 ENVIRONMENTAL CONSEQUENCES

Permanent Impacts

Build Alternative (Preferred Alternative)

Regional Air Quality Conformity

The proposed project is listed in the Southern California Association of Governments (SCAG) *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy Final Amendment #3* (RTP/SCS), which was adopted by SCAG on September 6, 2018 (SCAG 2018), and FHWA and FTA made a regional conformity determination finding on December 17, 2018. The project is also included in SCAG's financially constrained 2019 FTIP (State Highway Amendments 1-5), page 4. The SCAG 2019 FTIP was determined to conform by FHWA and FTA on December 17, 2018. The design concept and scope of the proposed project are consistent with the project description in the 2016 RTP/SCS, 2019 FTIP, and the "open to traffic" assumptions of the SCAG regional emissions analysis.

The amended FTIP project description is as follows:

FTIP ID ORA150110: SR-91 (SR-57 to SR-55) - ADD 1 MF LANE EB FROM 55 TO 57; ADD 1 MF LANE WB FROM GLASSELL TO STATE COLLEGE; IMPROVE INTERCHANGES AND MERGING FROM LAKEVIEW TO RAYMOND(PA&ED Phase). AUXILIARY LANES WILL BE ADDED IN CERTAIN SEGMENTS (PA&ED PHASE).

Project-Level Air Quality Conformity

As stated above, the project comes from a conforming RTP and FTIP, has a design concept and scope that have not changed significantly from those in the RTP and FTIP, project analyses have used the latest planning assumptions and U.S. EPA–approved emissions models, and the project complies with control measures in the SIP. The proposed project is within a maintenance area for federal PM_{10} standards and nonattainment area for federal $PM_{2.5}$ standards. Therefore, per 40 CFR Part 93, analyses are required for conformity purposes. However, U.S. EPA does not require hot-spot analyses (either qualitative or quantitative) for projects that are not listed in Section 93.123(b)(1) as projects of air quality concern (POAQCs). The proposed project would not be considered a POAQC. Furthermore, the proposed project was submitted to stakeholders at a Transportation Conformity Working Group (TCWG) meeting on February 28, 2017, pursuant to the interagency consultation requirement of 40 CFR 93.105 (c)(1)(i). The members of the TCWG confirmed that the proposed project would not be a POAQC. In August 2019, the FHWA issued a determination that the project would conform with the SIP in accordance with 40 CFR Part 93.

Carbon Monoxide Analysis

A CO hot-spot analysis was performed per the 1997 Transportation Project-Level Carbon Monoxide Protocol (CO Protocol), which determines whether a proposed project requires a qualitative or quantitative analysis or whether such analysis is necessary. The analysis concluded that implementation of the proposed project would reduce congestion and overall travel time as a result of improvements in vehicle hours traveled (VHT) under build conditions. The proposed improvements would accommodate future growth but would not induce additional growth in the area. The proposed project would not cause traffic volumes to increase substantially. Additionally, the proposed project would not involve parking lots and therefore would not increase the number of vehicles operating in cold-start mode. As a result, the proposed project has adequately addressed the CO impact and demonstrated that it is not anticipated to cause or contribute to any new violations of the federal CO standard. No further quantitative qualitative analysis is needed.

Particulate Matter Analysis

"Conformity," in an air quality context, is the FCAA requirement for all federal actions to conform to the letter and spirit of the SIP. The SIP is the state's plan for attaining and maintaining the NAAQS. Conformity requirements are set forth in Section 176(c) of the Clean Air Act, which is codified in 42 United States Code (USC) 7506(c). Specific criteria and procedures for carrying out the conformity process are in 40 CFR 93, Subparts A (Highways and Transit) and B (General Federal Actions). Essentially, all projects that are funded or approved by FHWA or FTA must follow the procedures and criteria specified in Subpart A. Nonattainment areas are subject to this “Transportation Conformity Rule,” which requires local transportation and air quality officials to coordinate planning and ensure that transportation projects, such as road construction, do not affect an area's ability to reach its air quality goals. This Transportation Conformity Rule specifies that projects that are not fully exempt from conformity requirements must have a project-level conformity analysis. The conformity analysis must address whether or

not the project comes from a conforming regional transportation plan and transportation improvement program or has an equivalent regional analysis in nonattainment or maintenance areas that do not have an MPO and includes hot-spot analysis and related commitments where applicable.

A hot-spot analysis is required in nonattainment and maintenance areas for CO, PM_{10}, and $PM_{2.5}$. Transportation conformity requirements become effective one year after an area is designated as nonattainment. A hot-spot analysis is required for a POAQC. The proposed project is within a maintenance area for federal PM_{10} standards and nonattainment area for federal $PM_{2.5}$ standards. Therefore, per 40 CFR Part 93, analyses are required for conformity purposes. However, U.S. EPA does not require hot-spot analyses (either qualitative or quantitative) for projects that are not listed in Section 93.123(b)(1) as POAQCs. A hot-spot analysis is defined in 40 CFR 93.101 as an estimation of likely future localized pollutant concentrations resulting from a new transportation project and a comparison of those concentrations to the relevant air quality standard. A hot-spot analysis assesses the air quality impacts on a scale smaller than an entire nonattainment or maintenance area, including, for example, congested roadway intersections and highways or transit terminals. Such an analysis is a means of demonstrating that a transportation project meets FCAA conformity requirements to support state and local air quality goals with respect to potential localized air quality impacts.

The following criteria are directly associated with 40 CFR 93.123(b)(1). The associated discussions address why the proposed project does not qualify as a POAQC:

i. New or expanded highway projects that have a significant number of or significant increase in diesel vehicles.

Table 2.2.6-5 provides the opening-year traffic volumes along each segment within the project limits. As shown in Table 2.2.6-5, existing annual average daily traffic (AADT) volumes along SR-91 range from 87,543 to 136,342, including truck volumes, which range from 5,041 to 9,957 AADT. In the opening year, SR-91 AADT would range from 94,100 to 146,900 under no-build conditions and 99,000 to 148,000 AADT under build conditions. SR-91 opening-year truck volumes would range from 5,857 to 10,598 AADT under no-build and 5,866 to 10,654 AADT under build conditions. Truck volumes along SR-91 would be between approximately 4.5% and 9.2% of the total number of vehicles on SR-91. Additionally, truck volumes would increase by an average of 2% along SR-91 within the project limits under build conditions. Truck volumes on several the SR-91 eastbound segments would increase by 5%; however, overall truck volumes on these segments would less than 10,000 AADT. The proposed improvements would not directly generate new heavy-truck trips in the project area.

Table 2.2.6-5 Existing and Opening-Year Daily Traffic Volumes

Segment	Existing Total AADT	Existing Truck AADT	Opening Year (2030) No-Build Total AADT	Opening Year (2030) No-Build Truck AADT	Opening Year (2030) Build Total AADT	Opening Year (2030) Build Truck AADT	Opening-Year Truck Percent Change
SR-91 Eastbound							
East Street On-ramp to State College Off-ramp	106,496	9,798	109,000	10,028	110,200	10,138	1%
State College On-ramp to SR-57 Off-ramp	101,837	8,860	104,900	9,126	106,900	9,587	5%
SR-57 On-ramp to Glassell Street Off-ramp	95,963	8,349	101,600	8,839	106,200	9,239	5%
Glassell Street On-ramp to Tustin Avenue Off-ramp	87,543	5,690	94,100	6,117	99,000	6,435	5%
Tustin Avenue On-ramp to SR-91/SR-55 Split	89,624	5,826	100,200	6,513	104,400	6,786	4%
SR-91/SR-55 Split to Lakeview Avenue Off-ramp	128,982	5,804	146,900	6,611	148,000	6,660	1%
Lakeview Avenue NB On-ramp to SR-90 Off-ramp	113,675	5,684	132,300	6,615	132,700	6,635	0%
SR-90 On-ramp to Fairmount Blvd (proposed) On-ramp	106,136	5,041	123,300	5,857	123,500	5,866	0%
SR-91 Westbound							
State College Blvd On-ramp to Raymond Ave Off-ramp	108,223	9,957	115,200	10,598	115,800	10,654	1%
SR-57 On-ramp to State College Blvd Off-ramp	105,753	9,201	112,800	9,814	115,800	10,075	3%
Kraemer Blvd Southbound On-ramp to SR-57 Off-ramp	104,489	9,091	110,000	9,570	113,500	9,875	3%
Tustin Ave On-ramp to Kraemer Blvd Off-ramp	97,984	6,369	100,300	6,520	103,400	6,721	3%
SR-91/SR-55 Split to Tustin Ave Off-ramp	97,529	6,339	105,600	6,864	109,400	7,111	4%
Lakeview Ave Southbound On-ramp SR-91/SR-55 Split	136,342	6,135	145,000	6,525	N/A	N/A	N/A
SR-90 On-ramp to Lakeview Ave Off-ramp	119,171	5,959	132,000	6,600	70,500	6,630	0%
Fairmount Blvd (proposed) On-ramp to SR-90 Off-ramp	113,898	5,410	128,300	6,094	76,400	6,099	0%
SR-55 Northbound							
North of Lincoln	109,188	6,551	124,300	7,458	123,800	7,428	-0.4%
SR-55 Southbound							
North of Lincoln	108,621	6,517	116,800	7,008	117,300	7,038	0.4%
SR-57 Northbound							
North of Lincoln	110,056	6,757	124,200	7,626	125,800	7,724	1%
At East La Jolla Street	129,657	7,961	142,000	8,719	144,600	8,878	2%
SR-57 Southbound							
North of Lincoln	122,165	7,501	131,600	8,080	130,900	8,037	-1%
At East La Jolla Street	125,656	7,715	133,900	8,221	134,800	8,277	1%

Source: Michael Baker International 2018

As shown in Table 2.2.6-5, existing AADT volumes along SR-57 range from 110,056 to 129,657, including truck volumes, which range from 6,757 to 7,961 AADT. In the opening year, SR-57 AADT would range from 124,200 to 142,000 under no-build conditions and 125,800 to 144,600 AADT under build conditions. SR-57 opening-year truck volumes would range from 7,626 to 8,719 AADT under no-build and 7,724 to 8,878 AADT under build conditions. Truck volumes make up approximately 6.14% of the total number of vehicles on SR-57. Additionally, truck volumes along SR-57 would increase by an average of 1% (including a decrease on one segment) under build conditions within the project limits. The proposed improvements would not directly generate new heavy-truck trips in the project area. Additionally, Table 2.2.6-5 shows that existing AADT volumes along SR-55 range from 108,621 to 109,188, including truck volumes, which range from 6,517 to 6,551 AADT. In the opening year, SR-55 AADT would range from 116,800 to 124,300 under no-build conditions and 117,300 to 123,800 AADT under build conditions. SR-55 opening-year truck volumes would range from 7,008 to 7,458 AADT under no-build conditions and 7,038 to 7,428 AADT under build conditions. The proposed improvements would not directly generate new heavy-truck trips in the project area.

Table 2.2.6-6 shows the horizon-year traffic volumes along each segment within the project limits. As shown in Table 2.2.6-6, horizon-year no-build AADT volumes would range from 96,500 to 153,900 along SR-91, including truck volumes, which would range from 6,273 to 10,838 AADT. Under build conditions, AADT along SR-91 would range from 103,400 to 155,500, and truck volumes would range from 6,194 to 10,911 AADT. For the roadway segments with truck volumes that would exceed 10,000 AADT, the increase in trucks would be less than 5%.[2] The roadway segments that would experience a change in truck volumes greater that 5% would have truck volumes of less than 10,000 AADT. Additionally, truck volumes would increase by an average of 3% along SR-91 within the project limits under build conditions. The proposed improvements would not directly generate new heavy-truck trips in the project area.

As shown in Table 2.2.6-6, below, horizon-year no-build AADT along SR-57 would range from 129,800 to 146,700 and 132,000 to 150,300 AADT under build conditions. Truck volumes along SR-57 would range from 7,970 to 9,007 AADT under no-build and from 8,105 to 9,228 AADT under build conditions. Although truck volumes would exceed 10,000 AADT on some segments along SR-57, this represents approximately 6.14% of the total number of vehicles on SR-57. Additionally, truck volumes along SR-57 would increase by an average of 1% (including a decrease on one segment) under build conditions within the project limits. The proposed improvements would not directly generate new heavy-truck trips in the project area.

The project would improve mobility, reduce congestion, and enhance operations. Proposed project improvements include freeway mainline widening and modifications to various interchanges, ramps, and intersections. As shown in Table 2.2.6-5 and discussed above, the proposed improvements would not directly generate new heavy-truck trips in the project area.

[2] A "significant Increase" in diesel vehicles is 5%, comparing Build with No-Build Alternative, per Caltrans *California Statewide PM Hot-Spot Procedures* (October 19, 2007).

Table 2.2.6-6 Horizon-Year (2050) Daily Traffic Volumes

Segment	Horizon-Year No-Build Total AADT	Horizon-Year No-Build Truck AADT	Horizon-Year Build Total AADT	Horizon-Year Build Truck AADT	Horizon-Year Truck Percent Change
SR-91 Eastbound					
East Street On-ramp to State College Off-ramp	109,900	10,111	111,500	10,258	1%
State College On-ramp to SR-57 Off-ramp	106,100	9,231	108,800	9,466	3%
SR-57 On-ramp to Glassell Street Off-ramp	103,700	9,022	110,100	9,579	6%
Glassell Street On-ramp to Tustin Avenue Off-ramp	96,500	6,273	103,400	6,721	7%
Tustin Avenue On-ramp to SR-91/SR-55 Split	104,300	6,780	110,200	7,163	6%
SR-91/SR-55 Split to Lakeview Avenue Off-ramp	153,900	6,926	155,500	6,998	1%
Lakeview Avenue NB On-ramp to SR-90 Off-ramp	139,600	6,980	140,300	7,015	1%
SR-90 On-ramp to Fairmount Blvd (proposed) On-ramp	130,100	6,180	130,400	6,194	0%
SR-91 Westbound					
State College Blvd On-ramp to Raymond Ave Off-ramp	117,800	10,838	118,600	10,911	1%
SR-57 On-ramp to State College Blvd Off-ramp	115,500	10,049	119,700	10,414	4%
Kraemer Blvd Southbound On-ramp to SR-57 Off-ramp	112,000	9,744	116,900	10,170	4%
Tustin Ave On-ramp to Kraemer Blvd Off-ramp	101,200	6,578	105,400	6,851	4%
SR-91/SR-55 Split to Tustin Ave Off-ramp	108,700	7,066	113,900	7,404	5%
Lakeview Ave Southbound On-ramp SR-91/SR-55 Split	148,300	6,674	N/A	N/A	
SR-90 On-ramp to Lakeview Ave Off-ramp	137,000	6,850	137,800	6,890	1%
Fairmount Blvd (proposed) On-ramp to SR-90 Off-ramp	133,900	6,360	134,000	6,365	0%
SR-55 Northbound					
North of Lincoln	129,800	7,970	132,000	8,105	2%
SR-55 Southbound	146,700	9,007	150,300	9,228	2%
North of Lincoln					
SR-57 Northbound	135,200	8,301	134,200	8,240	-1%
North of Lincoln	137,100	8,418	138,300	8,492	1%

Source: Michael Baker International 2018

ii. Projects affecting intersections that are at level of service (LOS) D, E, or F, with a significant number of diesel vehicles, or those that change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project.

The proposed project would not affect intersections that are at LOS D, E, or F, with a significant number of diesel vehicles. Implementation of the project would enhance traffic flow in the project area for both truck traffic and general traffic. Based on the traffic data in Table 2.2.6-5 and Table

2.2.6-6, the proposed project would not result in significant changes in traffic volume, vehicle mix, or other factors that would increase emissions.

Table 2.2.6-7 summarizes existing delay and corresponding LOS within the project area. As shown in Table 2.2.6-7, LOS would generally improve (i.e., delay would be reduced) under build conditions.

Table 2.2.6-7 Existing and Opening-Year Level of Service

Study Intersection	Existing Peak-Hour LOS AM	Existing Peak-Hour LOS PM	2030 No-Build Peak-Hour LOS AM	2030 No-Build Peak-Hour LOS PM	2030 Build Peak-Hour LOS AM	2030 Build Peak-Hour LOS PM
SR-91 WB/State College Blvd	B	B	B	B	B	B
SR-91 EB/State College Blvd	C	C	C	C	C	C
La Palma Ave/Kraemer Blvd	F	E	F	F	F	F
SR-91 WB/Kraemer Blvd	B	B	B	B	B	B
SR-91 EB/Kraemer Blvd[1]	C	E	C	C	C	C
Frontera St/Glassell St	B	B	B	B	B	A
La Palma Ave /Tustin Ave	C	D	D	E	D	E
SR-91 WB/Tustin Ave	F	F	D	D	D	D
SR-91 EB/Tustin Ave	C	C	C	C	B	B
East Riverdale Ave/Tustin Ave	C	C	C	C	C	C
East Riverdale/Lakeview Ave	C	D	D	E	D	E
SR-91 WB/Lakeview Ave	B	B	B	B	C	C
Lakeview Ave/Santa Ana Cyn Rd	E	D	F	D	D	D
SR-91 EB Off-ramp/Santa Ana Cyn Rd	B	B	B	B	B	B
Orangethorpe Ave/SR-57 NB	C	C	C	D	C	D
Orangethorpe Ave/SR-57 SB	C	D	C	D	C	D
Orangethorpe Ave/State College Blvd	C	D	C	D	C	D
State College Blvd/La Palma Ave	D	D	D	E	D	E
State College Blvd/Lincoln Ave	D	D	D	D	D	D
SR-57 NB Ramps and Lincoln Ave	C	C	C	C	C	C
SR-57 SB Ramps and Lincoln Ave	C	C	C	C	C	C
Glassell St/East Riverdale Ave	B	B	B	B	B	B
Tustin Ave/SR-55 SB Off-ramp	B	B	B	B	B	B
Tustin St/Lincoln Ave	F	F	F	F	F	F
Nohl Ranch Rd/Santiago Blvd/Lincoln Ave	D	C	D	C	D	C
Santiago Blvd/SR-55 NB Ramps	C	C	C	C	C	C
La Palma Ave/Lakeview Ave	C	D	C	D	C	D
Imperial Hwy/La Palma Ave	D	D	E	E	E	E
Imperial Hwy/SR-91 WB Ramps	B	B	B	B	B	B
Imperial Hwy/SR-91 EB Ramps	B	B	B	C	B	C
Imperial Hwy/Santa Ana Cyn Rd	D	E	E	F	E	E
Lakeview Ave/WB On-ramp to SR-55[2]	F	N/A[2]	N/A[2]	N/A[2]	B	B

Notes [Table 2.2.6-7]:
Bold = Exceeds LOS D threshold
NB = northbound; SB = southbound; EB = eastbound; WB = westbound
1. Stop-controlled intersection (existing), Signalized (No-Build and Build).
2. Build scenario only.

Table 2.2.6-8 summarizes the horizon-year delay and corresponding LOS within the project area. As shown in Table 2.2.6-8, LOS would generally improve (i.e., delay would be reduced) under build conditions.

Table 2.2.6-8 Horizon-Year (2050) Level of Service

Study Intersection	2050 No-Build Peak-Hour LOS AM	2050 No-Build Peak-Hour LOS PM	2050 Build Peak-Hour LOS AM	2050 Build Peak-Hour LOS PM
SR-91 WB/State College Blvd	B	B	B	B
SR-91 EB/State College Blvd	C	C	C	C
La Palma Ave/Kraemer Blvd	F	F	F	F
SR-91 WB/Kraemer Blvd	C	B	C	B
SR-91 EB/Kraemer Blvd[1]	C	C	C	C
Frontera St/Glassell St	B	A	B	A
La Palma Ave /Tustin Ave	D	E	D	E
SR-91 WB/Tustin Ave	E	D	E	D
SR-91 EB/Tustin Ave	C	C	B	B
East Riverdale Ave/Tustin Ave	C	C	C	C
East Riverdale/Lakeview Ave	D	E	E	E
SR-91 WB/Lakeview Ave	B	C	C	C
Lakeview Ave/Santa Ana Cyn Rd	F	D	D	D
SR-91 EB Off-ramp/Santa Ana Cyn Rd	B	B	C	B
Orangethorpe Ave/SR-57 NB	C	D	C	D
Orangethorpe Ave/SR-57 SB	C	D	C	D
Orangethorpe Ave/State College Blvd	C	E	C	D
State College Blvd/La Palma Ave	D	E	D	E
State College Blvd/Lincoln Ave	D	E	D	D
SR-57 NB Ramps and Lincoln Ave	C	C	C	C
SR-57 SB Ramps and Lincoln Ave	C	C	C	C
Glassell St/East Riverdale Ave	B	C	B	B
Tustin Ave/SR-55 SB Off-ramp	B	B	B	B
Tustin St/Lincoln Ave	F	F	F	F
Nohl Ranch Rd/Santiago Blvd/Lincoln Ave	E	C	D	C
Santiago Blvd/SR-55 NB Ramps	C	C	C	C
La Palma Ave/Lakeview Ave	C	C	C	C
Imperial Hwy/La Palma Ave	E	E	E	E
Imperial Hwy/SR-91 WB Ramps	B	B	B	B
Imperial Hwy/SR-91 EB Ramps	B	C	B	C
Imperial Hwy/Santa Ana Cyn Rd	E	F	E	F
Lakeview Ave/WB On-ramp to SR-55[2]	N/A[2]	N/A[2]	B	B

Notes:
Bold = Exceeds LOS D threshold.
NB = northbound; SB = southbound; EB = eastbound; WB = westbound
1. Stop-controlled intersection (existing), Signalized (No-Build and Build).
2. Build scenario only.

iii. New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location.

The proposed project does not involve new bus or rail terminals or transfer points with a significant number of diesel vehicles congregating at a single location. The proposed project would enhance traffic flow in the project area for both truck traffic and general traffic.

iv. Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location.

The proposed project does not involve expanded bus or rail terminals or transfer points with a significant number of diesel vehicles congregating at a single location. As stated above, the proposed project involves a freeway widening project.

v. Projects in or affecting locations, areas, or categories of sites that are identified in the applicable PM2.5 or PM10 implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

The proposed project is consistent with the SCAG RTP and FTIP (RTP ID 2M0736 and FTIP ID ORA150110) and intended to meet the traffic needs in the area, based on local land use plans.

U.S. EPA's March 2006 guidance document*, Transportation Guidance for Qualitative Hot-spot Analysis in PM2.5 and PM10 Nonattainment and Maintenance Areas*, references two-step criteria for identifying "a significant volume of diesel truck traffic." The first criterion concerns facilities with average daily traffic (ADT) volumes of more than 125,000. If the first criterion is met, the second criterion is that 8% or more of the traffic volume (i.e., 10,000 vehicles or more) is diesel truck traffic. As discussed above, the project would not generate diesel truck trips directly. The added capacity would represent a 2% average increase in the total number of vehicles on SR-91 and 1% on SR-57.

As demonstrated above, the proposed project would not involve a significant amount of diesel truck traffic, because truck volumes would be approximately 2% of the total number of vehicles on SR-91 and 1% on SR- 57, which is in compliance with the RTP/FTIP. Additionally, the proposed project would improve overall performance, reduce congestion, increase ramp and mainline capacity, and improve traffic circulation within the project limits. Therefore, the project meets Clean Air Act requirements and is not a POAQC under 40 CFR 93.123(b)(1). It would not cause or contribute to a violation of the NAAQS for $PM_{2.5}$. Thus, this project would not be considered a POAQC under 40 CFR 93.123(b)(1).

FHWA has assigned its NEPA responsibilities to Caltrans for highway projects. There are two forms of assignment: 23 USC 326, which covers most categorical exclusion (CE) determinations, and 23 USC 327, the broader NEPA assignment program. Projects covered under 23 USC 326 are processed using certain NEPA CEs only, and the conformity determination is made along with NEPA approval by Caltrans. Projects covered under 23 USC 327 may include some that use a NEPA CE and all that use a higher level document, leading to a Finding of No Significant Impact (FONSI) or Record of Decision (ROD). Projects under 23 USC 327 require a conformity determination from FHWA, although all other NEPA-related actions are assigned to Caltrans. The proposed project is being processed under 23 USC 327. It should be noted that 23 USC 326 and 23 USC 327 were codified by the Surface Transportation Reauthorization Act, MAP-21.

Projects that are approved under MAP-21 must include evidence in the project file that one of the three following situations applies:

1. Conformity Does Not Apply to the Project Area. This would be true if the project area was an "attainment/unclassifiable" area for all NAAQS (i.e., it has never been a nonattainment area for any of the current NAAQS). As of April 2016, conformity does not apply in any part of District 1; however, conformity does apply in some parts of District 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12. The official source of area designation information is U.S. EPA's "Green Book" and the area designation regulations at 40 CFR 81.305, California.
2. The Project Is Exempt from All Conformity Analysis Requirements. This would be true if the project fits one of the categories listed in Table 2 of the conformity regulations at 40 CFR 93.126 or is a signal synchronization project, using only existing signals covered by 40 CFR 93.128. In areas subject to conformity requirements, these projects do not require a project-level analysis or conformity determination. If the project area is designated an "attainment/unclassifiable" area for CO, PM10, and PM2.5, or if the project type is listed in Table 3 of the conformity rule at 40 CFR 93.127, the project would also be considered exempt from conformity analysis requirements.
3. The Project Is Subject to Project-level Conformity Analysis Requirements and Meets the Criteria for a Conformity Determination. This is true if all relevant conformity procedures have been completed, including interagency consultation if a PM hot-spot analysis (including finding that the project is not a POAQC for PM_{10} or $PM_{2.5}$) is needed, and the project is found to meet all hot-spot and regional (if applicable) conformity criteria.

The proposed project is within the South Coast Air Basin, which is a federally designated nonattainment area for O_3 and $PM_{2.5}$ and a maintenance area for PM10; thus, Situation 1 would not apply. Table 2 of 40 CFR 93.126 describes projects that are exempt from the requirement to determine conformity. Such projects may proceed toward implementation, even in the absence of a conforming transportation plan and FTIP. The proposed project does not fall under any of the classifications outlined under Table 2; thus, Situation 2 would not apply.

Situation 3 requires interagency consultation to meet all hot-spot conformity criteria. The proposed project was submitted to stakeholders at a TCWG meeting on February 28, 2017, pursuant to the interagency consultation requirement of 40 CFR 93.105 (c)(1)(i). U.S. EPA, ARB, SCAQMD, and other interagency consultation participants concurred that the project is not a POAQC. The project would not add diesel truck capacity or be a major truck traffic generator. Diesel heavy-truck traffic would increase by a maximum of 2% on SR-91 within the project limits (refer to Appendix E [FHWA Air Quality Conformity Determination]). Therefore, the proposed project would not be considered a POAQC under 40 CFR 93.126 because it would not create a new or worsen an existing $PM_{2.5}$ violation.

On July 16, 2019, Caltrans submitted a request to FHWA for a project level conformity determination for the project. In a letter dated August 8, 2019, FHWA wrote that the SR-91 Improvement Project was found to conform with the State Implementation Plan (SIP) in accordance with 40 CFR Part 93. This letter is provided in Chapter 4, Comments and Coordination.

Regional Emissions – Mobile Sources

Existing, opening-year, and horizon-year emissions in the project area were calculated using emissions factors from the latest version of CT-EMFAC (version 6.0). CT-EMFAC was first developed by University of California, Davis, with support from Caltrans and ARB. Versions 3.0 and later were developed by Sonoma Technology, with permission from the University of

California, Davis and support from Caltrans and the San Diego Association of Governments. The five-mile-per-hour (mph) VMT speed bin data provided by System Metrics Group include project study area VMT for the following categories: freeway mainline, ramps, arterials, and high-occupancy vehicle [HOV] lanes. Each category contains VMT from a range of 0 to 75 mph for the AM hour, PM hour, midday period, and night period. Each VMT speed bin value was multiplied by emissions factors from CT-EMFAC, AP-42 (re-entrained dust emissions), and EMFAC2014 (brake and tire wear emissions), then added together to get the total for each pollutant (reactive organic gases [ROG], NO_X, CO, PM_{10}, and $PM_{2.5}$). Emissions factors are in grams per day, which were converted to pounds per day (453.59 grams per pound). After individual speed bin emissions were calculated, the totals from each category were added to find total pounds per day.

Daily mobile-source emissions in the study area are provided in Table 2.2.6-9, which shows emissions that occur from vehicles on SR-91, SR-57, and SR-55 mainlines; HOV lanes; ramps; and arterials in the surrounding area/project study area. As indicated in Table 2.2.6-9, ROG, NO_X, and CO emissions would decrease in future years, despite anticipated increases in VMT from growth. These decreases are attributed to improvements in vehicle emissions over time. PM emissions (both PM_{10} and $PM_{2.5}$) would increase only slightly, despite a significant increase in VMT compared with existing conditions.

PM emissions are composed of exhaust, particles from brake and tire wear, and re-entrained road dust. Exhaust emissions will decrease in the future with improvements in engine and emission control technologies; however, re-entrained road dust emissions represent a higher fraction of PM. As such, PM emissions are a stronger function of VMT and vehicle distribution.

The build scenario would add capacity and result in increased VMT. The combination of the two effects would result in nominal increases in regional PM emissions (ranging from 0.17% to 0.50%), as shown in Table 2.2.6-9. Additionally, as depicted in Table 2.2.6-9, emissions associated with the future build scenarios would be lower than existing emissions of ROG, NO_X, and CO. The reduction would be due to future vehicle emissions improvements and fleet turnover. The increased PM_{10} and $PM_{2.5}$ emissions would be due to re-entrained dust, break wear, and tire wear associated with increased VMT. However, as described above, a PM_{10} and $PM_{2.5}$ hot-spot analysis has been conducted, which determined that the project would not cause or contribute to any new localized PM_{10} and $PM_{2.5}$ violations, increase the frequency or severity of any existing violations, or delay timely attainment of the PM_{10} and $PM_{2.5}$ NAAQS.

Table 2.2.6-9 Study Area Daily Vehicle Emissions

Emissions Source	Daily Vehicle Miles Traveled	Pounds per Day ROG	Pounds per Day NOx	Pounds per Day CO	Pounds per Day PM10	Pounds per Day PM2.5
Existing Conditions	9,075,756	796	5,899	20,860	1,578	447
Opening Year (2030) Emissions						
2030 No-Build Scenario	9,783,990	319	1,268	8,095	1,993	515
2030 Build Scenario	9,802,818	320	1,271	8,112	2,000	517
- Net Change from Existing	727,062	-476	-4,628	-12,748	422	70
- Percent Change from Existing	8.0%	-59.8%	-78.5%	-61.1%	26.7%	15.7%
- Net Change from No-Build to Build	18,828	1.35	3.07	17.04	7.19	1.87
- Percent Change from 2030 No-Build Scenario	0.19%	0.42%	0.24%	0.21%	0.36%	0.36%

Emissions Source	Daily Vehicle Miles Traveled	Pounds per Day ROG	Pounds per Day NO_x	Pounds per Day CO	Pounds per Day PM_{10}	Pounds per Day $PM_{2.5}$
Horizon Year (2050) Emissions						
2050 No-Build Scenario	10,782,554	302	921	6,710	2,188	557
2050 Build Scenario	10,807,917	304	923	6,729	2,198	560
- Net Change from Existing	1,732,161	-492	-4,976	-14,131	620	113
- Percent Change from Existing	19.1%	-61.8%	-84.4%	-67.7%	39.3%	25.3%
- Net Change from No-Build to Build	25,363	1.53	1.57	18.57	9.61	2.45
- Percent Change from 2050 No-Build Scenario	0.23%	0.50%	0.17%	0.28%	0.44%	0.44%

Source: Michael Baker International 2018

Aerially Deposited Lead

Elevated concentrations of lead (from use of leaded gasoline) and other metals are sometimes associated with older roadways. Based on a review of historical sources, SR-91, SR-57, and the SR-91/SR-55 interchange were constructed in the 1960s, 1970s, and 1960s, respectively. The potential exists for aerially deposited lead (ADL) to be present in soil in unpaved areas along these highways (Kleinfelder 2018). Soil sampling for the presence of ADL should be performed in unpaved locations within the project limits prior to construction activities. In case ADL is present, the proposed project would comply with the ADL monitoring and mitigation requirements of Caltrans' Standard Specifications and Standard Special Provisions.

Mobile-Source Air Toxics

In addition to criteria air pollutants, for which there are the NAAQS, U.S. EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries). Mobile-source air toxics (MSATs) are a subset of the 188 air toxics defined by the FCAA. MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

The proposed project would improve vehicular traffic and circulation but would not create a facility that would be likely to meaningfully increase MSATs, because the project would not add a substantial level of new vehicular capacity to the freeway mainline. However, the proposed project involves traffic volumes where ADT is greater than 150,000. As a result, a quantitative analysis for the project's MSAT effects was provided.

The project would not result in a significant increase in truck ADT between the no-build and build scenarios. The project would not involve a truck route, add diesel truck capacity, or be a major truck traffic generator. Additionally, MSAT emissions under the build scenario would be offset somewhat compared with the no-build scenario because of traffic flow improvements. According to the EMFAC model, emissions of all priority MSATs (with the exception of diesel PM) decrease as speed increases. The extent to which the speed-related emissions decreases offset MSATs cannot be reliably projected because of inherent deficiencies in the technical models. Additionally, emissions would most likely be lower than present levels in the design year as a result of U.S. EPA's national control programs, which are projected to reduce annual MSAT emissions by 90% between 2010 and 2050 (*Updated Interim Guidance on Mobile-Source*

Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the U.S. EPA–projected reduction would be so great (even after accounting for VMT growth) that MSAT emissions in the study area would most likely be lower in the future in nearly all cases.

Table 2.2.6-10 and Table 2.2.6-11 provide MSAT emissions under existing, no-build, and build conditions for the opening year and horizon year. Overall, MSAT emissions under the build scenario would increase by less than 1% in the study area compared with the no-build scenario. However, MSAT build scenario emissions would improve by an average of 67% compared with existing conditions.

Table 2.2.6-10. 2030 MSAT Emissions

Toxic Air Contaminant	Existing Emissions (lbs/day)	2030 No-Build Emissions (lbs/day)	2030 Build Emissions (lbs/day)	2030 Build Existing Percent Change	2030 Build No-Build Percent Change
Benzene	28.56	10.70	10.74	-62.39%	0.43%
Acrolein	1.33	0.49	0.49	-62.84%	0.51%
Acetaldehyde	18.86	6.76	6.77	-64.14%	0.14%
Formaldehyde	46.89	16.97	17.00	-63.74%	0.21%
Butadiene	6.07	2.28	2.29	-62.26%	0.47%
Naphthalene	0.83	0.31	0.32	-61.85%	0.43%
POM	1.25	0.41	0.42	-66.81%	0.40%
Diesel PM	72.51	5.35	5.37	-92.60%	0.32%
DEOG	194.14	68.24	68.24	-64.85%	0.01%

POM = polycyclic organic matter; PM = particulate matter; DEOG = diesel exhaust organic gas
Source: Michael Baker International 2018

Table 2.2.6-11. 2050 MSAT Emissions

Toxic Air Contaminant	Existing Emissions (lbs/day)	2050 No-Build Emissions (lbs/day)	2050 Build Emissions (lbs/day)	2050 Build Existing Percent Change	2050 Build No-Build Percent Change
Benzene	28.56	10.22	10.27	-64.05%	0.52%
Acrolein	1.33	0.47	0.47	-64.51%	0.63%
Acetaldehyde	18.86	6.83	6.84	-63.76%	0.07%
Formaldehyde	46.89	16.87	16.90	-63.95%	0.17%
Butadiene	6.07	2.18	2.19	-63.91%	0.57%
Naphthalene	0.83	0.31	0.31	-62.26%	0.50%
POM	1.25	0.35	0.35	-71.80%	0.43%
Diesel PM	72.51	4.33	4.34	-94.02%	0.29%
DEOG	194.14	69.31	69.23	-64.34%	-0.12%

POM = polycyclic organic matter; PM = particulate matter; DEOG = diesel exhaust organic gas
Source: Michael Baker International 2018

No-Build Alternative

No alterations to the existing roadway would occur under the No-Build Alternative; therefore, no improvements in traffic operations within the project study area would occur. Relative to existing conditions, under the No-Build Alternative, daily VMT would increase, vehicle emissions of PM_{10} and $PM_{2.5}$ would increase, and vehicle emissions of ROG, NO_X, and CO would decrease.

Decreases in ROG, NO_X, and CO emissions can be attributed to improvements in vehicle emissions over time. PM emissions (both PM_{10} and $PM_{2.5}$) would increase only slightly, despite the significant increase in VMT compared with existing conditions.

PM emissions are composed of exhaust, particles from brake and tire wear, and re-entrained road dust. Exhaust emissions will decrease in the future with improvements in engine and emission control technologies; however, re-entrained road dust emissions represent a higher fraction of PM. As such, PM emissions are a stronger function of VMT and vehicle distribution.

Relative to existing conditions, all MSAT emissions would decrease under the No-Build Alternative in both 2030 and 2050. However, the No-Build Alternative could be inconsistent with regional plans and programs, such as the 2016–2040 RTP/SCS and 2019 FTIP, because the project would not be constructed as approved in the RTP for the area.

2.2.6.4 TEMPORARY IMPACTS

Build Alternative (Preferred Alternative)

Construction Air Quality Conformity

Construction activities would not last for more than five years at one general location. Therefore, construction-related emissions would not need to be included in regional and project-level conformity analysis (40 CFR 93.123(c)(5)).

Construction Emissions

Short-term impacts on air quality would occur during demolition, grading/trenching, new pavement construction, and the restriping phase. Construction of the proposed project is anticipated to commence in 2026 and be completed in 2030. Construction activities would not last for more than five years at one general location. Therefore, construction-related emissions would not need to be included in regional and project-level conformity analysis (40 CFR 93.123(c)(5)).

Temporary emissions would include ROG, CO, NO_X, PM_{10}, and $PM_{2.5}$. Stationary or mobile powered on-site construction equipment typically includes trucks, tractors, signal boards, excavators, backhoes, concrete saws, crushing and/or processing equipment, graders, scrapers, trenchers, pavers, and other paving equipment. Based on the number of daily work trips required for project construction, construction workers' trips are not anticipated to significantly contribute to or affect traffic flow on local roadways and therefore are not considered significant. During the demolition phase, some asphalt concrete pavement and curbs and gutters would have to be removed.

Table 2.2.6-12 provides estimated daily emissions associated with each construction phase. The emissions estimations, which are based on the assumptions described above, relied on the Roadway Construction Emissions Model (Version 8.1.0) developed by the Sacramento Metropolitan Air Quality Management District (SMAQMD). Limited detailed construction information was available at the time of this analysis; therefore, the emissions modeling is based on a conservative assumption of 200 cubic yards of earthwork per day. It should be noted that 200 cubic yards per day is the maximum amount; on most days, the amount would be less.

Table 2.2.6-12. Estimated Daily Construction Emissions

Construction Phase	Pollutant (pounds/day)[1] ROG	Pollutant (pounds/day)[1] CO	Pollutant (pounds/day)[1] NO_X	Pollutant (pounds/day)[1] $PM10^{2, 3}$	Pollutant (pounds/day)[1] $PM2.5^{2, 3}$
Grubbing/Land Clearing	1.93	15.85	16.20	15.78	3.77
Grading/Excavation	6.03	55.78	56.44	17.71	5.51
Drainage/Utilities/Sub-Grade	3.67	36.42	30.47	16.46	4.44
Paving	1.98	22.43	15.48	0.78	0.67
Maximum	6.03	55.78	56.44	17.71	5.51

ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; PM_{10} = particulate matter up to 10 microns; $PM_{2.5}$ = particulate matter up to 2.5 microns

Notes:

[1] Emissions were calculated using the Roadway Construction Emissions Model (RCEM) (Version 8.1.0) developed by the Sacramento Metropolitan Air Quality Management District (SMAQMD).

[2] PM_{10} and $PM_{2.5}$ estimates assume control of fugitive dust from watering and associated dust control measures.

[3] Emissions include the sum of exhaust and fugitive dust.

As described in **PF AQ-1**, all construction vehicles and equipment would be required to be equipped with state-mandated emission control devices, pursuant to state emissions regulations and standard construction practices. After construction of the proposed project is complete, all construction-related impacts would cease. Short-term construction PM emissions would be further reduced with implementation of required dust suppression measures, as outlined in SCAQMD Rules 402 and 403. Caltrans Standard Specifications for Construction (Sections 10-5 [Dust Control] and 14-9.02 [Air Pollution Control]) would also be adhered to. Therefore, project construction would not violate state or federal air quality standards or contribute to existing air quality violations in the Basin.

PF AQ-1 Include measures to meet the requirements of SCAQMD Rules 402 (Nuisance) and 403 (Fugitive Dust).

PF AQ-2 The contractor shall adhere to Caltrans Standard Specifications for Construction (2018), Sections 14-9.02 (Air Pollution Control) and 10-5 (Dust Control).

Naturally Occurring Asbestos

According to the California Geological Survey (formerly the California Division of Mines and Geology [CDMG]) document entitled *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos Report* (August 2000), the proposed project is not located in an area where NOA is likely to be present. NOA in bedrock is typically associated with serpentine and peridotite deposits. Note that during demolition activities, the likelihood of encountering structural asbestos is low because of the nature of the demolished materials. The material would consist primarily of concrete. Therefore, the potential for NOA to be present within the project limits is considered low. Furthermore, prior to the commencement of construction, qualified geologists would further examine the soils and the existing structure. Should the project geologist encounter asbestos during the analysis, proper steps would be executed to handle the materials.

No-Build Alternative

The No-Build Alternative would not result in the construction of any improvements to SR-91 in the project area and, therefore, would not result in temporary impacts on air quality.

2.2.6.5 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The project would not produce substantial operational air quality impacts; therefore, no operational avoidance, minimization, and/or mitigation measures are required. The project features/standardized measures will include methods to address potential short-term (construction) impacts; therefore no additional avoidance, minimization, or mitigation measures are required.

2.2.6.6 CLIMATE CHANGE

Neither the United States Environmental Protection Agency (U.S. EPA) nor the Federal Highway Administration (FHWA) has issued explicit guidance or methods to conduct project-level greenhouse gas analysis. FHWA emphasizes concepts of resilience and sustainability in highway planning, project development, design, operations, and maintenance. Because there have been requirements set forth in California legislation and executive orders on climate change, the issue is addressed in the California Environmental Quality Act (CEQA) chapter of this document. The CEQA analysis may be used to inform the National Environmental Policy Act (NEPA) determination for the project.

2.2.6.7 REFERENCES

California Department of Transportation (Caltrans). 2015. Standard Specifications for Construction.

Federal Highway Administration. 2016. Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents.

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Southern California Association of Governments (SCAG). 2016. RTP Amendment #2 (p. 26). Available: http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS_amend02.pdf.

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2.2.7 Noise and Vibration

The primary sources used in preparation of this section are the *State Route 91 Improvement Project between State Route 57 and State Route 55 Noise Study Report* (NSR), July 2018 (ICF); the *Noise Abatement Decision Report* (NADR), September 2018 (ICF); the *Supplemental Noise Study Report*, June 2019 (ICF); and the *Supplemental Noise Abatement Decision Report*, June 2019 (ICF).

2.2.7.1 REGULATORY SETTING

The National Environmental Policy Act (NEPA) of 1969 and the California Environmental Quality Act (CEQA) provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and foster a healthy environment. The requirements for noise analysis, as well as consideration of noise abatement and/or mitigation, differ between NEPA and CEQA.

California Environmental Quality Act

CEQA requires a strictly baseline analysis versus a build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project, unless those measures are not feasible.

The rest of this section will focus on the NEPA/23 Code of Federal Regulations (CFR) Part 772 noise analysis; please see Chapter 3 of this document for further information on noise analysis under CEQA.

National Environmental Policy Act and 23 CFR 772

For highway transportation projects with Federal Highway Administration (FHWA) involvement (and Caltrans, as assigned), the Federal-Aid Highway Act of 1970 and its implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design phase of a highway project. The regulations include noise abatement criteria (NAC), which are used to determine when a noise impact will occur. The NAC differ, depending on the type of land use under analysis. For example, the NAC for residences (67 A-weighted decibels [dBA]) is lower than the NAC for commercial areas (72 dBA). Table 2.2.7-1 lists the NAC for use in the NEPA/23 CFR 772 analysis.

Table 2.2.7-1. Activity Categories and Noise Abatement Criteria

Activity Category	NAC, Hourly A-Weighted Noise Level, $L_{eq}(h)$[1]	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance, and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[2]	67 (Exterior)	Residential.
C[2]	67 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in activity categories A through D or F.
F	No NAC—reporting only	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical, etc.), and warehousing.
G	No NAC—reporting only	Undeveloped lands that are not permitted.

1. The 1-hour equivalent sound level (L_{eq}[h]) activity criteria values are for impact determination only and are not design standards for noise abatement measures. All values are A-weighted decibels (dBA).
2. Includes undeveloped lands permitted for this activity category.

Figure 2.2.7-1 lists the noise levels of common activities so readers can compare the actual and predicted highway noise levels discussed in this section with common activities.

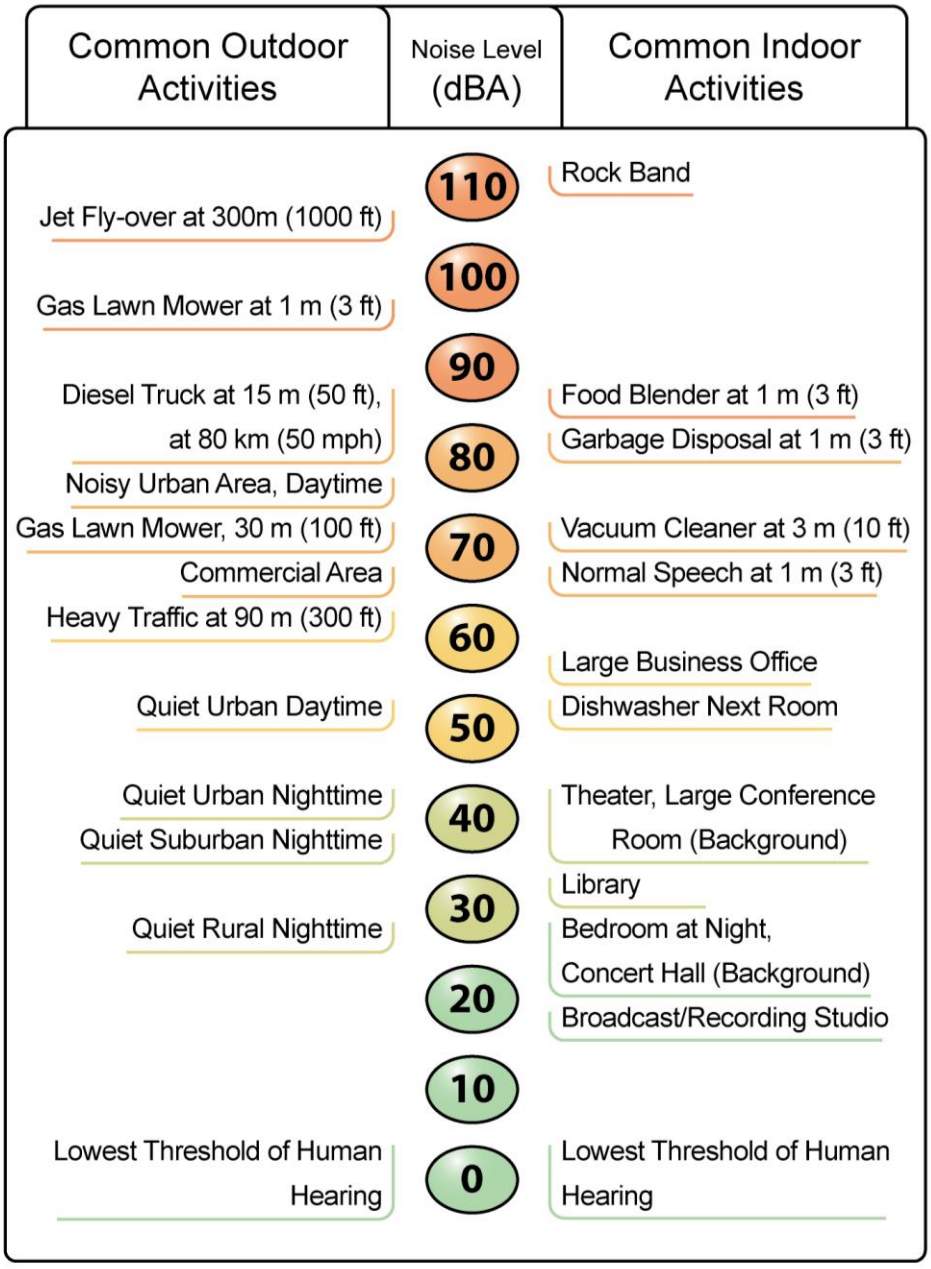


Figure 2.2.7-1. Noise Levels of Common Activities

According to the Department's *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects,* May 2011, a noise impact occurs when the predicted future noise level with the project substantially exceeds the existing noise level (defined as a 12 dBA or more) or when the future noise level with the project approaches or exceeds the NAC. A noise level is considered to approach the NAC if it is within 1 dBA of the NAC.

If it is determined that a project will have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that would most likely be incorporated in the project.

The Department's *Traffic Noise Analysis Protocol* sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. Noise abatement must be predicted to reduce noise by at least 5 dB at an affected receptor to be considered feasible from an acoustical perspective. It must also be possible to design and construct the noise abatement measure for it to be considered feasible. Factors that affect the design and constructability of noise abatement include, but are not limited to, safety, barrier height, topography, drainage, access requirements for driveways, presence of local cross streets, underground utilities, other noise sources in the area, and maintenance of the abatement measure. The overall reasonableness of noise abatement is determined by the following three factors: 1) the noise reduction design goal of 7 dB at one or more affected receptors; 2) the cost of noise abatement; and 3) the viewpoints of benefited receptors (including property owners and residents of the benefited receptors).

2.2.7.2 AFFECTED ENVIRONMENT

This section is based on the analysis and findings presented in the following technical studies:

- Noise Study Report (July 17, 2018)
- Noise Abatement Decision Report (September 10, 2018)
- Supplemental Noise Study Report (June 26, 2019)
- Supplemental Noise Abatement Decision Report (June 26, 2019)

A field investigation was conducted to identify land uses that could be subject to traffic and construction noise impacts from the project. Land uses in the project area were categorized according to land use type, the extent of frequent human use, and activity category, as defined in Table 2.2.7-1. Although all land uses were evaluated in this analysis, as stated in the Traffic Noise Analysis Protocol, the focus of this impact analysis was on locations of frequent human use that would benefit from a lowered noise level, specifically, locations with defined outdoor activity areas.

Land uses along the project alignment consist mainly of residential uses (Activity Category B [67 dBA $L_{eq}(h)$]), offices and commercial uses (Activity Category E), and industrial uses (Activity Category F). Other land uses include schools, hotels, active recreation areas, and amusement parks (Activity Category C [67 dBA $L_{eq}(h)$]). Although all developed land uses were considered in this analysis, noise abatement was considered only for areas of frequent human use that would benefit from a lowered noise level. Accordingly, this impact analysis focuses on locations with defined outdoor activity areas, such as residences and recreational areas.

Because of the size of the project area, the existing- and design-year no-build and build alignments were divided into 13 analysis areas:

- **Area A** encompasses the far northeast neighborhood between Lakeview Avenue, State Route (SR) 91, and the Santa Ana River. This area is primarily a single- and multi-family

residential area (Activity Category B) and currently developed with noise and property-line barriers, ranging from 6 to 14 feet in height, along westbound (WB) SR-91 and the WB exit to Lakeview Avenue. Modeled receivers M-1 through M-24 are in this area.

- **Area B** encompasses the far southeast neighborhood between Lakeview Avenue, SR-91, and Santa Ana Canyon Road. This area is a primarily single-family residential area but does include a school (Activity Categories B and C, respectively). It is currently developed with noise and property-line barriers, ranging from 6 to 16 feet in height, along eastbound (EB) SR-91 and the EB SR-91 on-ramp from northbound (NB) Lakeview Avenue. Modeled receivers M-25 through M-43 are in this area.
- **Area C** encompasses a large area between Tustin Avenue, Lakeview Avenue, and SR-91. This area is primarily a single-family residential area but does include a school and some commercial uses (Activity Categories B, C, and F). It is currently developed with noise and property-line barriers, ranging from 6 to 18 feet in height, along the WB SR-91 and the NB SR-55 connector to WB SR-91. Modeled receivers M-44 through M-91 and M-159 are in this area.
- **Area D** encompasses the entire area southeast of the SR-55 and SR-91 interchange and Santa Ana Canyon Road. This area is primarily a single-family residential area (Activity Category B). It is currently developed with noise and property-line barriers, ranging from 6 to 16 feet in height, along NB SR-55 and EB SR-91. Modeled receivers M-92 through M-130 are in this area.
- **Area E** encompasses the area southwest of SR-91 between SR-55 and Tustin Avenue. This area is primarily a single- and multi-family residential area but does include some commercial and industrial uses (Activity Categories B, F, and G). It is currently developed with noise and property-line barriers, ranging from 4 to 14 feet in height, along EB SR-91 and the EB SR-91 connector to southbound (SB) SR-55. Modeled receivers M-131 through M-158 are in this area.
- **Area F** encompasses the area north of SR-91 between the SR-91 and Glassell Street interchange, La Palma Avenue, and Tustin Avenue. This area is developed with primarily commercial, hotel, medical, and amusement park uses (Activity Categories C, D, and F). It is not currently developed with any noise barriers. Modeled receivers M-160 through M-162 and M-164 through M-178 are in this area.
- **Area G** encompasses the area south of SR-91 between the SR-91 and Glassell Street interchange, Tustin Avenue, and the Santa Ana River. This area is developed with primarily industrial and hotel uses (Activity Category F). It is not currently developed with any noise barriers. Modeled receivers M-163, M-179, and M-180 are in this area.
- **Area H** encompasses a large area north of SR-91 between SR-57 and the SR-91 and Glassell Street interchange. This area is developed with primarily industrial uses (Activity Category F). Two noise-sensitive land uses were modeled in this area, a homeless shelter (Activity Category D) and an outdoor seating area (Activity Category C). Both of these locations are on the same property. Area H is not currently developed with any noise barriers. Modeled receivers M-181 through M-188 are in this area.
- **Area I** encompasses a large area south of SR-91 between SR-57 and the SR-91 and Glassell Street interchange. This area is primarily a single- and multi-family residential area (Activity Categories B and F). It is currently developed with noise and property-line barriers, ranging from 8 to 16 feet in height, along NB SR-57, EB SR-91, and the NB SR-57 connector to EB SR-91. Modeled receivers M-189 through M-239 are in this area.

- **Area J** encompasses the area northwest of the SR-57 and SR-91 interchange between Placentia Avenue and La Jolla Street. This area is primarily a multi-family residential area but does include commercial and industrial uses (Activity Categories B, E, and F). It is currently developed with noise and property-line barriers, ranging from 6 to 14 feet in height, along SB SR-57, WB SR-91, and Miraloma Way. Modeled receivers M-240 through M-269, M-292, and M-293 are in this area.
- **Area K** encompasses the area south of SR-91 between the SR-57 and SR-91 interchange and State College Boulevard. This area is primarily a single- and multi-family residential area (Activity Categories B and F). It is currently developed with noise barriers, ranging from 14 to 15 feet in height, along EB SR-91, the EB SR-91 on-ramp from State College Boulevard, and the EB SR-91 connector to SB SR-57. Modeled receivers M-270 through M-291 and M-294 through M-302 are in this area.
- **Area L** encompasses the area north of SR-91 between Acacia Street and State College Boulevard. This area is primarily a multi-family residential area but does include commercial and industrial uses (Activity Categories B and F). It is currently developed with noise barriers, ranging from 10 to 14 feet in height, along WB SR-91. Modeled receivers M-303 through M-311 are in this area.
- **Area M** encompasses the area south of SR-91 between Acacia Street and State College Boulevard. This area is primarily a single-family residential area (Activity Category B). It is currently developed with noise and property-line barriers, ranging from 6 to 16 feet in height, along EB SR-91 and the EB SR-91 off-ramp to State College Boulevard. Modeled receivers M-312 through M-329 are in this area.

Table 2.2.7-2 presents the modeled noise levels at each receiver (M-1 through M-329). As shown in Table 2.2.7-2, existing modeled worst-hour traffic noise levels range from 52.0 to 82.5 dBA L_{eq}(h). Under existing conditions, the NAC is currently approached or exceeded at 60 of the modeled receivers, which are representative of 142 noise-sensitive uses (i.e., residential, school/park, amusement park).

2.2.7.3 ENVIRONMENTAL CONSEQUENCES

As defined in 23 CFR 772, a Type I project is a federal or federal-aid highway project that constructs a highway at a new location or physically alters an existing highway that significantly changes either the horizontal or vertical alignment of the highway. The Build Alternative (Preferred Alternative) includes the addition of a general purpose lane as well as other highway improvements; therefore, the project is considered a Type I project.

The future worst-case traffic noise impact at frequent outdoor human use areas along the project corridor was modeled for existing conditions, design-year no-build conditions, and design-year build-conditions to determine appropriate noise abatement measures. This section discusses the future noise environment and feasible noise abatement measures for affected locations.

No-Build Alternative

The noise study results provided in Table 2.2.7-2 indicate that predicted traffic noise levels for design-year worst-hour noise levels would range from 51.9 to 82.5 dBA L_{eq}(h) at representative land uses, meaning that noise levels would approach or exceed the NAC for Activity Category B, C, and E land uses at 90 modeled receiver locations. Overall, design-year No-Build Alternative conditions would be similar to Build Alternative (Preferred Alternative) conditions.

Table 2.2.7-2. Noise Levels for Existing, Future No Build, and Future Build and Proposed Abatement

Receiver ID	Measurement Location	Area	Existing Barrier	Barrier ID	Existing (2014) Noise Level (dBA)	Design Year (2045) Noise Level without Project (No Build) (dBA)	Design Year (2045) Noise Level with Project (Build) (dBA)	Noise Impact Criteria Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)									Noise Abatement				
									6-foot Wall	8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	18-foot Wall	20-foot Wall	22-foot Wall	Feasible/ Design Goal Met	Reasonable	Barrier Height (FT)	Total Allowable Cost	Construction Cost
M-1	--	A	WB Existing 14' EOS	--	58.7	58.7	58.7	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-2	--	A	WB Existing 14' EOS	--	58.2	58.2	58.1	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-3	--	A	WB Existing 14' EOS	--	63.2	63.2	63.2	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-4	--	A	WB Existing 14' EOS	--	60.9	60.9	60.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-5	--	A	WB Existing 14' EOS	--	63.1	63.1	63.0	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-6	ST-2	A	WB Existing 14' EOS	--	63.4	63.4	63.3	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-7	--	A	WB Existing 14' EOS	--	61.1	61.1	61.1	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-8	--	A	WB Existing 14' EOS	--	60.5	60.5	60.5	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-9	--	A	WB Existing 14' EOS	--	60.8	60.8	60.7	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-10	--	A	WB Existing 14' EOS	Barrier S-223	58.6	58.6	58.7	B (67)	58.7	58.7	58.7	58.6	58.6	58.5	58.5	58.5	58.5	No	--	6	--	--
M-11	--	A	WB Existing 14' EOS	Barrier S-223	60.6	60.6	62.0	B (67)	61.3	61.0	60.8	60.7	60.5	60.5	60.4	60.4	60.4	No	--	8	--	--
M-12	--	A	WB Existing 14' EOS	Barrier S-223	62.6	62.6	67.0	B (67)	64.8	63.9	63.3	62.9	62.6	62.3	62.1	62.0	61.8	Yes	Yes	10	$535,000 [1]	$416,000
M-13	--	A	WB Existing 14' EOS	Barrier S-223	62.6	62.6	71.0	B (67)	66.3	64.9	64.0	63.2	62.5	62.0	61.6	61.1	60.8	Yes	Yes	12	$535,000 [1]	$461,000
M-14	--	A	WB Existing 14' EOS	Barrier S-223	58.8	58.8	63.5	B (67)	61.1	60.4	59.8	59.2	58.9	58.7	58.5	58.3	58.2	Yes	Yes	14	$535,000 [1]	$507,000
M-15	--	A	WB Existing 14' EOS	Barrier S-223	55.2	55.2	60.7	B (67)	57.2	56.4	55.5	55.0	54.6	54.4	54.2	54.1	54.1	Yes	No	16	$535,000 [1]	$549,000
M-16	--	A	WB Existing 14' EOS	Barrier S-223	61.8	61.8	65.0	B (67)	62.8	62.3	61.9	61.9	61.6	61.5	61.3	61.1	60.9	Yes	No	18	$642,000 [1]	$1,523,000
M-17	--	A	WB Existing 16' ROW	Barrier S-223	58.7	58.7	60.5	B (67)	59.2	58.9	58.7	58.5	58.4	58.4	58.3	58.3	58.3	Yes	No	20	$856,000 [1]	$2,075,000
M-18	ST-4	A	WB Existing 16' ROW	Barrier S-223	60.2	60.2	61.4	F (None)	60.5	60.4	60.2	60.1	60.1	60.5	60.4	60.3	60.2	Yes	No	22	$856,000 [1]	$2,173,000
M-19	--	A	WB Existing 16' ROW	Barrier S-223	59.0	59.0	60.9	B (67)	59.4	59.2	59.7	59.4	59.2	59.1	58.9	58.8	58.8					
M-20	--	A	WB Existing 16' ROW	--	58.9	58.9	58.4	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-21	--	A	WB Existing 6' ROW	--	61.6	61.7	59.0	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-22	--	A	WB Existing 6' ROW	--	62.0	62.0	59.1	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-23	--	A	WB Existing 6' ROW	--	59.4	59.4	58.0	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-24	ST-5	A	WB Existing 6' ROW	--	58.9	59.0	55.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Receiver ID	Measurement Location	Area	Existing Barrier	Barrier ID	Existing (2014) Noise Level (dBA)	Design Year (2045) Noise Level without Project (No Build) (dBA)	Design Year (2045) Noise Level with Project (Build) (dBA)	Noise Impact Criteria Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)									Noise Abatement				
									6-foot Wall	8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	18-foot Wall	20-foot Wall	22-foot Wall	Feasible/ Design Goal Met	Reasonable	Barrier Height (FT)	Total Allowable Cost	Construction Cost
M-25	--	B	EB Existing 16' ROW	Barrier EW-132	66.9	66.9	66.9	C (67)	--	--	--	--	--	--	65.9	65.1	64.3	No	No	18	--	--
M-26	--	B	EB Existing 16' ROW	Barrier EW-132	67.2	67.2	67.1	C (67)	--	--	--	--	--	--	66.2	65.4	64.7					
M-27	--	B	EB Existing 16' ROW	--	65.5	65.5	65.5	C (67)	--	--	--	--	--	--	--	--	--					
M-28	ST-15	B	EB Existing 16' ROW	Barrier EW-132	67.1	67.1	67.1	C (67)	--	--	--	--	--	--	66.1	65.3	64.5					
M-29	--	B	EB Existing 16' ROW	Barrier EW-132	70.5	70.5	70.4	B (67)	--	--	--	--	--	--	69.4	68.4	67.5					
M-30	ST-16	B	EB Existing 16' ROW	Barrier EW-132	69.5	69.5	69.4	B (67)	--	--	--	--	--	--	68.3	67.3	66.4	No	No	20	--	--
M-31	--	B	EB Existing 16' ROW	--	57.6	57.6	57.6	B (67)	--	--	--	--	--	--	--	--	--					
M-32	--	B	EB Existing 16' ROW	Barrier EW-132	68.6	68.6	68.6	B (67)	--	--	--	--	--	--	67.4	66.4	65.5					
M-33	--	B	EB Existing 16' ROW	--	62.0	62.0	61.9	B (67)	--	--	--	--	--	--	--	--	--					
M-34	--	B	EB Existing 16' ROW	Barrier EW-132	68.4	68.4	68.4	B (67)	--	--	--	--	--	--	67.2	66.1	65.2					
M-35	--	B	EB Existing 16' ROW	--	58.6	58.7	58.6	B (67)	--	--	--	--	--	--	--	--	--	No	No	22	--	--
M-36	ST-17	B	EB Existing 16' ROW	Barrier EW-132	68.1	68.1	68.0	B (67)	--	--	--	--	--	--	67.0	66.0	65.2					
M-37	--	B	EB Existing 16' ROW	Barrier EW-132	68.1	68.1	68.0	B (67)	--	--	--	--	--	--	66.9	65.9	65.0					
M-38	--	B	EB Existing 16' ROW	--	61.5	61.5	61.4	B (67)	--	--	--	--	--	--	--	--	--					
M-39	--	B	EB Existing 16' ROW	Barrier EW-132	68.7	68.7	68.6	B (67)	--	--	--	--	--	--	67.3	66.2	65.2					
M-40	--	B	EB Existing 16' ROW	--	56.9	56.9	56.8	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-41	--	B	EB Existing 16' ROW	--	63.9	63.9	63.7	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-42	ST-18	B	EB Existing 16' ROW	--	62.6	62.7	62.2	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-43	--	B	EB Existing 16' ROW	--	64.5	64.5	64.0	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-44	--	C	WB 6' Property Line Wall	--	55.9	56.0	54.0	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Receiver ID	Measurement Location	Area	Existing Barrier	Barrier ID	Existing (2014) Noise Level (dBA)	Design Year (2045) Noise Level without Project (No Build) (dBA)	Design Year (2045) Noise Level with Project (Build) (dBA)	Noise Impact Criteria Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)									Noise Abatement				
									6-foot Wall	8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	18-foot Wall	20-foot Wall	22-foot Wall	Feasible/ Design Goal Met	Reasonable	Barrier Height (FT)	Total Allowable Cost	Construction Cost
M-45	ST-6	C	6' Property Line Wall	--	58.1	58.3	55.7	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-46	--	C	6' Property Line Wall	Barrier S-103	57.9	58.1	55.4	B (67)	55.2	55.0	54.9	54.8	54.7	54.6	54.6	54.5	54.4	Yes	No	6	$570,000	$1,620,000
M-47	--	C	6' Property Line Wall	Barrier S-103	60.5	60.6	63.1	B (67)	62.3	62.2	62.1	62.0	61.9	61.8	61.7	61.6	61.6					
M-48	ST-7	C	6' Property Line Wall	Barrier S-103	59.5	59.5	64.8	B (67)	62.0	61.5	61.1	60.8	60.4	60.1	59.8	59.4	59.0					
M-49	--	C	WB 16' Existing ROW	Barrier S-103	59.1	59.1	60.1	B (67)	59.7	59.3	58.8	58.4	58.1	57.8	57.6	57.4	57.3	Yes	No	8	$665,000	$1,849,000
M-50	--	C	WB 16' Existing ROW	Barrier S-103	63.7	63.7	69.1	B (67)	65.6	64.8	64.1	63.4	62.8	62.3	61.7	61.2	60.9					
M-51	--	C	WB 16' Existing ROW	Barrier S-103	61.4	61.4	67.7	B (67)	65.6	64.9	64.0	62.8	62.0	61.4	60.8	60.3	59.9					
M-52	--	C	WB 16' Existing ROW	Barrier S-103	58.7	58.7	61.9	B (67)	61.2	60.8	60.5	59.9	59.3	59.1	58.6	58.3	58.0	Yes	No	10	$1,805,000	$2,078,000
M-53	--	C	WB 16' Existing ROW	Barrier S-103	57.1	57.1	63.1	B (67)	62.2	61.6	60.8	59.9	59.0	58.0	57.4	56.8	56.7					
M-54	ST-8	C	WB 16' Existing ROW	Barrier S-103	61.3	61.3	73.1	F (None)	68.5	67.4	65.9	64.5	63.5	62.7	62.1	61.4	60.8					
M-54A	--	C	WB 16' Existing ROW	Barrier S-103	59.5	59.5	68.1	B (67)	65.9	64.5	64.2	63.3	62.0	61.1	60.4	59.8	59.3	Yes	No	12	$2,185,000	$2,306,000
M-55	--	C	WB 16' Existing ROW	Barrier S-103	58.7	58.7	64.4	B (67)	63.1	62.4	61.8	61.3	60.5	59.8	59.3	58.8	58.4					
M-56	--	C	WB 16' Existing ROW	Barrier S-103	61.9	61.4	73.0	B (67)	67.3	66.6	65.4	64.3	63.5	62.8	62.1	61.6	61.1					
M-56A	--	C	WB 16' Existing ROW	Barrier S-103	62.3	61.4	77.1	B (67)	69.4	67.0	65.1	63.8	62.8	61.8	61.0	60.3	59.6	Yes	Yes	14	$2,755,000	$2,535,000
M-56B	--	C	WB 16' Existing ROW	Barrier S-103	61.9	61.3	77.2	B (67)	69.6	66.9	65.1	63.9	62.9	61.9	61.2	60.4	59.8					
M-56C	--	C	WB 16' Existing ROW	Barrier S-103	61.5	60.7	73.9	B (67)	67.6	65.1	63.6	62.5	61.6	60.8	60.1	59.4	58.7					
M-56D	--	C	WB 16' Existing ROW	Barrier S-103	60.1	60.3	71.6	B (67)	67.1	66.1	64.6	63.5	62.7	62.0	61.3	60.7	60.2	Yes	Yes	16	$2,945,000	$2,747,000
M-57	--	C	WB 16' Existing ROW	Barrier S-103	60.2	60.0	69.2	B (67)	66.1	65.1	63.8	63.0	62.5	62.1	61.7	61.3	60.8					
M-58	--	C	WB 16' Existing ROW	Barrier S-103	59.4	59.1	66.0	B (67)	63.7	62.6	61.7	60.2	59.5	59.0	58.7	58.5	58.3	Yes	No	18	$3,515,000	$7,613,000
M-59	--	C	WB 16' Existing ROW	Barrier S-103	60.8	60.6	67.1	B (67)	65.0	64.6	63.8	62.6	61.9	61.7	61.1	60.6	60.2					
M-60	--	C	WB 16' Existing ROW	Barrier S-103	61.3	61.0	68.0	B (67)	65.3	63.9	62.7	62.3	61.9	61.6	61.3	61.0	60.8	Yes	No	20	$3,515,000	$10,376,000
M-61	--	C	WB 16' Existing ROW	Barrier S-103	64.6	64.3	70.8	B (67)	67.0	66.2	65.5	64.8	64.2	63.6	63.0	62.7	62.3					
M-62	--	C	WB 16' Existing ROW	Barrier S-103	56.8	56.6	61.1	B (67)	60.2	59.3	58.3	57.3	56.7	56.2	56.0	55.7	55.4	Yes	No	22	$3,515,000	$10,866,000
M-63	--	C	WB 16' Existing ROW	Barrier S-103	64.7	64.4	70.5	B (67)	66.8	66.0	65.3	64.6	64.1	63.5	63.0	62.7	62.3					
M-64	--	C	WB 16' Existing ROW	--	63.0	62.7	65.4	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Receiver ID	Measurement Location	Area	Existing Barrier	Barrier ID	Existing (2014) Noise Level (dBA)	Design Year (2045) Noise Level without Project (No Build) (dBA)	Design Year (2045) Noise Level with Project (Build) (dBA)	Noise Impact Criteria Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)									Noise Abatement				
									6-foot Wall	8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	18-foot Wall	20-foot Wall	22-foot Wall	Feasible/ Design Goal Met	Reasonable	Barrier Height (FT)	Total Allowable Cost	Construction Cost
M-65	ST-10	C	WB 16' Existing ROW	--	63.7	63.5	65.0	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-66	--	C	WB 16' Existing ROW	--	56.1	56.0	57.5	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-67	--	C	WB 16' Existing ROW	--	62.9	62.7	63.1	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-68	--	C	WB 16' Existing ROW	--	60.9	60.7	61.1	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-69	--	C	WB 16' Existing ROW	--	62.8	62.6	62.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-70	--	C	WB 16' Existing ROW	--	62.0	61.8	61.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-71	--	C	WB 16' Existing ROW	Barrier EW-471	67.1	66.9	67.0	B (67)	--	--	--	--	--	--	66.5	66.1	65.5	No	No	18	--	--
																		No	No	20	--	--
																		No	No	22	--	--
M-72	ST-11	C	WB 16' Existing ROW	--	66.1	65.6	65.7	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-73	--	C	WB 16' Existing ROW	--	60.8	60.4	60.7	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-74	--	C	WB 16' Existing ROW	--	58.3	58.1	58.4	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-75	--	C	WB 16' Existing ROW	--	57.2	57.0	57.2	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-76	--	C	WB 16' Existing ROW	--	63.9	63.8	63.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-77	ST-12	C	WB 16' Existing ROW	--	64.4	64.3	64.4	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-78	--	C	WB 16' Existing ROW	--	56.9	56.6	56.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-79	--	C	WB 16' Existing ROW	--	64.5	64.4	64.5	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-80	--	C	WB 16' Existing ROW	--	56.8	56.7	57.0	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-81	--	C	WB 16' Existing ROW	--	64.0	64.0	64.1	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-82	--	C	WB 16' Existing ROW	--	57.3	57.3	57.5	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-83	--	C	WB 16' Existing ROW	--	64.3	64.3	64.4	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-84	--	C	WB 16' Existing ROW	--	58.1	58.0	58.3	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-85	ST-13	C	WB 16' Existing ROW	Barrier EW-471	66.9	66.9	66.9	B (67)	--	--	--	--	--	--	66.2	65.2	64.5	No	No	18	--	--
																		No	No	20	--	--
																		No	No	22	--	--
M-86	--	C	WB 16' Existing ROW	--	61.7	61.6	61.8	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-87	ST-14	C	WB 16' Existing ROW	--	62.2	62.2	62.3	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-87A	--	C	WB 18' Existing ROW	--	61.9	61.8	61.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Receiver ID	Measurement Location	Area	Existing Barrier	Barrier ID	Existing (2014) Noise Level (dBA)	Design Year (2045) Noise Level without Project (No Build) (dBA)	Design Year (2045) Noise Level with Project (Build) (dBA)	Noise Impact Criteria Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)									Noise Abatement				
									6-foot Wall	8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	18-foot Wall	20-foot Wall	22-foot Wall	Feasible/ Design Goal Met	Reasonable	Barrier Height (FT)	Total Allowable Cost	Construction Cost
M-88	--	C	WB 17' Existing ROW	--	57.8	57.8	58.1	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-89	--	C	WB 16' Existing ROW	Barrier S-521 (EOS)	65.0	65.0	65.2	B (67)	65.2	65.2	65.2	65.2	65.2	65.2	65.0	64.9	64.9	No	No	6	--	--
																		No	No	8	--	--
																		No	No	10	--	--
																		No	No	12	--	--
M-90	--	C	6' Property Line Wall	Barrier S-521 (EOS)	69.2	69.2	69.4	B (67)	69.5	69.5	69.5	68.9	68.1	67.8	66.6	65.5	65.0	No	No	14	--	--
																		Yes	No	16	--	--
																		Yes	No	18	--	--
																		Yes	No	20	--	--
																		Yes	No	22	--	--
M-91	--	C	6' Property Line Wall	--	62.2	62.2	62.4	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-92	--	D	6' Property Line Wall	--	52.9	52.9	52.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-93	--	D	6' Property Line Wall	--	61.2	61.2	60.4	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-94	--	D	6' Property Line Wall	--	56.1	56.1	55.8	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-95	--	D	6' Property Line Wall	--	55.1	55.1	54.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-96	--	D	EB Existing 14' ROW	--	57.9	57.9	57.8	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-97	ST-20	D	EB Existing 14' ROW	--	58.3	58.3	58.0	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-98	--	D	EB Existing 14' ROW	--	60.3	60.3	59.8	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-99	--	D	EB Existing 14' ROW	--	60.0	60.0	59.7	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-100	--	D	EB Existing 14' ROW	--	56.8	56.8	56.7	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-101	--	D	EB Existing 14' ROW	--	58.8	58.8	58.5	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-102	--	D	EB Existing 14' ROW	--	55.9	55.9	56.2	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-103	--	D	EB Existing 14' ROW	--	62.6	62.6	62.2	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-104	--	D	EB Existing 14' ROW	--	57.8	57.8	57.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-105	--	D	EB Existing 14' ROW	--	61.9	61.9	61.7	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-106	--	D	EB Existing 14' ROW	--	62.0	62.0	61.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-107	--	D	EB Existing 14' ROW	--	59.2	59.2	59.2	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-108	--	D	EB Existing 14' ROW	--	59.3	59.3	59.1	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-109	--	D	EB Existing 14' ROW	--	55.9	55.9	56.3	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Receiver ID	Measurement Location	Area	Existing Barrier	Barrier ID	Existing (2014) Noise Level (dBA)	Design Year (2045) Noise Level without Project (No Build) (dBA)	Design Year (2045) Noise Level with Project (Build) (dBA)	Noise Impact Criteria Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)									Noise Abatement				
									6-foot Wall	8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	18-foot Wall	20-foot Wall	22-foot Wall	Feasible/ Design Goal Met	Reasonable	Barrier Height (FT)	Total Allowable Cost	Construction Cost
M-110	--	D	EB Existing 14' ROW	--	63.4	63.4	63.2	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-111	--	D	EB Existing 14' ROW	--	60.2	60.2	59.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-112	ST-21	D	EB Existing 14' ROW	--	56.8	56.8	56.8	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-113	--	D	EB Existing 14' ROW	--	59.9	59.9	60.0	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-114	--	D	EB Existing 14' ROW	--	58.8	58.8	58.8	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-115	--	D	EB Existing 14' ROW	--	59.1	59.1	58.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-116	--	D	EB Existing 14' ROW	--	61.8	61.8	61.6	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-117	--	D	EB Existing 14' ROW	--	58.7	58.7	58.7	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-118	--	D	EB Existing 14' ROW	--	59.1	59.1	58.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-119	--	D	EB Existing 14' ROW	--	59.6	59.6	59.6	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-120	--	D	EB Existing 14' ROW	--	54.8	54.8	54.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-121	--	D	EB Existing 14' ROW	--	63.3	63.3	63.4	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-122	ST-22	D	EB Existing 14' ROW	--	62.7	62.7	62.8	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-123	--	D	EB Existing 14' ROW	--	64.6	64.6	64.7	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-124	--	D	EB Existing 14' ROW	Barrier EW-542	70.4	70.4	70.4	B (67)	--	--	--	--	--	70.1	69.8	69.6	69.3	Yes	No	20	--	--
																		Yes	No	22	--	--
M-125	ST-23	D	EB Existing 14' ROW	--	62.7	62.7	62.8	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-126	--	D	EB Existing 14' ROW	--	64.5	64.5	64.5	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-127	--	D	EB Existing 14' ROW	--	64.1	64.1	64.1	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-128	--	D	EB Existing 14' ROW	--	63.9	63.9	63.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-129	ST-24	D	6' Property Barrier	--	62.1	62.1	62.1	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-130	--	D	6' Property Barrier	--	64.5	64.5	64.5	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-131	--	E	EB Existing 15' ROW	Barrier EW-535	63.6	63.6	63.5	B (67)	--	--	--	--	--	63.2	62.5	61.9	61.5	No	No	16	--	--
M-132	--	E	EB Existing 15' ROW	Barrier EW-535	55.1	55.1	55.0	B (67)	--	--	--	--	--	54.7	54.3	54.1	53.8					
M-133	ST-25	E	EB Existing 15' ROW	Barrier EW-535	64.1	64.1	64.1	B (67)	--	--	--	--	--	63.7	63.0	62.4	61.8	No	No	18	--	--

Receiver ID	Measurement Location	Area	Existing Barrier	Barrier ID	Existing (2014) Noise Level (dBA)	Design Year (2045) Noise Level without Project (No Build) (dBA)	Design Year (2045) Noise Level with Project (Build) (dBA)	Noise Impact Criteria Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)									Noise Abatement				
									6-foot Wall	8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	18-foot Wall	20-foot Wall	22-foot Wall	Feasible/ Design Goal Met	Reasonable	Barrier Height (FT)	Total Allowable Cost	Construction Cost
M-134 (2nd Story)	--	E	EB Existing 15' ROW	Barrier EW-535	68.9	68.9	68.8	B (67)	--	--	--	--	--	67.7	66.4	64.7	63.7					
M-135	--	E	EB Existing 15' ROW	Barrier EW-535	52.6	52.6	52.6	B (67)	--	--	--	--	--	52.3	51.4	50.8	50.4	No	No	20	--	--
M-136	--	E	EB Existing 15' ROW	Barrier EW-535	62.1	62.1	62.1	B (67)	--	--	--	--	--	61.8	61.4	61.0	60.7					
M-137	--	E	EB Existing 15' ROW	Barrier EW-535	61.8	61.8	62.2	B (67)	--	--	--	--	--	62.1	62.1	62.0	62.0	No	No	22	--	--
M-138	--	E	EB Existing 15' ROW	Barrier EW-535	64.0	64.0	64.4	B (67)	--	--	--	--	--	64.4	64.3	64.3	64.2					
M-139	--	E	EB Existing 15' ROW	Barrier EW-535	57.6	57.6	57.7	B (67)	--	--	--	--	--	57.6	57.5	57.3	57.2					
M-140	ST-26	E	EB Existing 15' ROW	--	60.1	60.1	60.5	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-141	--	E	EB Existing 15' ROW	--	60.9	60.9	61.4	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-142	--	E	EB Existing 15' ROW	--	60.0	60.0	60.3	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-143	--	E	EB Existing 15' ROW	Barrier S-520	58.3	58.3	59.6	B (67)	59.6	59.4	59.2	58.8	58.4	58.3	58.4	58.3	58.2	No	No	6	--	--
																		Yes	No	8	$535,000	$478,000
M-144	--	E	EB Existing 15' ROW	Barrier S-520	55.8	55.8	58.6	B (67)	58.3	57.7	57.2	56.6	55.8	55.3	55.7	55.3	55.0	Yes	No	10	$535,000	$537,000
																		Yes	No	12	$642,000	$596,000
M-145	--	E	EB Existing 15' ROW	Barrier S-520	64.0	64.0	70.9	B (67)	67.1	65.8	65.1	64.8	63.6	63.2	62.8	62.5	62.3	Yes	Yes	14	$856,000	$655,000
M-146	--	E	EB Existing 12' EOS	Barrier S-520	63.2	63.2	73.4	B (67)	67.2	66.0	65.4	63.8	63.1	62.8	62.3	62.0	61.7	Yes	Yes	16	$856,000	$710,000
M-147	--	E	EB Existing 12' EOS	Barrier S-520	62.6	62.6	67.5	B (67)	64.9	64.2	64.0	63.2	62.4	61.8	61.3	60.9	60.5	Yes	No	18	$856,000	$1,967,000
M-148	--	E	EB Existing 12' EOS	Barrier S-520	60.7	60.6	67.0	B (67)	64.0	63.2	62.5	61.0	60.3	60.8	61.3	61.5	61.5	Yes	No	20	$856,000	$2,680,000
																		Yes	No	22	$856,000	$2,807,000
M-149	--	E	10' Property Line Wall	--	52.0	51.9	52.5	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-150	--	E	10' Property Line Wall	--	52.2	52.1	52.7	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-151	--	E	10' Property Line Wall	--	55.6	55.5	56.2	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-152	--	E	10' Property Line Wall	--	56.2	56.1	56.7	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-153	ST-28	E	10' Property Line Wall	--	62.4	61.7	62.6	G (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-154	--	E	10' Property Line Wall	--	63.6	63.6	64.4	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-155	--	E	10' Property Line Wall	--	64.0	60.6	61.4	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Receiver ID	Measurement Location	Area	Existing Barrier	Barrier ID	Existing (2014) Noise Level (dBA)	Design Year (2045) Noise Level without Project (No Build) (dBA)	Design Year (2045) Noise Level with Project (Build) (dBA)	Noise Impact Criteria Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)									Noise Abatement				
									6-foot Wall	8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	18-foot Wall	20-foot Wall	22-foot Wall	Feasible/ Design Goal Met	Reasonable	Barrier Height (FT)	Total Allowable Cost	Construction Cost
M-156	--	E	10' Property Line Wall	--	64.6	62.2	63.2	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-157	--	E	10' Property Line Wall	--	70.7	70.7	71.8	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-158	--	E	Existing Variable Height ROW	--	76.3	76.3	78.3	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-159	--	C	--	--	59.1	59.2	59.4	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-160	--	E	--	--	72.4	72.5	72.8	E (72)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-161	--	F	--	--	72.2	72.2	72.4	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-162	--	F	--	--	70.4	70.4	70.5	D (52) (Interior)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-163	--	G	--	--	70.8	70.8	72.4	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-164	--	F	--	--	77.3	77.3	77.4	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-165	--	F	--	Barrier S-457	79.8	79.8	79.9	C (67)	75.2	72.0	70.4	69.1	68.0	67.5	67.0	66.2	65.7	Yes	Yes	6	$190,000	$540,000
M-166	--	F	--	Barrier S-457	69.7	69.7	69.8	C (67)	66.4	65.2	64.5	63.4	62.6	62.3	62.0	61.7	61.4					
M-167	--	F	--	Barrier S-457	71.6	71.6	71.7	C (67)	68.1	67.4	66.2	64.3	63.6	63.1	62.7	62.3	61.9	Yes	Yes	8	$1,615,000	$616,000
M-168	--	F	--	Barrier S-457	82.4	82.4	82.5	C (67)	75.1	73.6	70.9	69.3	68.3	67.4	66.7	65.8	65.1					
M-169	--	F	--	Barrier S-457	71.0	71.0	71.1	C (67)	67.4	66.0	65.2	64.0	62.9	62.4	62.1	61.7	61.4	Yes	Yes	10	$3,420,000	$693,000
M-170	ST-29	F	--	Barrier S-457	82.5	82.5	82.6	C (67)	75.2	73.7	71.0	69.4	68.1	67.4	66.3	65.6	65.1					
M-171	--	F	--	Barrier S-457	73.6	73.6	73.7	C (67)	69.8	68.5	67.8	66.6	65.8	65.5	65.2	64.9	64.7	Yes	Yes	12	$3,800,000	$769,000
M-172	--	F	--	Barrier S-457	68.8	68.8	69.0	C (67)	65.7	64.3	63.8	63.1	61.7	61.4	61.1	60.8	60.6	Yes	Yes	14	$3,800,000	$845,000
M-173	--	F	--	Barrier S-457	67.0	67.0	67.1	C (67)	64.0	63.2	63.0	61.4	60.8	60.5	60.2	59.9	59.7	Yes	Yes	16	$3,800,000	$916,000
M-174	--	F	--	Barrier S-457	81.5	81.5	81.6	C (67)	78.7	75.6	74.0	71.6	70.5	69.7	69.2	68.7	68.2	Yes	Yes	18	$3,800,000	$2,928,000
M-175	--	F	--	Barrier S-457	78.6	78.6	78.8	C (67)	76.9	75.2	73.3	72.4	71.2	70.8	70.5	70.2	70.0	Yes	Yes	20	$3,800,000	$3,459,000
M-176	--	F	--	Barrier S-457	67.7	67.7	67.8	C (67)	64.9	63.2	62.7	62.0	60.4	60.0	59.6	59.2	58.9	Yes	Yes	22	$3,800,000	$3,622,000
M-177	--	F	--	--	75.8	75.8	75.8	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-178	--	F	--	--	65.8	65.9	65.1	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-179	--	G	--	--	65.7	65.7	65.6	E (72)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-180	ST-30	G	--	--	65.9	66.0	65.8	E (72)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-181	--	H	--	Barrier S-38 (EOS)	73.5	73.6	74.2	D (52 Interior)	70.7	69.4	68.2	67.3	66.6	66.2	65.6	65.4	65.2	No	No	6	--	--
																		No	No	8	--	--
																		No	No	10	--	--
M-181	--	H	--	Barrier S-38 (EOS)	53.5	53.6	54.2	D (52 Interior)	50.7	49.4	48.2	47.3	46.6	46.2	45.6	45.4	45.2	No	No	12	--	--
																		Yes	No	14	--	--
																		Yes	No	16	--	--
M-181A	--	H	--		65.1	65.6	66.5	C (67)	63.7	62.9	61.5	60.3	59.4	58.7	58.2	57.8	57.5	Yes	No	18	--	--
																		Yes	No	20	--	--

Receiver ID	Measurement Location	Area	Existing Barrier	Barrier ID	Existing (2014) Noise Level (dBA)	Design Year (2045) Noise Level without Project (No Build) (dBA)	Design Year (2045) Noise Level with Project (Build) (dBA)	Noise Impact Criteria Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)									Noise Abatement				
									6-foot Wall	8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	18-foot Wall	20-foot Wall	22-foot Wall	Feasible/ Design Goal Met	Reasonable	Barrier Height (FT)	Total Allowable Cost	Construction Cost
				Barrier S-38 (EOS)														Yes	No	22	--	--
M-181	--	H	--	Barrier S-38 (ROW)	73.5	73.6	74.2	D (52 Interior)	71.8	70.2	68.9	67.8	67.1	66.6	66.1	65.7	65.5	No	No	6	--	--
																		No	No	8	--	--
																		No	No	10	--	--
M-181	--	H	--	Barrier S-38 (ROW)	53.5	53.6	54.2	D (52 Interior)	51.8	50.2	48.9	47.8	47.1	46.6	46.1	45.7	45.5	No	No	12	--	--
																		Yes	No	14	--	--
																		Yes	No	16	--	--
M-181A	--	H	--	Barrier S-38 (ROW)	65.1	65.6	66.5	C (67)	65.8	63.6	63.0	62.6	61.4	59.9	59.0	58.3	57.7	Yes	No	18	--	--
																		Yes	No	20	--	--
																		Yes	No	22	--	--
M-182	--	H	--	--	74.9	74.9	76.0	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-183	--	H	--	--	77.4	77.4	77.6	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-184	--	H	--	--	75.7	75.7	75.8	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-185	--	H	--	--	76.4	76.4	76.5	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-186	--	H	--	--	62.5	62.5	62.1	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-187	--	H	--	--	67.7	67.7	69.2	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-188	--	H	--	--	73.9	73.9	74.0	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-189	--	I	--	Barrier S-403D	67.3	67.3	68.2	B (67)	65.7	65.7	65.1	64.5	63.7	63.1	62.6	62.4	62.7	Yes	Yes	6	$2,660,000	$2,157,000
M-189A	--	I	--	Barrier S-403D	61.8	62.0	61.1	B (67)	60.8	60.3	59.7	59.2	58.9	58.6	58.4	58.2	57.9					
M-189B	--	I	--	Barrier S-403D	66.1	66.2	66.1	B (67)	66.0	65.9	65.8	65.7	64.9	63.8	63.3	63.1	62.9					
M-190	--	I	--	Barrier S-403D	53.5	53.6	53.9	B (67)	53.9	54.0	54.0	54.0	53.8	53.4	52.7	52.1	51.5					
M-191 (2nd Story)	--	I	--	Barrier S-403D	74.2	74.2	75.3	B (67)	74.8	73.1	71.3	69.6	67.9	67.1	66.2	65.5	64.9					
M-192 (2nd Story)	--	I	--	Barrier S-403D	73.9	73.9	74.8	B (67)	74.5	72.7	71.6	69.5	67.9	67.2	66.2	65.4	64.8					
M-193	--	I	--	Barrier S-403C	53.4	53.5	53.9	B (67)	53.9	54.0	54.1	54.0	53.9	53.8	53.2	52.5	51.8	Yes	Yes	8	$3,420,000	$2,462,000
M-194 (2nd Story)	--	I	EB Existing 16' ROW	Barrier S-403C	72.0	72.1	72.9	B (67)	72.6	71.1	70.2	68.6	67.5	67.0	66.0	65.3	64.6					
M-195 (2nd Story)	ST-31	I	EB Existing 16' ROW	Barrier S-403C	70.5	70.5	71.4	F (None)	71.2	70.1	69.3	68.3	67.7	67.4	66.5	65.6	64.9					
M-196	ST-32	I	EB Existing 16' ROW	Barrier S-403C	62.8	62.8	63.7	B (67)	63.3	63.2	63.0	62.9	62.9	62.8	62.6	62.3	62.0					

Receiver ID	Measurement Location	Area	Existing Barrier	Barrier ID	Existing (2014) Noise Level (dBA)	Design Year (2045) Noise Level without Project (No Build) (dBA)	Design Year (2045) Noise Level with Project (Build) (dBA)	Noise Impact Criteria Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)									Noise Abatement				
									6-foot Wall	8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	18-foot Wall	20-foot Wall	22-foot Wall	Feasible/ Design Goal Met	Reasonable	Barrier Height (FT)	Total Allowable Cost	Construction Cost
M-197	--	I	EB Existing 16' ROW	Barrier S-403C	64.3	64.4	65.3	B (67)	64.2	64.0	63.9	63.8	63.7	63.6	63.0	62.5	62.0					
M-198	--	I	EB Existing 16' ROW	Barrier S-403C	61.1	61.1	61.7	B (67)	61.8	61.8	61.8	61.8	61.8	61.8	61.1	60.5	60.0					
M-199	--	I	EB Existing 16' ROW	Barrier S-403C	64.0	64.0	65.5	B (67)	64.7	64.5	64.5	64.4	64.3	64.3	63.7	63.2	62.7	Yes	Yes	10	$4,750,000	$2,766,000
M-200	--	I	EB Existing 16' ROW	Barrier S-403C	64.2	64.2	66.5	B (67)	65.1	64.9	64.8	64.7	64.7	64.6	64.0	63.4	62.9					
M-201	--	I	EB Existing 16' ROW	Barrier S-403C	62.5	62.5	63.3	B (67)	63.1	63.1	63.1	63.0	63.0	63.0	62.4	61.8	61.2					
M-202	--	I	EB Existing 16' ROW	Barrier S-403C	64.1	64.1	67.2	B (67)	65.5	65.2	65.1	65.0	64.9	64.8	64.2	63.6	63.1					
M-203	--	I	EB Existing 16' ROW	Barrier S-403C	57.4	57.4	58.5	B (67)	58.4	58.3	58.2	58.1	57.9	57.8	56.9	56.3	55.7					
M-204	ST-33	I	EB Existing 16' ROW	Barrier S-403C	67.7	67.7	76.2	B (67)	71.2	70.6	70.2	69.4	69.1	68.8	68.2	67.7	67.1					
M-205 (2nd Story)	--	I	EB Existing 16' ROW	Barrier S-403C	66.0	66.0	75.0	B (67)	72.5	71.5	69.1	68.3	67.2	66.8	65.8	64.8	63.8	Yes	Yes	12	$5,605,000	$3,070,000
M-206	--	I	EB Existing 16' ROW	Barrier S-403B	67.6	67.6	79.2	B (67)	72.8	72.0	71.4	69.9	69.2	68.7	68.0	67.4	66.8					
M-207 (2nd Story)	--	I	EB Existing 16' ROW	Barrier S-403B	66.0	66.0	77.5	B (67)	74.6	73.4	70.6	69.5	67.6	66.7	65.7	64.7	63.8					
M-208	--	I	EB Existing 16' ROW	Barrier S-403B	67.8	67.8	80.6	B (67)	73.6	72.7	72.0	70.1	69.3	68.7	68.1	67.5	66.8					
M-209 (2nd Story)	--	I	EB Existing 16' ROW	Barrier S-403B	66.1	66.1	78.4	B (67)	75.5	74.2	71.4	70.1	67.9	66.8	65.8	64.7	64.0					
M-210	--	I	EB Existing 16' ROW	Barrier S-403B	67.9	67.9	81.0	B (67)	73.9	73.0	72.2	70.3	69.3	68.7	68.0	67.4	66.7	Yes	Yes	14	$6,270,000	$3,375,000
M-211 (2nd Story)	--	I	EB Existing 16' ROW	Barrier S-403B	66.1	66.1	78.6	B (67)	75.7	74.4	71.4	70.2	67.9	66.8	65.8	64.7	63.9					
M-212 (2nd Story)	--	I	EB Existing 16' ROW	Barrier S-403B	70.1	70.1	82.8	B (67)	80.8	79.2	76.6	74.9	72.6	70.9	69.9	68.8	68.1					
M-213 (2nd Story)	--	I	EB Existing 16' ROW	Barrier S-403B	70.1	70.1	82.5	B (67)	80.5	78.9	76.3	74.6	72.4	70.7	69.6	68.6	67.6					
M-214 (2nd Story)	--	I	EB Existing 16' ROW	Barrier S-403B	60.6	60.7	66.6	B (67)	66.2	65.7	64.9	64.3	63.5	61.5	59.5	58.5	57.7					

Receiver ID	Measurement Location	Area	Existing Barrier	Barrier ID	Existing (2014) Noise Level (dBA)	Design Year (2045) Noise Level without Project (No Build) (dBA)	Design Year (2045) Noise Level with Project (Build) (dBA)	Noise Impact Criteria Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)									Noise Abatement				
									6-foot Wall	8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	18-foot Wall	20-foot Wall	22-foot Wall	Feasible/ Design Goal Met	Reasonable	Barrier Height (FT)	Total Allowable Cost	Construction Cost
M-215 (2nd Story)	ST-34	I	EB Existing 16' ROW	Barrier S-403B	70.1	70.1	82.4	B (67)	80.2	78.6	76.3	74.5	72.0	70.6	69.5	68.7	67.6	Yes	Yes	16	$6,840,000	$3,658,000
M-216	--	I	EB Existing 16' ROW	Barrier S-403B	54.3	54.3	62.5	B (67)	62.3	61.9	61.2	59.8	57.6	54.7	53.3	52.7	52.3					
M-217 (2nd Story)	--	I	EB Existing 16' ROW	Barrier S-403B	67.7	67.7	81.5	B (67)	78.1	75.2	73.5	71.5	69.8	68.7	67.8	66.8	66.0					
M-218	--	I	EB Existing 16' ROW	Barrier S-403B	65.7	65.7	80.3	B (67)	72.4	71.5	70.1	68.2	67.4	66.8	66.3	65.7	65.2					
M-219 (2nd Story)	--	I	EB Existing 16' ROW	Barrier S-403B	67.8	67.8	81.5	B (67)	78.1	75.6	73.6	71.7	69.8	68.6	67.8	66.7	65.9					
M-220	--	I	EB Existing 16' ROW	Barrier S-403B	65.7	65.7	80.4	B (67)	72.4	71.4	70.0	68.1	67.2	66.6	65.9	65.4	64.8	Yes	No	18	$6,840,000	$15,279,000
M-221	--	I	EB Existing 16' ROW	Barrier S-403B	64.3	64.3	78.9	B (67)	71.2	70.2	69.1	67.1	66.0	65.2	64.6	64.0	63.4					
M-222	ST-35	I	EB Existing 16' ROW	Barrier S-403B	66.2	66.2	81.4	F (None)	73.6	72.5	71.1	69.1	68.0	67.2	66.5	65.9	65.3					
M-223	--	I	EB Existing 16' ROW	Barrier S-403B	53.9	53.9	61.1	B (67)	59.0	58.5	57.9	56.7	55.5	54.5	53.7	52.9	52.2					
M-224	--	I	EB Existing 16' ROW	Barrier S-403B	65.4	65.4	78.7	B (67)	71.9	70.9	69.6	67.8	66.9	66.1	65.5	64.9	64.3					
M-225	--	I	EB Existing 16' ROW	Barrier S-403B	65.8	65.8	80.5	B (67)	72.5	71.6	69.9	68.1	67.3	66.6	65.9	65.3	64.8	Yes	No	20	$6,840,000	$18,049,000
M-226	--	I	EB Existing 16' ROW	Barrier S-403B	53.7	53.7	61.0	B (67)	58.6	58.0	57.1	56.0	55.1	54.3	53.6	52.8	52.3					
M-227	--	I	EB Existing 16' ROW	Barrier S-403B	66.2	66.2	81.0	B (67)	72.8	71.6	69.7	68.3	67.4	66.7	66.0	65.4	64.9					
M-228	--	I	EB Existing 16' ROW	Barrier S-403B	54.7	54.7	64.2	B (67)	59.5	58.8	58.0	56.8	56.0	55.1	54.4	53.8	53.3					
M-229	--	I	EB Existing 16' ROW	Barrier S-403B	60.2	60.2	73.9	B (67)	66.4	65.5	63.6	62.3	61.6	60.9	60.5	59.8	59.4	Yes	No	22	$6,840,000	$18,902,000
M-230	--	I	EB Existing 16' ROW	Barrier S-403A	53.1	53.1	54.5	B (67)	54.7	54.6	54.4	54.1	53.9	53.4	52.8	52.4	52.2					
M-231	--	I	EB Existing 14' ROW	Barrier S-403A	61.7	61.7	70.9	B (67)	65.4	64.6	63.7	63.1	62.8	62.3	61.9	61.3	60.8					
M-232	ST-36	I	EB Existing 14' ROW	Barrier S-403A	61.2	61.2	67.4	B (67)	63.7	63.3	62.8	62.6	62.4	62.0	61.7	61.4	61.1					
M-233	--	I	EB Existing 14' ROW	Barrier S-403A	60.3	60.3	64.5	B (67)	62.2	62.0	61.8	61.6	61.5	61.3	61.1	60.9	60.7					
M-189 [2]	--	I	--	Barrier S-435	67.3	67.3	68.2	B (67)	65.7	65.7	65.1	64.5	63.7	63.1	62.6	62.4	62.7	Yes	Yes	6	$2,660,000	$2,352,000
M-189A [2]	--	I	--	Barrier S-435	61.8	62.0	61.1	B (67)	60.8	60.3	59.7	59.2	58.9	58.6	58.4	58.2	57.9					
M-189B [2]	--	I	--	Barrier S-435	66.1	66.2	66.1	B (67)	66.0	65.9	65.8	65.7	64.9	63.8	63.3	63.1	62.9					
M-190 [2]	--	I	--	Barrier S-435	53.5	53.6	53.9	B (67)	53.9	54.0	54.0	54.0	53.8	53.4	52.7	52.1	51.5					
M-191 (2nd Story) [2]	--	I	--	Barrier S-435	74.2	74.2	75.3	B (67)	74.8	73.1	71.3	69.6	67.9	67.1	66.2	65.5	64.9					

Receiver ID	Measurement Location	Area	Existing Barrier	Barrier ID	Existing (2014) Noise Level (dBA)	Design Year (2045) Noise Level without Project (No Build) (dBA)	Design Year (2045) Noise Level with Project (Build) (dBA)	Noise Impact Criteria Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)									Noise Abatement				
									6-foot Wall	8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	18-foot Wall	20-foot Wall	22-foot Wall	Feasible/ Design Goal Met	Reasonable	Barrier Height (FT)	Total Allowable Cost	Construction Cost
M-192 (2nd Story) [2]	--	I	--	Barrier S-435	73.9	73.9	74.8	B (67)	74.5	72.7	71.6	69.5	67.9	67.2	66.2	65.4	64.8					
M-193 [2]	--	I	--	Barrier S-411C	53.4	53.5	53.9	B (67)	53.9	54.0	54.1	54.0	53.9	53.8	53.2	52.5	51.8	Yes	Yes	8	$3,420,000	$2,685,000
M-194 (2nd Story) [2]	--	I	EB Existing 16' ROW	Barrier S-411C	72.0	72.1	72.9	B (67)	72.6	71.1	70.2	68.6	67.5	67.0	66.0	65.3	64.6					
M-195 (2nd Story) [2]	ST-31	I	EB Existing 16' ROW	Barrier S-411C	70.5	70.5	71.4	F (None)	71.2	70.1	69.3	68.3	67.7	67.4	66.5	65.6	64.9					
M-196 [2]	ST-32	I	EB Existing 16' ROW	Barrier S-411C	62.8	62.8	63.7	B (67)	63.3	63.2	63.0	62.9	62.9	62.8	62.6	62.3	62.0					
M-197 [2]	--	I	EB Existing 16' ROW	Barrier S-411C	64.3	64.4	65.3	B (67)	64.2	64.0	63.9	63.8	63.7	63.6	63.0	62.5	62.0					
M-198 [2]	--	I	EB Existing 16' ROW	Barrier S-411C	61.1	61.1	61.7	B (67)	61.8	61.8	61.8	61.8	61.8	61.8	61.1	60.5	60.0					
M-199 [2]	--	I	EB Existing 16' ROW	Barrier S-411C	64.0	64.0	65.5	B (67)	64.7	64.5	64.5	64.4	64.3	64.3	63.7	63.2	62.7	Yes	Yes	10	$5,320,000	$3,017,000
M-200 [2]	--	I	EB Existing 16' ROW	Barrier S-411C	64.2	64.2	66.5	B (67)	65.1	64.9	64.8	64.7	64.7	64.6	64.0	63.4	62.9					
M-201 [2]	--	I	EB Existing 16' ROW	Barrier S-411C	62.5	62.5	63.3	B (67)	63.1	63.1	63.1	63.0	63.0	63.0	62.4	61.8	61.2					
M-202 [2]	--	I	EB Existing 16' ROW	Barrier S-411C	64.1	64.1	67.2	B (67)	65.5	65.2	65.1	65.0	64.9	64.8	64.2	63.6	63.1					
M-203 [2]	--	I	EB Existing 16' ROW	Barrier S-411C	57.4	57.4	58.5	B (67)	58.4	58.3	58.2	58.1	57.9	57.8	56.9	56.3	55.7					
M-204 [2]	ST-33	I	EB Existing 16' ROW	Barrier S-411C	67.7	67.7	76.2	B (67)	71.2	70.6	70.2	69.4	69.1	68.8	68.2	67.7	67.1					
M-205 (2nd Story) [2]	--	I	EB Existing 16' ROW	Barrier S-411C	66.0	66.0	75.0	B (67)	72.5	71.5	69.1	68.3	67.2	66.8	65.8	64.8	63.8	Yes	Yes	12	$6,080,000	$3,348,000
M-206 [2]	--	I	EB Existing 16' ROW	Barrier S-411C	67.6	67.6	79.2	B (67)	72.8	72.0	71.4	69.9	69.2	68.7	68.0	67.4	66.8					
M-207 (2nd Story) [2]	--	I	EB Existing 16' ROW	Barrier S-411B	66.0	66.0	77.5	B (67)	74.6	73.4	70.6	69.5	67.6	66.7	65.7	64.7	63.8					
M-208 [2]	--	I	EB Existing 16' ROW	Barrier S-411B	67.8	67.8	80.6	B (67)	73.6	72.7	72.0	70.1	69.3	68.7	68.1	67.5	66.8					
M-209 (2nd Story) [2]	--	I	EB Existing 16' ROW	Barrier S-411B	66.1	66.1	78.4	B (67)	75.5	74.2	71.4	70.1	67.9	66.8	65.8	64.7	64.0					

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									6-foot Wall	8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	18-foot Wall	20-foot Wall	22-foot Wall	Feasible/ Design Goal Met	Reasonable	Barrier Height (FT)	Total Allowable Cost	Construction Cost
M-210 [2]	--	I	EB Existing 16' ROW	Barrier S-411B	67.9	67.9	81.0	B (67)	73.9	73.0	72.2	70.3	69.3	68.7	68.0	67.4	66.7	Yes	Yes	14	$6,640,000	$3,681,000
M-211 (2nd Story) [2]	--	I	EB Existing 16' ROW	Barrier S-411B	66.1	66.1	78.6	B (67)	75.7	74.4	71.4	70.2	67.9	66.8	65.8	64.7	63.9					
M-212 (2nd Story) [2]	--	I	EB Existing 16' ROW	Barrier S-411B	70.1	70.1	82.8	B (67)	80.8	79.2	76.6	74.9	72.6	70.9	69.9	68.8	68.1					
M-213 (2nd Story) [2]	--	I	EB Existing 16' ROW	Barrier S-411B	70.1	70.1	82.5	B (67)	80.5	78.9	76.3	74.6	72.4	70.7	69.6	68.6	67.6					
M-214 (2nd Story) [2]	--	I	EB Existing 16' ROW	Barrier S-411B	60.6	60.7	66.6	B (67)	66.2	65.7	64.9	64.3	63.5	61.5	59.5	58.5	57.7					
M-215 (2nd Story) [2]	ST-34	I	EB Existing 16' ROW	Barrier S-411B	70.1	70.1	82.4	B (67)	80.2	78.6	76.3	74.5	72.0	70.6	69.5	68.7	67.6	Yes	Yes	16	$6,840,000	$3,990,000
M-216 [2]	--	I	EB Existing 16' ROW	Barrier S-411B	54.3	54.3	62.5	B (67)	62.3	61.9	61.2	59.8	57.6	54.7	53.3	52.7	52.3					
M-217 (2nd Story) [2]	--	I	EB Existing 16' ROW	Barrier S-411B	67.7	67.7	81.5	B (67)	78.1	75.2	73.5	71.5	69.8	68.7	67.8	66.8	66.0					
M-218 [2]	--	I	EB Existing 16' ROW	Barrier S-411B	65.7	65.7	80.3	B (67)	72.4	71.5	70.1	68.2	67.4	66.8	66.3	65.7	65.2					
M-219 (2nd Story) [2]	--	I	EB Existing 16' ROW	Barrier S-411B	67.8	67.8	81.5	B (67)	78.1	75.6	73.6	71.7	69.8	68.6	67.8	66.7	65.9					
M-220 [2]	--	I	EB Existing 16' ROW	Barrier S-411B	65.7	65.7	80.4	B (67)	72.4	71.4	70.0	68.1	67.2	66.6	65.9	65.4	64.8	Yes	No	18	$6,840,000	$16,340,000
M-221 [2]	--	I	EB Existing 16' ROW	Barrier S-411B	64.3	64.3	78.9	B (67)	71.2	70.2	69.1	67.1	66.0	65.2	64.6	64.0	63.4					
M-222 [2]	ST-35	I	EB Existing 16' ROW	Barrier S-411B	66.2	66.2	81.4	F (None)	73.6	72.5	71.1	69.1	68.0	67.2	66.5	65.9	65.3					
M-223 [2]	--	I	EB Existing 16' ROW	Barrier S-411B	53.9	53.9	61.1	B (67)	59.0	58.5	57.9	56.7	55.5	54.5	53.7	52.9	52.2					
M-224 [2]	--	I	EB Existing 16' ROW	Barrier S-411B	65.4	65.4	78.7	B (67)	71.9	70.9	69.6	67.8	66.9	66.1	65.5	64.9	64.3					
M-225 [2]	--	I	EB Existing 16' ROW	Barrier S-411B	65.8	65.8	80.5	B (67)	72.5	71.6	69.9	68.1	67.3	66.6	65.9	65.3	64.8	Yes	No	20	$6,840,000	$19,303,000
M-226 [2]	--	I	EB Existing 16' ROW	Barrier S-411B	53.7	53.7	61.0	B (67)	58.6	58.0	57.1	56.0	55.1	54.3	53.6	52.8	52.3					
M-227 [2]	--	I	EB Existing 16' ROW	Barrier S-411B	66.2	66.2	81.0	B (67)	72.8	71.6	69.7	68.3	67.4	66.7	66.0	65.4	64.9					
M-228 [2]	--	I	EB Existing 16' ROW	Barrier S-411B	54.7	54.7	64.2	B (67)	59.5	58.8	58.0	56.8	56.0	55.1	54.4	53.8	53.3					
M-229 [2]	--	I	EB Existing 16' ROW	Barrier S-411B	60.2	60.2	73.9	B (67)	66.4	65.5	63.6	62.3	61.6	60.9	60.5	59.8	59.4	Yes	No	22	$6,840,000	$20,215,000
M-230 [2]	--	I	EB Existing 16' ROW	Barrier S-411B	53.1	53.1	54.5	B (67)	54.7	54.6	54.4	54.1	53.9	53.4	52.8	52.4	52.2					
M-231 [2]	--	I	EB Existing 14' ROW	Barrier S-411A	61.7	61.7	70.9	B (67)	65.4	64.6	63.7	63.1	62.8	62.3	61.9	61.3	60.8					

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									6-foot Wall	8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	18-foot Wall	20-foot Wall	22-foot Wall	Feasible/ Design Goal Met	Reasonable	Barrier Height (FT)	Total Allowable Cost	Construction Cost
M-232 [2]	ST-36	I	EB Existing 14' ROW	Barrier S-411A	61.2	61.2	67.4	B (67)	63.7	63.3	62.8	62.6	62.4	62.0	61.7	61.4	61.1					
M-233 [2]	--	I	EB Existing 14' ROW	Barrier S-411A	60.3	60.3	64.5	B (67)	62.2	62.0	61.8	61.6	61.5	61.3	61.1	60.9	60.7					
M-234	--	I	9' Property Line Wall	--	57.5	57.5	57.5	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-235	--	I	9' Property Line Wall	--	57.6	57.6	57.4	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-236	ST-37	I	9' Property Line Wall	--	58.4	58.4	58.3	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-237	ST-38	I	EB Existing 15' ROW	--	58.6	58.6	58.6	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-238[6]	--	I	9' Property Line Wall	--	59.0	59.0	59.0	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-240	--	J	SB Existing 14' EOS	Barrier EW-451	65.6	65.6	65.6	B (67)	--	--	--	--	--	65.2	64.9	64.6	64.5	No	No	20	--	--
M-241	--	J	SB Existing 14' EOS	Barrier EW-451	61.5	61.5	61.5	B (67)	--	--	--	--	--	60.6	60.0	59.3	58.9					
M-242	--	J	SB Existing 14' EOS	Barrier EW-451	65.0	65.0	65.0	B (67)	--	--	--	--	--	63.8	62.7	62.1	61.2					
M-243	--	J	SB Existing 14' EOS	Barrier EW-451	62.3	62.3	62.5	B (67)	--	--	--	--	--	61.6	60.6	60.4	59.9					
M-244	--	J	SB Existing 14' EOS	Barrier EW-451	67.5	67.5	67.6	B (67)	--	--	--	--	--	66.6	65.5	64.5	63.7					
M-245	--	J	SB Existing 14' EOS	Barrier EW-451	64.1	64.1	65.1	B (67)	--	--	--	--	--	64.4	63.6	62.6	61.8					
M-246 (2nd Story)	--	J	SB Existing 14' EOS	Barrier EW-451	68.8	68.8	69.3	B (67)	--	--	--	--	--	67.2	66.5	65.6	65.2					
M-247	--	J	SB Existing 14' EOS	Barrier EW-451	64.1	64.1	64.6	B (67)	--	--	--	--	--	63.6	61.6	60.6	59.9	Yes	No	22	$95,000	$5,297,000
M-248	--	J	SB Existing 14' EOS	Barrier EW-451	59.2	59.3	60.0	B (67)	--	--	--	--	--	59.4	58.8	58.4	58.0					
M-249 (2nd Story)	--	J	SB Existing 14' EOS	Barrier EW-451	72.9	72.9	73.2	B (67)	--	--	--	--	--	69.8	68.3	67.2	65.8					
M-250	ST-39	J	SB Existing 14' EOS	Barrier EW-451	72.6	72.6	72.9	F (None)	--	--	--	--	--	71.6	70.6	69.9	68.9					
M-251	--	J	SB Existing 14' EOS	Barrier EW-451	72.0	72.0	72.9	B (67)	--	--	--	--	--	72.0	71.0	70.0	69.1					
M-252	--	J	SB Existing 14' EOS	Barrier EW-451	58.2	58.2	58.5	B (67)	--	--	--	--	--	57.2	56.4	56.0	55.8					

Receiver ID	Measurement Location	Area	Existing Barrier	Barrier ID	Existing (2014) Noise Level (dBA)	Design Year (2045) Noise Level without Project (No Build) (dBA)	Design Year (2045) Noise Level with Project (Build) (dBA)	Noise Impact Criteria Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)									Noise Abatement				
									6-foot Wall	8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	18-foot Wall	20-foot Wall	22-foot Wall	Feasible/ Design Goal Met	Reasonable	Barrier Height (FT)	Total Allowable Cost	Construction Cost
M-253 (2nd Story)	--	J	SB Existing 14' EOS	Barrier EW-451	70.0	70.0	70.5	B (67)	--	--	--	--	--	69.1	68.3	67.7	67.6					
M-254	--	J	SB Existing 14' EOS	Barrier EW-451	60.1	60.1	61.9	B (67)	--	--	--	--	--	61.7	61.6	61.5	61.3					
M-255	--	J	--	--	70.8	70.8	71.0	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-256	--	J	--	--	72.6	72.6	72.1	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-257	--	J	--	--	66.8	66.8	67.5	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-258	--	J	--	--	74.0	74.0	75.4	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-259	--	J	--	--	68.7	68.7	70.0	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-260	--	J	EB Existing 14' EOS	--	60.6	60.6	60.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-261	--	J	EB Existing 14' EOS	Barrier EW-354	72.0	72.0	72.8	B (67)	--	--	--	--	--	73.2	72.9	72.5	72.3	No	--	--	--	--
M-262	ST-40	J	EB Existing 14' EOS	Barrier EW-354	69.3	69.3	70.1	B (67)	--	--	--	--	--	69.0	68.3	67.6	66.7	No	--	--	--	--
M-263	--	J	EB Existing 14' EOS	Barrier EW-354	67.9	67.9	68.7	B (67)	--	--	--	--	--	67.8	66.9	66.1	65.2	No	--	--	--	--
M-264	--	J	EB Existing 14' EOS	--	61.3	61.3	61.7	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-265	--	J	EB Existing 16' ROW	--	65.8	65.8	66.6	B (67)	--	--	--	--	--	66.6	65.5	64.5	64.0	No	--	--	--	--
M-266	ST-41	J	EB Existing 16' ROW	Barrier EW-354	65.3	65.3	65.9	B (67)	--	--	--	--	--	65.9	65.1	64.3	63.8	No	--	--	--	--
M-267	--	J	EB Existing 16' ROW	Barrier EW-354	65.7	65.7	66.4	B (67)	--	--	--	--	--	66.4	65.5	64.7	64.1	No	--	--	--	--
M-268	--	J	EB Existing 16' ROW	--	61.3	61.3	62.0	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-269	--	J	EB Existing 16' ROW	--	53.7	53.7	54.1	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-270	--	K	EB 15' Existing ROW	--	61.3	61.3	61.3	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-271	--	K	EB 15' Existing ROW	--	61.2	61.2	61.2	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-272	--	K	EB 15' Existing ROW	--	59.2	59.2	59.3	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-273	--	K	EB 15' Existing ROW	--	63.2	63.3	63.4	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-274	ST-42	K	EB 15' Existing ROW	--	63.6	63.6	63.7	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-275	--	K	EB 18' Existing ROW	--	64.3	64.3	64.4	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-276	--	K	EB 18' Existing ROW	--	64.0	64.0	64.1	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Receiver ID	Measurement Location	Area	Existing Barrier	Barrier ID	Existing (2014) Noise Level (dBA)	Design Year (2045) Noise Level without Project (No Build) (dBA)	Design Year (2045) Noise Level with Project (Build) (dBA)	Noise Impact Criteria Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)									Noise Abatement				
									6-foot Wall	8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	18-foot Wall	20-foot Wall	22-foot Wall	Feasible/ Design Goal Met	Reasonable	Barrier Height (FT)	Total Allowable Cost	Construction Cost
M-277	--	K	EB 20' Existing ROW	--	63.6	63.6	63.8	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-278	--	K	EB 20' Existing ROW	--	61.1	61.1	61.3	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-279	--	K	EB 16' Existing ROW	--	64.8	64.8	64.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-280	--	K	EB Existing 16' ROW	--	65.6	65.6	65.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-281	--	K	EB Existing 16' ROW	--	64.1	64.1	64.4	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-282	ST-43	K	EB Existing 16' ROW	Barrier EW-355	66.8	66.8	67.1	B (67)	--	--	--	--	--	--	66.1	65.3	64.5	--	--	--	--	--
M-283	--	K	EB Existing 16' ROW	--	61.5	61.5	61.7	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-284	--	K	EB Existing 16' ROW	Barrier EW-355	66.0	66.0	66.1	B (67)	--	--	--	--	--	--	65.2	64.4	63.8	--	--	--	--	--
M-285	ST-44	K	EB Existing 16' ROW	--	66.1	66.1	66.2	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-286	--	K	EB Existing 16' ROW	--	59.9	59.9	60.1	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-287	--	K	EB Existing 16' ROW	--	62.8	62.8	63.0	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-288	--	K	EB Existing 16' ROW	Barrier EW-355	66.6	66.6	66.7	B (67)	--	--	--	--	--	--	65.7	65.0	64.2	--	--	--	--	--
M-289	--	K	EB Existing 16' ROW	--	59.6	59.6	59.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-290	ST-45	K	EB Existing 16' ROW	Barrier EW-355	69.7	69.7	69.8	B (67)	--	--	--	--	--	--	69.1	68.7	68.4	--	--	--	--	--
M-291	--	K	EB Existing 16' ROW	--	61.3	61.3	61.7	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-292	--	J	EB 15' Existing ROW	--	64.9	64.9	65.5	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-293	--	J	EB 15' Existing ROW	--	63.9	64.0	64.7	E (72)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-294	--	K	EB 15' Existing ROW	--	63.2	63.2	63.4	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-295	--	K	EB 15' Existing ROW	--	62.7	62.7	63.0	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-296	--	K	EB 15' Existing ROW	--	62.3	62.3	62.6	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-297	ST-46	K	EB 15' Existing ROW	--	62.3	62.3	62.6	C (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-298	--	K	EB 15' Existing ROW	Barrier EW-339	66.3	66.3	66.6	B (67)	--	--	--	--	--	66.2	65.3	64.4	63.8	--	--	--	--	--
M-299	--	K	EB 15' Existing ROW	--	60.3	60.3	60.6	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Receiver ID	Measurement Location	Area	Existing Barrier	Barrier ID	Existing (2014) Noise Level (dBA)	Design Year (2045) Noise Level without Project (No Build) (dBA)	Design Year (2045) Noise Level with Project (Build) (dBA)	Noise Impact Criteria Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)									Noise Abatement				
									6-foot Wall	8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	18-foot Wall	20-foot Wall	22-foot Wall	Feasible/ Design Goal Met	Reasonable	Barrier Height (FT)	Total Allowable Cost	Construction Cost
M-300	--	K	EB 15' Existing ROW	--	65.4	65.4	65.8	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-301	--	K	EB 15' Existing ROW	--	58.7	58.7	59.1	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-302	--	K	EB 15' Existing ROW	Barrier EW-339	68.0	68.0	68.2	B (67)	--	--	--	--	--	68.4	68.2	68.0	67.7	--	--	--	--	--
M-303	--	L	--	--	71.1	71.2	71.7	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-304	--	L	--	--	79.2	79.3	79.3	F (None)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-305	--	L	WB Existing 14' ROW	--	64.1	64.1	63.4	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-306 (2nd Story)	--	L	WB Existing 14' ROW	Barrier EW-314	66.5	66.5	66.6	B (67)	--	--	--	--	--	65.4	64.6	64.0	63.8	--	--	--	--	--
M-307 (2nd Story)	--	L	WB Existing 14' ROW	--	60.7	60.7	60.8	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-308 (2nd Story)	--	L	WB Existing 14' ROW	--	61.6	61.6	61.8	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-309	--	L	WB Existing 14' ROW	--	60.8	60.8	60.8	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-310	ST-49	L	WB Existing 14' ROW	--	64.7	64.7	64.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-311	--	L	WB Existing 12' ROW	--	61.5	61.5	61.8	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-312	--	M	EB Existing 16' ROW	--	58.8	58.8	59.1	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-313	--	M	EB Existing 16' ROW	--	62.8	62.8	63.1	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-314	ST-47	M	EB Existing 16' ROW	--	59.0	59.0	59.3	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-315	--	M	EB Existing 16' ROW	--	60.7	60.7	60.9	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-316	--	M	EB Existing 16' ROW	--	65.3	65.3	65.5	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-317	--	M	EB Existing 16' ROW	--	61.5	61.5	61.6	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-318	--	M	EB Existing 16' ROW	--	65.0	65.1	65.3	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-319	--	M	EB Existing 16' ROW	--	61.4	61.4	61.6	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-320	--	M	EB Existing 16' ROW	--	61.9	61.9	62.1	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-321	--	M	EB Existing 16' ROW	--	65.5	65.5	65.5	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-322	--	M	EB Existing 16' ROW	--	62.2	62.2	62.3	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-323	ST-48	M	EB Existing 16' ROW	--	63.9	63.9	64.0	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Receiver ID	Measurement Location	Area	Existing Barrier	Barrier ID	Existing (2014) Noise Level (dBA)	Design Year (2045) Noise Level without Project (No Build) (dBA)	Design Year (2045) Noise Level with Project (Build) (dBA)	Noise Impact Criteria Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)									Noise Abatement				
									6-foot Wall	8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	18-foot Wall	20-foot Wall	22-foot Wall	Feasible/ Design Goal Met	Reasonable	Barrier Height (FT)	Total Allowable Cost	Construction Cost
M-324	--	M	EB Existing 16' ROW	--	64.0	64.0	64.1	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-325	--	M	EB Existing 14' EOS	--	65.8	65.9	65.9	B (67)	--	--	--	--	--	--	64.7	64.0	63.5	--	--	--	--	--
M-326	--	M	EB Existing 14' EOS	--	63.3	63.3	63.3	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-327	--	M	EB Existing 14' EOS	--	65.1	65.1	65.1	B (67)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M-328	--	M	EB Existing 14' EOS	--	62.7	62.7	62.7	B (67)	--	--	--	--	--	--	--	--	--		--	--	--	--
M-329	--	M	EB Existing 14' EOS	--	62.9	62.9	63.0	B (67)	--	--	--	--	--	--	--	--	--		--	--	--	--

[1] – The 2019 reasonableness allowance was used for soundwalls S-223 and S-520 as these barriers were analyzed in the SNSR and the SNADR.

[2] – Sound walls S-403 and S-411 follow the same alignment (along the ROW) up through Station 431+05, where soundwall S-411 terminates. Soundwall S-435 would start at Station 430+50 along the edge of shoulder (EOS) of the EB off-ramp to North Glassell Street, whereas S-403 would continue along the ROW.

Construction (Short-Term) Impacts

Under the No-Build Alternative, SR-91 freeway mainline widening as well as modifications to various interchanges, ramps, and intersections would not be implemented at this time. No construction-related noise impacts would occur.

Build Alternative (Preferred Alternative)

Area A (North of SR-91, East of North Lakeview Avenue)

The traffic noise modeling results in Table 2.2.7-2 indicate that traffic noise levels under future design-year build conditions within Area A would range from 58.7 dBA L_{eq}(h) at modeled location M-10 to 71.0 dBA L_{eq}(h) at modeled location M-13. Noise levels under design-year build conditions are predicted to change relative to existing worst-hour traffic noise levels by approximately 0.1 dB to 8.4 dB. Traffic noise impacts are predicted at noise-sensitive land uses in Area A; therefore, noise abatement must be considered.

Area B (South of SR-91, East of North Lakeview Avenue)

The traffic noise modeling results in Table 2.2.7-2 indicate that traffic noise levels under future design-year build conditions within Area B would range from 56.8 dBA L_{eq}(h) at modeled location M-40 to 70.4 dBA L_{eq}(h) at modeled location M-29. Noise levels under design-year build conditions are predicted to change relative to existing worst-hour traffic noise levels by approximately -0.5 dB (a decrease of 0.5 dB) to 0.0 dB. Traffic noise impacts are predicted at noise-sensitive land uses in Area B; therefore, noise abatement must be considered.

Area C (North and East of SR-91, West of North Lakeview Avenue, East of North Tustin Avenue)

The traffic noise modeling results in Table 2.2.7-2 indicate that traffic noise levels under future design-year build conditions within Area C would range from 54.0 dBA L_{eq}(h) at modeled location M-44 to 77.2 dBA L_{eq}(h) at modeled location M-56B. Noise levels under design-year build conditions are predicted to change relative to existing worst-hour traffic noise levels by approximately -2.5 dB to 15.3 dB. Traffic noise impacts are predicted at noise-sensitive land uses in Area C; therefore, noise abatement must be considered.

Area D (South of SR-91, West of North Lakeview Avenue)

The traffic noise modeling results in Table 2.2.7-2 indicate that traffic noise levels future design-year build conditions within Area D would range from 52.9 dBA L_{eq}(h) at modeled location M-92 to 70.4 dBA L_{eq}(h) at modeled location M-124. Noise levels under design-year build conditions are predicted to change relative to existing worst-hour traffic noise levels by approximately -0.8 dB to 0.4 dB. Traffic noise impacts are predicted at noise-sensitive land uses in Area D; therefore, noise abatement must be considered.

Area E (North of SR-55, West of SR-91, South of North Tustin Avenue)

The traffic noise modeling results in Table 2.2.7-2 indicate that traffic noise levels under future design-year build conditions within Area E would range from 58.6 dBA L_{eq}(h) at modeled location M-144 to 78.3 dBA L_{eq}(h) at modeled location M-158. Noise levels under design-year build conditions are predicted to change relative to existing worst-hour traffic noise levels by approximately 1.3 dB to 10.2 dB. Traffic noise impacts are predicted at noise-sensitive land uses in Area E; therefore, noise abatement must be considered.

Area F (North of SR-91, West of North Tustin Avenue, East of North Glassell Street)

The traffic noise modeling results in Table 2.2.7-2 indicate that traffic noise levels under future design-year build conditions within Area F would range from 65.1 dBA L_{eq}(h) at modeled location M-178 to 82.6 dBA L_{eq}(h) at modeled location M-170. Noise levels under design-year build conditions are predicted to change relative to existing worst-hour traffic noise levels by approximately -0.7 dB to 0.2 dB. Traffic noise impacts are predicted at noise-sensitive land uses in Area F; therefore, noise abatement must be considered.

Area G (South of SR-91, West of North Tustin Avenue, East of North Glassell Street)

The traffic noise modeling results in Table 2.2.7-2 indicate that traffic noise levels under future design-year build conditions within Area G would range from 65.6 dBA L_{eq}(h) at modeled location M-179 to 72.4 dBA L_{eq}(h) at modeled location M-163. Noise levels under design-year build conditions are predicted to change relative to existing worst-hour traffic noise levels by approximately -0.2 dB to 1.6 dB. No modeled receivers are predicted to approach or exceed any NAC. Therefore, traffic noise impacts are not predicted for Area G, and noise abatement does not need to be considered.

Area H (North of SR-91, East of SR-57, West of North Glassell Street)

The traffic noise modeling results in Table 2.2.7-2 indicate that traffic noise levels under future design-year build conditions within Area H would range from 62.1 dBA L_{eq}(h) at modeled location M-186 to 77.6 dBA L_{eq}(h) at modeled location M-183. Noise levels under design-year build conditions are predicted to change relative to existing worst-hour traffic noise levels by approximately -0.4 dB to 1.5 dB. Traffic noise impacts are predicted to occur in Area H, and noise abatement must be considered.

Area I (South of SR-91, East of SR-57, West of North Glassell Street)

The traffic noise modeling results in Table 2.2.7-2 indicate that traffic noise levels under future design-year build conditions within Area I would range from 53.8 dBA L_{eq}(h) at modeled location M-190 to 82.8 dBA L_{eq}(h) at modeled location M-212. Noise levels under design-year build conditions are predicted to change relative to existing worst-hour traffic noise levels by approximately -0.2 dB to 15.2 dB. At 17 modeled receivers (M-208 through M-213, M-215/ST-34, M-217 through M-221, M-224, M-225, M-227, M-229, and M-231), traffic noise levels under design-year build conditions are predicted to increase by more than 12 dB relative to the existing condition. However, noise levels at these locations would be subject to removal and relocation of a portion an existing noise barrier. Therefore, this is not considered a substantial increase because the barrier would be replaced as part of the project. Traffic noise impacts are predicted at noise-sensitive land uses in Area I; therefore, noise abatement must be considered.

Area J (North of SR-91, West of SR-57, East of North State College Boulevard)

The traffic noise modeling results in Table 2.2.7-2 indicate that traffic noise levels under future design-year build conditions within Area J would range from 54.2 dBA L_{eq}(h) at modeled location M-269 to 75.4 dBA L_{eq}(h) at modeled location M-258. Noise levels under design-year build conditions are predicted to change relative to existing worst-hour traffic noise levels by approximately -0.5 dB to 1.8 dB. Traffic noise impacts are predicted at noise-sensitive land uses in Area J; therefore, noise abatement must be considered.

Area K (South of SR-91, West of SR-57, East of North State College Boulevard)

The traffic noise modeling results in Table 2.2.7-2 indicate that traffic noise levels under future design-year build conditions within Area K would range from 59.1 dBA L_{eq}(h) at modeled

location M-301 to 69.8 dBA L_{eq}(h) at modeled location M-290. Noise levels under design-year build conditions are predicted to change relative to existing worst-hour traffic noise levels by approximately 0.0 dB (i.e., no change) to 0.4 dB. Traffic noise impacts are predicted at noise-sensitive land uses in Area K; therefore, noise abatement must be considered.

Area L (North of SR-91, West of North State College Boulevard)

The traffic noise modeling results in Table 2.2.7-2 indicate that traffic noise levels under future design-year build conditions within Area L would range from 60.7 dBA L_{eq}(h) at modeled location M-309 to 79.3 dBA L_{eq}(h) at modeled location M-304. Noise levels under design-year build conditions are predicted to change relative to existing worst-hour traffic noise levels by approximately -0.7 dB to 0.6 dB. Traffic noise impacts are predicted at noise-sensitive land uses in Area L; therefore, noise abatement must be considered.

Area M (South of SR-91, West of North State College Boulevard)

The traffic noise modeling results in Table 2.2.7-2 indicate that traffic noise levels under future design-year build conditions within Area M would range from 59.1 dBA L_{eq}(h) at modeled location M-312 and to 65.9 dBA L_{eq}(h) at modeled location M-325. Noise levels under design-year build conditions are predicted to change relative to existing worst-hour traffic noise levels by approximately 0.0 dB to 0.3 dB. No modeled receivers are predicted to approach or exceed any NAC. Therefore, traffic noise impacts are not predicted for Area M, and noise abatement does not need to be considered.

Construction (Short-Term Impacts)

During construction of the project, noise from construction activities may intermittently dominate the noise environment in the immediate area of construction. Noise associated with construction is controlled by 2018 Caltrans Standard Specifications, Section 14-8.02, Noise Control:

- Do not exceed 86 dBA, maximum noise level (L_{max}), at 50 feet from job site activities between 9:00 p.m. and 6:00 a.m.

Table 2.2.7-3 summarizes the noise levels that would be produced by the equipment that is anticipated to be used during project construction. This conventional construction equipment is expected to generate noise levels ranging from 74 to 85 dBA L_{max} at a distance of 50 feet; pile driving would generate a noise level of approximately 101 dBA L_{max} at 50 feet. Noise produced by construction equipment would be reduced at a rate of about 6 dB per doubling of distance.

Table 2.2.7-3. Construction Equipment Noise

Equipment	**L_{max} at 50 feet (dBA, slow)**
Air compressor	78
Auger drill rig	84
Backhoe	78
Compactor	83
Concrete mixer truck	79
Concrete pump truck	81
Crane	81
Dozer	82
Dump truck	76

Equipment	L_{max} at 50 feet (dBA, slow)
Excavator	81
Front-end loader	79
Generator	81
Grader	85
Impact pile driver	101
Jackhammer	89
Paver	77
Pneumatic tools	85
Rollers	80
Scraper	84
Welder/torch	74

Source: Federal Highway Administration. 2008. *Roadway Construction Noise Model*. Software Version 1.1. See also http://www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/rcnm.pdf.

No adverse noise impacts from construction are anticipated because construction would be conducted in accordance with Caltrans Standard Specifications, Section 14.8-02 (**PF-NOI-1**). Construction noise would be short term and intermittent.

PF NOI-1 Sound control used will conform to the provisions in Section 14-8.02, "Noise Control," of the Standard Specifications.

2.2.7.4 AVOIDANCE, MINIMIZATION, AND/OR ABATEMENT MEASURES

A preliminary noise abatement analysis was conducted to determine appropriate abatement measures for the Build Alternative (Preferred Alternative). In total, 12 noise barriers were found to be feasible at wall heights ranging from 6 to 22 feet, providing a minimum reduction of 5 dB. The design goal of 7 dB would be achieved with nine noise barriers at wall heights between 6 and 22 feet. A number of other walls were analyzed but either did not meet the 5 dB requirement for feasibility or were not able to achieve the design goal of 7 dB. Therefore, those walls were not considered for further analysis. The evaluated noise barriers are shown in Appendix G, Figure 1.

The cost estimates were based on barrier design, materials, labor, traffic control, mobilization, and a 25 percent contingency factor. The noise barriers were assumed to be constructed of masonry block, in accordance with Caltrans Standard Specifications, and either supported on a retaining wall or cast-in-drilled-hole piles. Table 2.2.7-4 summarizes the acoustical feasibility of the noise barriers and the estimated cost of construction compared to the reasonableness allowance for each noise barrier height. The reasonableness of a noise barrier was determined by comparing the estimated construction cost of the noise barrier against the total reasonableness allowance. The total reasonableness allowance was based on the number of benefited residences or, in this case, residential equivalent dwelling units multiplied by the reasonable allowance per residential equivalent, which is $95,000, based on the 2018 Construction Price Index. If the estimated noise barrier construction cost exceeds the total reasonable allowance, the noise barrier is determined to be not reasonable and is not considered further for incorporation into the project.

Table 2.2.7-4. Summary of Abatement Key Information

Barrier	Height (feet)	Acoustically Feasible?	Number of Benefited Residences	Design Goal Achieved?	Total Reasonable Allowance	Estimated Construction Cost	Cost Less than Allowance?
S-223	6	No	0	No	—	—	—
	8	Yes	2	No	—	—	—
	10	Yes	5	Yes	$535,000	$416,000	Yes
	12	Yes	5	Yes	$535,000	$461,000	Yes
	14[a]	Yes	5	Yes	$535,000	$507,000	Yes
	16[a]	Yes	5	Yes	$535,000	$549,000	No
	18[a]	Yes	6	Yes	$642,000	$1,523,000	No
	20[a]	Yes	8	Yes	$856,000	$2,075,000	No
	22[a]	Yes	8	Yes	$856,000	$2,173,000	No
S-103	6	Yes	6	Yes	$570,000	$1,620,000	No
	8	Yes	7	Yes	$665,000	$1,849,000	No
	10	Yes	19	Yes	$1,805,000	$2,078,000	No
	12	Yes	23	Yes	$2,185,000	$2,306,000	No
	14[a]	Yes	29	Yes	$2,755,000	$2,535,000	Yes
	16[a]	Yes	31	Yes	$2,945,000	$2,747,000	Yes
	18[a]	Yes	37	Yes	$3,515,000	$7,613,000	No
	20[a]	Yes	37	Yes	$3,515,000	$10,376,000	No
	22[a]	Yes	37	Yes	$3,515,000	$10,866,000	No
S-521	6	No	0	No	$0	—	—
	8	No	0	No	$0	—	—
	10	No	0	No	$0	—	—
	12[a]	No	0	No	$0	—	—
	14[a]	Yes	1	No	$0	—	—
	16[a]	Yes	3	Yes	$285,000	$527,000	No
	18[a]	Yes	3	Yes	$285,000	$1,683,000	No
	20[a]	Yes	3	Yes	$285,000	$1,989,000	No
	22[a]	Yes	3	Yes	$285,000	$2,083,000	No
S-542	6	No	0	No	$0	—	—
	8	No	0	No	$0	—	—
	10	No	0	No	$0	—	—
	12	No	0	No	$0	—	—
	14	No	0	No	$0	—	—
	16[a]	No	0	No	$0	—	—
	18[a]	No	0	No	$0	—	—
	20[a]	Yes	1	Yes	$95,000	$1,383,000	No
	22[a]	Yes	1	Yes	$95,000	$1,449,000	No
S-520	6	Yes	3	No	—	—	—
	8	Yes	5	Yes	$535,000	$478,000	Yes
	10	Yes	5	Yes	$535,000	$537,000	No
	12	Yes	6	Yes	$642,000	$596,000	Yes
	14	Yes	8	Yes	$856,000	$655,000	Yes
	16[a]	Yes	8	Yes	$856,000	$710,000	Yes
	18[a]	Yes	8	Yes	$856,000	$1,967,000	No
	20[a]	Yes	8	Yes	$856,000	$2,680,000	No
	22[a]	Yes	8	Yes	$856,000	$2,807,000	No

Barrier	Height (feet)	Acoustically Feasible?	Number of Benefited Residences	Design Goal Achieved?	Total Reasonable Allowance	Estimated Construction Cost	Cost Less than Allowance?
S-457	6	Yes	2	Yes	$190,000	$540,000	No
	8	Yes	17	Yes	$1,615,000	$616,000	Yes
	10	Yes	36	Yes	$3,420,000	$693,000	Yes
	12	Yes	40	Yes	$3,800,000	$769,000	Yes
	14[a]	Yes	40	Yes	$3,800,000	$845,000	Yes
	16[a]	Yes	40	Yes	$3,800,000	$916,000	Yes
	18[a]	Yes	40	Yes	$3,800,000	$2,928,000	Yes
	20[a]	Yes	40	Yes	$3,800,000	$3,459,000	Yes
	22[a]	Yes	40	Yes	$3,800,000	$3,622,000	Yes
S-38	6	No	—	No	$0	—	—
	8	No	—	No	$0	—	—
	10	Yes	2	No	$0	—	—
	12	Yes	2	No	$0	—	—
	14[a]	Yes	2	Yes	$190,000	$843,000	No
	16[a]	Yes	2	Yes	$190,000	$881,000	No
	18[a]	Yes	2	Yes	$190,000	$2,818,000	No
	20[a]	Yes	2	Yes	$190,000	$3,329,000	No
	22[a]	Yes	2	Yes	$190,000	$3,486,000	No
S-38 (ROW)	6	No	--	No	$0	—	—
	8	No	--	No	$0	—	—
	10	Yes	1	No	$0	—	—
	12	Yes	1	No	$0	—	—
	14	Yes	2	Yes	$190,000	$797,000	No
	16	Yes	2	Yes	$190,000	$864,000	No
	18[a]	Yes	2	Yes	$190,000	$2,763,000	No
	20[a]	Yes	2	Yes	$190,000	$3,264,000	No
	22[a]	Yes	2	Yes	$190,000	$3,418,000	No
S-403	6	Yes	28	Yes	$2,660,000	$2,157,000	Yes
	8	Yes	36	Yes	$3,420,000	$2,462,000	Yes
	10	Yes	50	Yes	$4,750,000	$2,766,000	Yes
	12	Yes	59	Yes	$5,605,000	$3,070,000	Yes
	14[a]	Yes	66	Yes	$6,270,000	$3,375,000	Yes
	16[a]	Yes	72	Yes	$6,840,000	$3,658,000	Yes
	18[a]	Yes	72	Yes	$6,840,000	$15,279,000	No
	20[a]	Yes	72	Yes	$6,840,000	$18,049,000	No
	22[a]	Yes	72	Yes	$6,840,000	$18,902,000	No
S411 & S-435	6	Yes	28	Yes	$2,660,000	$2,352,000	Yes
	8	Yes	36	Yes	$3,420,000	$2,685,000	Yes
	10	Yes	50	Yes	$4,750,000	$3,017,000	Yes
	12	Yes	59	Yes	$5,605,000	$3,348,000	Yes
	14[a]	Yes	66	Yes	$6,270,000	$3,681,000	Yes
	16[a]	Yes	72	Yes	$6,840,000	$3,990,000	Yes
	18[a]	Yes	72	Yes	$6,840,000	$16,340,000	No
	20[a]	Yes	72	Yes	$6,840,000	$19,303,000	No
	22[a]	Yes	72	Yes	$6,840,000	$20,215,000	No
EW-451	6	No	--	No	$0	—	—
	8	No	--	No	$0	—	—
	10	No	--	No	$0	—	—
	12	No	--	No	$0	—	—

Barrier	Height (feet)	Acoustically Feasible?	Number of Benefited Residences	Design Goal Achieved?	Total Reasonable Allowance	Estimated Construction Cost	Cost Less than Allowance?
	14	No	--	No	$0	—	—
	16	No	--	No	$0	—	—
	18	No	--	No	$0	—	—
	20	Yes	1	No	$0	—	—
	22	Yes	1	Yes	$95,000	$5,297,000	No

[a] Breaks line of sight of an 11.5-foot truck stack at all benefited receptors.
ROW = right of way

The recommended soundwall locations and heights are shown in Appendix G, Figure 1. The results of the preliminary noise abatement decision are based on acoustical and non-acoustical feasibility factors, the design goal, and the relationship between noise abatement allowances and cost estimate. The final overall reasonableness decision will take these results into account, along with the results of the survey of benefited receptors conducted during the environmental review process. At the end of the public review process for this Initial Study/Environmental Assessment (IS/EA), the final noise abatement decision will be made and presented in the final IS/EA. The preliminary noise abatement decision presented in this IS/EA will become the final noise abatement decision, unless compelling information received during the environmental review process, or as part of the survey of benefited receptors, indicates that it should be changed.

Area A, Noise Barrier S-223

Noise Barrier S-223 was found to be acoustically feasible if constructed at heights ranging from 8 to 22 feet; however, it would meet the design goal of 7 dB insertion loss at the design receiver (M-13) only at heights of 10 to 22 feet. The total length of Noise Barrier S-223 would be approximately 480 feet. Noise Barrier S-223 would replace the portion of the existing edge of shoulder (EOS) barrier that would be demolished to accommodate the new off-ramp to Lakeview Avenue. Noise Barrier S-223 would be constructed on the EOS, starting along the westbound off-ramp from SR-91 to Lakeview Avenue and tying back into the existing 14-foot EOS wall along the WB SR-91 mainline at Station 225+86. Noise Barrier S-223 would be shifted approximately 10 feet from its existing location. The location of Noise Barrier S-223 is shown in Appendix G, Figure 1.

Noise Barrier S-223 would result in two benefited receptors (Activity Category B land uses [residential]) at a barrier height of 8 feet; five benefited receptors (Activity Category B land uses [residential]) at barrier heights of 10 feet, 12 feet, 14 feet, and 16 feet; six benefited receptors (Activity Category B land uses [residential]) at a barrier height of 18 feet; and eight benefited receptors (Activity Category B land uses [residential]) at barrier heights of 20 and 22 feet.

Based on the costs provided in Appendix B of the NADR and shown in Table 2.2.7-4, the cost to construct Noise Barrier S-223 would exceed the reasonableness allowance at barrier heights of 16 feet to 22 feet. Barrier heights of 10 feet through 14 feet were found to be reasonable as the reasonable allowance would exceed the cost to construct Noise Barrier S-223 at these heights. The existing barrier is located along the portion of SR-91 where S-223 is a 14-foot barrier. The barrier height of 14 feet is the only viable barrier height, as it would match the height of the existing barrier. Therefore, a 14-foot height (and not the lower 10- and 12-foot barrier heights) for Noise Barrier S-223 is recommended.

Area C, Noise Barrier S-103

Noise Barrier S-103 was found to be acoustically feasible and would meet the 7 dB insertion loss design goal at the design receiver (M-56B) if constructed at any of the analyzed heights (6 to 22 feet). The total length of Noise Barrier S-103 would be approximately 2,400 feet. Noise Barrier S-103 would be constructed on the EOS, starting along the Lakeview drop ramp to westbound SR-91, then continuing along the westbound mainline. Noise Barrier S-103 would replace the portion of the existing right-of-way (ROW) barrier that would be demolished to accommodate the widened SR-91 design. Barrier heights of 14 feet or more would block the line of sight to an 11.5-foot truck stack at all benefited receptors. The location of Noise Barrier S-103 is shown in Appendix G, Figure 1.

Noise Barrier S-103 would result in six benefited receptors (Activity Category B land uses [residential]) at a barrier height of 6 feet, seven benefited receptors (Activity Category B land uses [residential]) at a barrier height of 8 feet, 19 benefited receptors (Activity Category B land uses [residential]) at a barrier height of 10 feet, 23 benefited receptors (Activity Category B land uses [residential]) at a barrier height of 12 feet, 29 benefited receptors (Activity Category B land uses [residential]) at a barrier height of 14 feet, 31 benefited receptors (Activity Category B land uses [residential]) at a barrier height of 16 feet, and 37 benefited receptors (Activity Category B land uses [residential]) at barrier heights of 18 feet, 20 feet, or 22 feet.

Based on the costs provided in the NADR (Appendix B) and shown in Table 2.2.7-4, the cost to construct Noise Barrier S-103 would exceed the reasonableness allowance at barrier heights of 6 to 12 feet, 18 feet, 20 feet, and 22 feet. Barrier heights of 14 feet and 16 feet were found to be reasonable because the reasonable allowance would not exceed the cost to construct Noise Barrier S-103. The existing barrier located along the portion of SR-91 where S-103 was modeled is a 16-foot barrier that transitions between the ROW and EOS. Therefore, because a barrier height of 16 feet would match the height of the existing barrier and maximize the number of benefited receptors, a 16-foot height for Noise Barrier S-103 is recommended.

Based on the studies completed to date, Caltrans intends to incorporate noise abatement in the form of Noise Barrier S-103 at the EOS, with a length of 2,400 feet and a height of 16 feet. Calculations, based on preliminary design data, show that Noise Barrier S-103 would reduce noise levels by 5.4 to 15.3 dBA for 31 residences at a cost of $2,747,000. If, during final design, conditions have changed substantially, noise abatement may not be necessary. The final decision on noise abatement will be made upon completion of the project design.

Area C, Noise Barrier S-521

Noise Barrier S-521 was found to be acoustically feasible if constructed at heights ranging from 14 to 22 feet; however, it would meet the 7 dB insertion loss design goal at the design receiver (M-11) only at heights of 16 to 22 feet. The total length of Noise Barrier S-521 would be approximately 460 feet. Noise Barrier S-521 would be constructed on the EOS of the westbound SR-91 alignment, west of the SR-91/SR-55 interchange. Barrier heights of 12 feet and more would block the line of sight to an 11.5-foot truck stack at all benefited receptors. The location of Noise Barrier S-521 is shown in Appendix G, Figure 1.

Noise Barrier S-521 would result in three benefited receptors (Activity Category B land use [residential]) and have a total reasonable allowance of $285,000 at heights of 16 feet or more. Based on the costs provided in the NADR (Appendix B) and shown in Table 2.2.7-4, the cost to construct Barrier S-521 would exceed the reasonableness allowance at all feasible barrier

heights (16 to 22 feet). Because the construction cost would exceed the reasonable allowance, Noise Barrier S-521 is not recommended.

Area D, Noise Barrier S-542

Noise Barrier S-542 was found to be acoustically feasible and would meet the 7 dB insertion loss design goal at the design receiver (M-12) at heights ranging from 20 to 22 feet. Noise Barrier S-542 would be constructed on the property line of a private home; this is the only location that would benefit the design receiver. The length of Noise Barrier S-542 would be approximately 320 feet. Barrier heights of 16 to 22 feet would block the line of sight to an 11.5-foot truck stack at the benefited receptor. The location of Barrier S-542 is shown in Appendix G, Figure 1.

Noise Barrier S-542 would result in one benefited receptor (Activity Category B land use [residential]) and have a total reasonable allowance of $95,000 for barrier heights of 20 and 22 feet. Based on the costs provided in Appendix B and shown in Table 2.2.7-4, the cost to construct Noise Barrier S-542 would exceed the reasonableness allowance at all feasible barrier heights (20 to 22 feet). Because the construction cost would exceed the reasonable allowance for both barrier heights, Noise Barrier S-542 is not recommended.

Area E, Noise Barrier S-520

Noise Barrier S-520 was found to be acoustically feasible if constructed at heights ranging from 6 to 22 feet; however, it would meet the 7 dB insertion loss design goal at the design receiver (M-146) only at heights of 8 to 22 feet. The total length of Noise Barrier S-520 would be approximately 620 feet. Noise Barrier S-520 would be constructed on the EOS along the eastbound SR-91 mainline lanes, south of the East Riverdale Overcrossing. Noise Barrier S-520 would replace the portion of the existing 12-foot EOS barrier that would be demolished to accommodate the widened SR-91 design. The location of Noise Barrier S-520 is shown in Appendix G, Figure 1.

Noise Barrier S-520 would result in three benefited receptors (Activity Category B land uses [residential]) at a barrier height of 6 feet, five benefited receptors (Activity Category B land uses [residential]) at barrier heights of 8 feet and 10 feet, six benefited receptors (Activity Category B land uses [residential]) at a barrier height of 12 feet, and eight benefited receptors (Activity Category B land uses [residential]) at barrier heights of 14 feet to 22 feet.

Based on the costs provided in Appendix B of the Supplemental NADR and shown in Table 2.2.7-4, the cost to construct Noise Barrier S-520 would exceed the reasonableness allowance at barrier heights of 10 feet and 18 feet to 22 feet. Barrier heights of 8 feet and 12 feet through 16 feet were found to be reasonable because the reasonable allowance would not exceed the cost to construct Noise Barrier S-520. Barrier heights of 12 and 14 feet would maximize the number of benefited receptors. Therefore, a barrier height of 12 or 14 feet for Noise Barrier S-520 is recommended. The 16-foot height is not recommended as this height would exceed the maximum suggested height (14 feet) for an EOS barrier.

Based on the studies completed to date and input from the public, Caltrans intends to incorporate noise abatement in the form of Noise Barrier S-520 at the EOS, with a length of 620 feet and a height of 16 feet. Calculations, based on preliminary design data, show that Noise Barrier S-520 would reduce noise levels by 1.3 to 10.6 dB for eight residences at a cost of $710,000 at a barrier height of 16 feet. If conditions have substantially changed during final design, noise abatement may not be constructed. The final decision on noise abatement will be made upon completion of the project design.

Area F, Noise Barrier S-457

Noise Barrier S-457 was found to be acoustically feasible and would meet the 7 dB insertion loss design goal at the design receiver (M-168) if constructed at heights ranging from 6 to 22 feet. The total length of Noise Barrier S-457 would be approximately 800 feet. Noise Barrier S-457 would be constructed on the EOS, along the westbound side of the SR-91 mainline, approaching the Kraemer/Glassell off-ramp. Barrier heights of 14 feet to 22 feet would block the line of sight to an 11.5-foot truck stack at all benefited receptors. The location of Noise Barrier S-457 is shown in Appendix G, Figure 1.

Noise Barrier S-457 would result in two benefited receptors (Activity Category C land use [amusement park]) and have a total reasonable allowance of $190,000 at a height of 6 feet, $1,615,000 at a height of 8 feet, $3,420,000 at a height of 10 feet, and $3,800,000 for barrier heights of 12 to 22 feet. Based on the costs provided in Appendix B and shown in Table 2.2.7-4, the cost to construct Noise Barrier S-457 would be less than the reasonableness allowance at barrier heights of 8 to 22 feet. A barrier height of 14 feet would maximize the number of benefited receptors and block the line of sight to an 11.5-foot truck stack. Therefore, a barrier height of 14 feet for Noise Barrier S-457 was recommended however, the owner of the property voted against the inclusion of Noise Barrier S-457.

Based on the studies completed to date and input from the public, Caltrans does not intend to incorporate noise abatement in the form of Noise Barrier S-457.

Area H, Noise Barrier S-38

Noise Barrier S-38 was found to be acoustically feasible at heights of 10 to 22 feet and would meet the 7 dB insertion loss design goal at the design receiver (M-181) if constructed at heights ranging from 14 to 22 feet. The total length of Noise Barrier S-38 would be approximately 770 feet. Noise Barrier S-38 would be constructed on the EOS along the southbound on-ramp from Kraemer/Glassell to westbound SR-91. Barrier heights of 14 to 22 feet would block the line of sight to an 11.5-foot truck stack at all benefited receptors. The location of Noise Barrier S-38 is shown in Appendix G, Figure 1.

Noise Barrier S-38 would result in two benefited receptors (representative of one Activity Category C land use [outdoor seating area] and one Activity Category D land use [interior]). It would have a total reasonable allowance of $190,000 for all barrier heights from 14 to 22 feet. Modeled receptor M-181 is representative of the interior of a facility. The NSR discusses the methodology for identifying impacts at modeled receiver M-181. Based on the costs provided in Appendix B and shown in Table 2.2.7-4, the cost to construct Noise Barrier S-38 would exceed the reasonableness allowance at all barrier heights. Because the construction cost would exceed the reasonable allowance for all barrier heights, Noise Barrier S-38 is not recommended.

Area H, Noise Barrier S-38 (ROW)

Noise Barrier S-38 (ROW) was modeled at the same general location as S-38. It was found to be acoustically feasible at heights of 10 to 22 feet and would meet the 7 dB insertion loss design goal at the design receiver (M-181) if constructed at heights ranging from 14 to 22 feet. The total length of Noise Barrier S-38 (ROW) would be approximately 755 feet. Noise Barrier S-38 (ROW) would be constructed on the ROW along the southbound on-ramp from Kraemer/Glassell to westbound SR-91. Barrier heights of 18 to 22 feet would block the line of sight to an 11.5-foot truck stack at all - benefited receptors. The location of Noise Barrier S-38 (ROW) is shown in Appendix G, Figure 1.

Noise Barrier S-38 (ROW) would result in two benefited receptors (representative of one Activity Category C land uses [outdoor seating area] and one Activity Category D land use [interior]) and have a total reasonable allowance of $190,000 for all barrier heights from 14 to 22 feet. Based on the costs provided in Appendix B and shown in Table 2.2.7-4, the cost to construct Noise Barrier S-38 (ROW) would exceed the reasonableness allowance at all barrier heights. Because the construction cost would exceed the reasonable allowance for all barrier heights, Noise Barrier S-38 (ROW) is not recommended.

Area I, Noise Barriers S-403 and S-411/S-435

Noise Barrier S-403 was found to be acoustically feasible and would meet the 7 dB insertion loss design goal at the design receiver (M-210) if constructed at heights ranging from 6 to 22 feet. As discussed in the NSR, Noise Barrier S-403 was broken up into four different parts (S-403A through S-403D). S-403A and S-403C are existing 14- and 16-foot segments of a wall that would not be demolished by the project. S-403B is an existing 16-foot-high, 2,575-foot-long segment that would be demolished to allow the SR-91 mainline to be widened. S-403D is a new 620-foot-long barrier extension at the eastern terminus of S-403C.

Noise Barrier S-403 would transition between the ROW and the EOS along the eastbound SR-91 alignment, east of the La Palma overcrossing, then transition onto the eastbound off-ramp to Kraemer/Glassell. The total length of Noise Barrier S-403 would be approximately 4,430 feet. Barrier heights of 14 to 22 feet would block the line of sight to an 11.5-foot truck stack at all benefited receptors.

Noise Barrier S-403 would result in 28 to 72 benefited receptors (Activity Category B land uses [residential]), depending on the barrier height. The total reasonable allowance for Noise Barrier S-403 would be $2,660,000 (28 benefitted receptors) at a height of 6 feet, $3,420,000 (36 benefitted receptors) at a height of 8 feet, $4,750,000 (50 benefitted receptors) at a height of 10 feet, $5,605,000 (59 benefitted receptors) at a height of 12 feet, $6,270,000 (66 benefitted receptors) at a height of 14 feet, and $6,840,000 (72 benefitted receptors) at heights of 16 to 22 feet. Based on the costs provided in Appendix B and shown in Table 2.2.7-4, the cost to construct Noise Barrier S-403 would be less than the reasonable allowance at barrier heights of 6 to 16 feet, but it would exceed the reasonableness allowance at barrier heights of 18 to 22 feet.

A second set of barriers, Noise Barriers S-411 and S-435, was considered as an alternative to Noise Barrier S-403, described above. Noise Barriers S-411 and S-435 were found to be acoustically feasible and would meet the 7 dB insertion loss design goal at the design receiver (M-210) if constructed at heights ranging from 6 to 22 fee**t.** As discussed above, Noise Barriers S-411A through S-411C are at the same location as Noise Barriers S-403A through S-403C. Noise Barrier S-435 has an approximate length of 910 feet and is located along the eastbound shoulder of the Kraemer/Glassell off-ramp.

Noise Barrier S-411 would transition between the ROW and the EOS along the eastbound SR-91 alignment, east of the La Palma overcrossing; Noise Barrier S-435 would be located only on the EOS of the Kraemer/Glassell off-ramp. The total length of Noise Barriers S-411 and S-435 would be approximately 4,720 feet. Barrier heights of 14 to 22 feet would block the line of sight to an 11.5-foot truck stack at all benefited receptors.

Noise Barriers S-411/S-435 would result in 28 to 72 benefitted receptors (Activity Category B land uses [residential]), depending on the barrier height. The total reasonable allowance for

Noise Barriers S-411/S-435 would be $2,660,000 (28 benefitted receptors) at a height of 6 feet, $3,420,000 (36 benefitted receptors) at a height of 8 feet, $4,750,000 (50 benefitted receptors) at a height of 10 feet, $5,605,000 (59 benefitted receptors) at a height of 12 feet, $6,270,000 (66 benefitted receptors) at a height of 14 feet, and $6,840,000 (72 benefitted receptors) at barrier heights of 16 to 22 feet. Based on the costs provided in Appendix B and shown in Table 2.2.7-4, the cost to construct Noise Barrier S-403 would be less than the reasonable allowance at barrier heights of 6 to 16 feet, but it would exceed the reasonableness allowance at barrier heights of 18 to 22 feet.

The two barrier options (Noise Barrier S-403 versus Noise Barriers S-411/S-435) were compared on the basis of construction cost versus benefitted receptors. Both options would provide the same number of benefitted receptors (72) with a barrier height of 16 feet and have a reasonable allowance of $6,840,000. However, at a height of 16 feet, Noise Barrier S-403 would have a lower construction cost than Noise Barriers S-411/S-435 ($3,163,000 for Noise Barrier S-403 versus $3,450,000 for Noise Barriers S-411/S-435). Therefore, Noise Barrier S-403, at a height of 16 feet, would maximize the number of benefited receptors and block the line of sight to an 11.5-foot truck stack while maximizing the benefit per construction dollar. As a result, construction of Noise Barrier S-403 is recommended at a barrier height of 16 feet; Noise Barrier S-411/S-435 is not recommended.

Based on the studies completed to date, Caltrans intends to incorporate noise abatement in the form of Noise Barrier S-403, transitioning from the ROW to the EOS, with length of 4,430 feet and height of 16 feet. Calculations, based on preliminary design data, show that the barrier would reduce noise levels by 5.1 to 14.3 dBA for 72 residences at a cost of $3,658,000. If, during final design, conditions have changed substantially, noise abatement may not be necessary. The final decision on noise abatement will be made upon completion of the project design.

Area K, Noise Barrier EW-451

Noise Barrier EW-451 is an existing 14-foot barrier along the EOS of the southbound SR-57 alignment. EW-451 was found to be acoustically feasible if constructed at a height of 20 or 22 feet, but it would meet the 7 dB insertion loss design goal at the design receiver (M-249) only at a height of 22 feet. The location of Noise Barrier EW-451 is shown in Appendix G, Figure 1. Noise Barrier EW-451 is already at the maximum height for an EOS barrier. Based on the costs provided in Appendix B and shown in Table 2.2.7-4, the cost to construct Noise Barrier EW-451 would exceed the reasonable allowance at the only barrier height (22 feet) that would meet the design goal. Therefore, because the construction cost would exceed the reasonable allowance, Noise Barrier EW-451 is not recommended.

Based on Section 5 of the Traffic Noise Analysis Protocol, the noise impact analysis presented in this environmental document is based on preliminary design. If the project design is changed in such a way that could affect the acoustical performance of the barriers, the barrier design must be modified to achieve the same performance as that of the barriers outlined in this environmental document. If during final design conditions have substantially changed, noise abatement may not be necessary. The final decision on noise abatement will be made upon completion of the project design. In addition, the following measures will be implemented under OCTA and Caltrans oversight. Any changes would require OCTA and Caltrans approvals. With implementation of **NOI-2** and **NOI-3**, temporary and operational construction noise and vibration impacts would be minimized.

NOI-2 Vibration associated with construction activities, specifically, pile driving, could cause annoyance impacts, depending on the distance from vibration-sensitive receptors. The following procedures could be implemented to minimize the potential for annoyance from construction vibration:

- Conduct vibration monitoring during vibration-intensive activities.
- Use cast-in-drilled-hole piles or sonic or vibratory pile drivers, where feasible, to avoid the use of impact-type pile drivers near residences.
- When there is a possibility of human annoyance from pile driving, conduct activities during weekday daytime hours when residents may be away from their homes.
- Avoid high vibration–generating activities during the same time in proximity to each other to the maximum extent practicable.
- Contact residents prior to pile driving to notify them that this activity will be occurring.

NOI-3 To ensure that noise impacts are minimized, the deck texture on the bridges and overhead ramps will be constructed using the new quieter longitudinally tined Groove and Grind deck specification, instead of a transversely tined texture.

2.2.7.5 REFERENCES

ICF. 2018. *State Route 91 Improvement Project between State Route 57 and State Route 55 Noise Study Report* (NSR), July.

———. 2018. *Noise Abatement Decision Report* (NADR), September

———. 2019. *Supplemental Noise Study Report*. June.

———. 2019. *Supplemental Noise Abatement Decision Report*. June.

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2.3 Biological Environment

2.3.1 Natural Communities

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed below in the Threatened and Endangered Species section, Section 2.3.5. Wetlands and other waters are also discussed below in Section 2.3.2.

2.3.1.1 AFFECTED ENVIRONMENT

The information in this section is based on the *Natural Environment Study* (NES) completed by ICF in June 2018 for the proposed project.

A literature search was conducted for the USGS 7.5-minute topographic quadrangles containing the Biological Study Area (BSA), defined as the project footprint plus an additional 300-foot buffer and the surrounding quadrangles. Quadrangles queried were Anaheim, Orange, Whittier, La Habra, Yorba Linda, Prado Dam, El Toro, Tustin, Newport Beach, Seal Beach, and Los Alamitos. The results from the California Natural Diversity Database showed a total of 12 sensitive vegetation communities potentially occurring in the project vicinity, but based on project surveys, all 12 of these communities were determined to be absent. There are, however, three natural communities of concern within the BSA. These communities are California sagebrush – California buckwheat scrub (coastal sage scrub), mulefat scrub, and riverine habitat.

- A total of 3.41 acres of coastal sage scrub is present in three different locations throughout the BSA, in the southeast section of the BSA along Santiago Boulevard, south of the Santa Ana River and east of State Route (SR) 91; along the bike path; and in a patch northeast of Glassell Street and Frontera Street, south of SR-91. All three areas are planted and not naturally occurring.
- A total of 0.11 acre of mulefat scrub is in a small vacant field on the east side of SR-91, south of the Lakeview overpass and adjacent to ruderal vegetation.
- A total of 15.23 acres of riverine habitat is present in the BSA, including open water areas within the Santa Ana River and its associated groundwater recharge channel to the north. Continuous water flows and routine maintenance have eliminated most vegetation in the riverine areas. There is no strictly riparian habitat, although there may be small growths of riparian species along the channel edges. This community type does not include open water associated with detention basins or other ephemeral channels; it is unique to the perennial Santa Ana River, a major water body in Southern California.

The Santa Ana River is the main regional wildlife corridor in the BSA. Historically, the Santa Ana River supported a substantial level of regional wildlife movement. In recent years, however, the loss of habitat due to development on the floodplain and in surrounding lowlands has greatly reduced the amount of regional movement in the BSA. The detrimental effects on wildlife

movement from SR-91, SR-57, and SR-55 and the surrounding residential, commercial, and industrial development have long been in place. Nevertheless, the Santa Ana River still contains discontinuous live-in habitat in some areas for wildlife, still links various habitats and drainages throughout the region, and continues to serve as an important corridor in the midst of the widespread loss of habitat in the region. The Santa Ana River provides open space that supports regional wildlife movement and migration by many species of water birds and small to medium-sized mammals, such as coyotes (*Canis latrans*), bobcat (*Lynx rufus*), opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), and skunk (*Mephitis mephitis*), as they travel between Prado Dam and areas upstream and downstream, including associated waterways and open spaces.

2.3.1.2 ENVIRONMENTAL CONSEQUENCES

Permanent Impacts

Build Alternative (Preferred Alternative)

Coastal Sage Scrub

Up to 1.69 acres of coastal sage scrub habitat may be permanently and directly affected by the project; the habitat is isolated and generally of low quality. The area to be affected, which is southeast of the Kraemer/Glassell overpass at SR-91, would be completely and permanently lost by development of this area. Because this patch of sage scrub is completely isolated from others by urban development, it has little value for wildlife movement. Its loss would not result in any notable habitat fragmentation because there is no surrounding habitat.

Mulefat Scrub

There would be no permanent impacts on mulefat scrub as a result of the Build Alternative (Preferred Alternative).

Riverine Habitat

The project would result in permanent direct impacts on riverine habitat within the BSA. Permanent impact calculations were based on the estimated extent of expansion of the piers on the west side of SR-91 (i.e., expanded by approximately three feet and lengthened by 20 feet). By that definition, approximately 0.01 acre of riverine habitat would be permanently affected as a result of mainline widening. Indirect impacts would include potential long-term degradation of habitat as a result of the spread of invasive weeds or the coating of vegetation with fugitive dust. Fish and Game Code Notification of Streambed Alteration will identify the restoration site that will be used to provide compensatory mitigation for permanent impacts on CDFW jurisdictional streambeds.

Wildlife Corridors

No permanent impacts on wildlife corridors are expected, primarily because they occur in the Santa Ana River. The proposed project would elongate existing piers that support the SR-91 bridge over the river; because the piers are angled and roughly parallel to the river's flow, elongating them by an estimated 20 feet each would not result in any appreciable permanent impact on wildlife movement in the area.

No-Build Alternative

The No-Build Alternative would not include construction of any of the proposed project improvements. Therefore, the No-Build Alternative would not result in permanent impacts on the previously discussed natural communities.

Temporary Impacts

Build Alternative (Preferred Alternative)

Coastal Sage Scrub

No direct temporary impacts have been identified for this community. Temporary indirect impacts may include the spread of invasive weeds or fugitive dust for nearby and intact habitat that is not directly affected during construction.

Mulefat Scrub

There would be no temporary impacts on mulefat scrub as a result of project construction.

Riverine Habitat

The project would result in approximately 2.89 acres of temporary direct impacts on riverine habitat within the BSA. Areas away from or under the SR-91 overpass may be subject to temporary impacts resulting from general construction/site preparation, equipment staging, and general habitat degradation through the spread of fugitive dust or seeds from non-native vegetation or spills involving oil or other fluids. These impacts would generally be limited to work areas and would occur at the time of construction.

Wildlife Corridors

Temporary impacts on wildlife movement at the time of construction would occur because wildlife would avoid active construction sites.

Furthermore, the following project features/standardized measures will include methods to address potential temporary impacts on natural communities**:**

PF BIO-3 A Stormwater Pollution Prevention Plan (SWPPP) will be prepared and implemented to address all construction-related activities, equipment, and materials that have the potential to affect water quality. The SWPPP will identify the sources of pollutants that may affect the quality of stormwater and include the construction site best management practices (BMPs) to control pollutants, such as sediment. Catch basin inlet protection, construction materials management, and non-stormwater BMPs will also be addressed. All construction site BMPs will follow the latest edition of the *Stormwater Quality Handbooks, Project Planning and Design Guide* (ICF 2018), to control and minimize the impacts of construction and construction-related activities, material, and pollutants on the watershed. These include, but are not limited to, temporary sediment control, temporary soil stabilization, scheduling, waste management, materials handling, and other non-stormwater BMPs.

PF BIO-4 The areas of disturbance and constructed slopes will be protected with temporary and/or permanent erosion controls, including fiber rolls, silt fencing, soil binders, rock slope protection, and/or revegetation with an erosion control seed mix.

PF BIO-9 Construction equipment will be cleaned of mud or other debris that may contain invasive plants and/or seeds and inspected to reduce the potential for spreading noxious weeds before mobilizing to the site and before leaving the site during the course of construction.

No-Build Alternative

The No-Build Alternative would not include construction of any of the proposed project improvements. Therefore, the No-Build Alternative would not result in temporary impacts on the previously discussed natural communities.

2.3.1.3 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

Coastal Sage Scrub

The proposed project is one of a series of projects that fall under the Orange County Transportation Authority (OCTA) Measure M2 Natural Community Conservation Plan/Habitat Conservation Plan (M2 NCCP/HCP). The M2 NCCP/HCP was created to streamline permitting for take authorization regarding covered species that are regulated by USFWS and CDFW and facilitate construction along 13 covered freeway projects that are proposed for improvements. A portion of the M2 funding was set aside to provide mitigation under the M2 NCCP/HCP. OCTA acquired seven preserves, with nearly 1,300 acres of natural habitat, in which 12 habitat restoration projects have been funded. Under the M2 NCCP/HCP, any permanent impacts on coastal sage scrub habitat would be mitigated off-site through preapproved NCCP/HCP mitigation. OCTA tracks the mitigation acres used for the covered projects to ensure they stay below the established impact cap. This tracking is completed within the NCCP/HCP annual reports that are provided and approved by USFWS and CDFW.

In addition, the following avoidance and minimization measures are proposed to reduce impacts on coastal sage scrub habitat:

BIO-1 Prior to clearing or construction, highly visible barriers (such as orange construction fencing) will be installed around areas adjacent to the project footprint to designate the environmentally sensitive areas (ESAs) to be protected. No project activity of any type will be permitted within these ESAs. In addition, heavy equipment, including motor vehicles, will not be allowed to operate within the ESAs. All construction equipment will be operated in a manner that prevents accidental damage to the ESAs. No structure of any kind, or incidental storage of equipment or supplies, will be allowed within these protected zones. Silt fence barriers will be installed at the ESA boundary to prevent accidental deposition of fill material in areas where vegetation is immediately adjacent to planned grading activities.

BIO-5 When in or near natural habitat areas, all personnel involved in on-site project construction will be required to participate in a preconstruction training program to understand the avoidance and minimization obligations of the project.

BIO-6 A qualified biologist will monitor construction activities when necessary, as determined during the project-specific environmental review, for the duration of the project to ensure that practicable measures are being employed to avoid and minimize incidental disturbance of habitat and covered species inside and

outside the project footprint. Opportunities to further avoid and minimize impacts on covered species will be reviewed.

BIO-10 Areas of natural habitat that are temporarily affected by construction activities will be restored to a natural condition. The restoration effort will emulate the characteristics of surrounding vegetation and/or return the area to the previous condition. For freeway construction projects, revegetation plans will be part of the project design, following Caltrans' landscape architecture guidelines and requirements. Restoration plans will be reviewed and approved by the Wildlife Agencies.

BIO-18 Invasive species will be removed from the project work area and controlled during construction. The use of known invasive plant species (i.e., plant species listed in California Invasive Plant Council's [Cal-IPC's] California Invasive Plant Inventory with a High or Moderate rating) will be prohibited for construction, revegetation, and landscaping activities.

Mulefat Scrub

Because there would be no impacts on mulefat scrub, no avoidance, minimization, or mitigation measures would be necessary.

Riverine Habitat

Along with measures **BIO-1**, **BIO-5**, **BIO-6**, **BIO-10**, and **BIO-18**, the following measures would be incorporated to avoid and minimize impacts on riverine habitat:

BIO-2 All equipment will be adequately maintained to prevent oil, fuel, or other hydraulic fluids from leaking into the river or other areas where it could accidentally contaminate waterways. Heavy equipment will be examined for leaks each day before work begins; in case of a leak, use of the equipment will not be allowed until the leak is fixed. All equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other toxic substances will occur in a Caltrans biologist-approved storing and staging area.

BIO-7 Construction activities in special aquatic resources will be restricted to the dry season (June 1 through October 15) when possible. However, open or flowing water may be present during construction. If construction occurs where there is open or flowing water, a strategy that is approved by the resource agencies (e.g., U.S. Army Corps of Engineers, California Department of Fish and Wildlife, and Regional Water Quality Control Board), such as the installation of diversions or cofferdams, will be used to dewater or divert water from the work area. If cofferdams are constructed, implementation of the following cofferdam or water diversion measures is recommended to avoid and lessen aquatic resources impacts during construction:

a) Cofferdams, filter fabric, and corrugated steel pipe are to be removed from the creek bed after completion of the project.

b) The timing of work within all channelized waters is to be coordinated with the regulatory agencies.

c) The cofferdam is to be placed upstream of the work area to direct base flows through an appropriately sized diversion pipe or side channel. The diversion pipe or channel will extend through the work area, where possible, or to the side of the work area and outlet through a sandbag dam at the downstream end.

BIO-8 Sediment catch basins immediately below the construction site are to be constructed when performing in-channel construction to prevent silt- and sediment-laden water from entering the mainstream flow. Accumulated sediments will be periodically removed from the catch basins.

Although actually a wildlife conservation measure, measure **BIO-13** would benefit riverine habitat by reducing temporary impacts.

BIO-13. To avoid attracting predators of covered species and other sensitive species, the project site will be kept as clean as possible. All food-related trash items will be enclosed in sealed containers and regularly removed from the site(s).

Wildlife Corridors

Because there would be no permanent impacts on wildlife corridors in the BSA, successful implementation of avoidance and minimization measures **BIO-1** through **BIO-8**, **BIO-10**, and **BIO-18** would reduce any otherwise adverse temporary impacts during project construction.

Common/Scientific Name	Status[a] CNDDB	Species Requirements	Specific Habitat[b] Present/Absent	Rationale
California Walnut Woodland	CNDDB S2.1	Cismontane woodland	HA	Not present
Riversidian Alluvial Fan Sage Scrub	CNDDB S1.1	Coastal scrub	HA	Not present
Southern California Arroyo Chub/Santa Ana Sucker Stream	SNR	Aquatic habitat	HA	Not present
Southern Coast Live Oak Riparian Forest	CNDDB S4	Riparian forest	HA	Not present
Southern Coastal Salt Marsh	CNDDB S2.1	Coastal marsh, swamp, and wetlands	HA	Not present
Southern Cottonwood Willow Riparian Forest	CNDDB S3.2	Riparian forest	HA	Not present
Southern Dune Scrub	CNDDB S1.1	Coastal dunes	HA	Not present
Southern Foredunes	CNDDB S2.1	Coastal dunes	HA	Not present
Southern Interior Cypress Forest	CNDDB S2.1	Closed-cone coniferous forest	HA	Not present
Southern Riparian Scrub	CNDDB S3.2	Riparian scrub	HA	Not present
Southern Sycamore Alder Riparian Woodland	CNDDB S4	Riparian woodland	HA	Not present
Southern Willow Scrub	CNDDB S2.1	Riparian scrub	HA	Not present

[a] Status Codes

Note: The California Natural Diversity Database (CNDDB) uses the same ranking methodology that was originally developed by The Nature Conservancy but now maintained and recently revised by NatureServe. The *state rank* (S-rank) refers to imperilment status only within California's state boundaries. It is a reflection of the overall status of an element through its state range. The state rank represents a letter-plus-number score that reflects a combination of rarity, threat, and trend factors, with weighting being heavier on rarity than the other two.

S1 = Critically Imperiled – Critically imperiled in the state because of extreme rarity (often five or fewer populations) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state.

S2 = Imperiled – Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.
S3 = Vulnerable – Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state.
S4 = Apparently Secure – Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors.
Gray Highlight = No potential to occur in the BSA.

2.3.1.4 REFERENCES

ICF. 2018. *Stormwater Quality Handbooks, Project Planning and Design Guide*, Prepared for Caltrans.

———. 2018. State Route 91 Improvement Project Between State Route 57 and State Route 55 Natural Environment Study, Including a Delineation of Federal and State Jurisdictional Water Resources. June.

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2.3.2 Wetlands and Other Waters

2.3.2.1 REGULATORY SETTING

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Federal Water Pollution Control Act, more commonly referred to as the Clean Water Act (CWA) (33 United States Code [USC] 1344), is the primary law regulating wetlands and surface waters. One purpose of the CWA is to regulate the discharge of dredged or fill material into waters of the U.S., including wetlands. Waters of the U.S. include navigable waters, interstate waters, territorial seas, and other waters that may be used in interstate or foreign commerce. The lateral limits of jurisdiction over non-tidal water bodies extend to the ordinary high-water mark (OHWM), in the absence of adjacent wetlands. When adjacent wetlands are present, CWA jurisdiction extends beyond the OHWM to the limits of the adjacent wetlands. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils formed during saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

Section 404 of the CWA establishes a regulatory program that provides that discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers (USACE) with oversight by the U.S. Environmental Protection Agency (U.S. EPA).

The USACE issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide Permit may be permitted under one of USACE's Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with U.S. EPA's Section 404(b)(1) Guidelines (40 Code of Federal Regulations [CFR] 230), and whether permit approval is in the public interest. The Section 404 (b)(1) Guidelines (Guidelines) were developed by the U.S. EPA in conjunction with the USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a "least environmentally damaging practicable alternative" (LEDPA) to the proposed discharge that would have lesser effects on waters of the U.S., and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, EO 11990 states that a federal agency, such as the Federal Highway Administration (FHWA) and/or the California Department of Transportation (Caltrans), as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: (1) that there is no practicable alternative to the construction and (2) the proposed project includes all practicable measures to minimize harm. A Wetlands Only Practicable Alternative Finding must be made.

At the state level, wetlands and waters are regulated primarily by the State Water Resources Control Board (SWRCB), the Regional Water Quality Control Boards (RWQCBs) and the California Department of Fish and Wildlife (CDFW). In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission or the Tahoe Regional Planning Agency) may also be involved. Sections 1600-1607 of the California Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFW before beginning construction. If CDFW determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFW jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFW.

The RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA. In compliance with Section 401 of the CWA, the RWQCBs also issue water quality certification for activities which may result in a discharge to waters of the U.S. This is most frequently required in tandem with a Section 404 permit request. Please see the Water Quality section for more details.

The Orange County Transportation Authority (OCTA) has worked with USACE to define a Programmatic Individual Permit for the 13 M2 freeway projects that establishes procedures for Letters of Permission (LOP). This Programmatic Individual Permit will streamline the individual project-level Section 404 permitting for the M2 freeway projects. The programmatic process allows USACE to evaluate aquatic resource impacts more holistically, including the adequacy and appropriateness of compensatory mitigation options that could offset unavoidable impacts on the aquatic ecosystem resulting from the individual projects. OCTA seeks to implement mitigation prior to when project impacts occur, which minimizes temporal losses of aquatic functions and services that often occur between the time aquatic resources are lost at project impact sites and the time when such resources are gained at approved compensatory mitigation sites. LOP authorizations differ from a standard Individual Permit process in that an LOP may be issued without publishing a public notice for each project and without completing a detailed environmental assessment. USACE's review (including interagency coordination) of each LOP application will ensure that adverse impacts are avoided and minimized to the maximum extent practicable, adequate and appropriate compensatory mitigation occurs for unavoidable impacts on the aquatic ecosystem, and each project's proposed activities comply with established LOP permitting procedures. If USACE determines that a project is ineligible, the applicant would have to seek authorization under a different USACE permitting mechanism or modify the project to comply with the established LOP procedures.

On December 20, 2017, USACE issued the Individual Permit to OCTA and Caltrans that broadly authorizes the general activities associated with OCTA's Measure M2 Freeway Program, of which this project is a part. Under that Individual Permit, specific activities for individual projects would be authorized in the future through an LOP. Therefore, authorization under Section 404 of the CWA through an LOP and Section 401 of the CWA through water quality certification would be required for impacts on waters of the U.S. and waters of the state, respectively.

The SWRCB will follow a similar process for Section 404 permitting. Advanced mitigation will be provided for the general 401 certification, consistent with the compensatory mitigation credits required for the USACE permit. Once the project design is approved and concurrence is received regarding the mitigation statement, LOPs and the project-level 401 certification would then authorize the discharge of dredged or fill material associated with the specific project designs, include any special conditions, and indicate the amount of mitigation acreage to be deducted from the appropriate site. This step is anticipated to be completed during the design phase of this project. Project-level applications will be processed through the SWRCB. The SWRCB will coordinate with the specific RWQCB as necessary. In addition, a CDFW 1602 Streambed Alteration Agreement would be required for impacts on areas subject to CDFW jurisdiction.

2.3.2.2 AFFECTED ENVIRONMENT

The information in this section is based on the Natural Environment Study (NES) and Jurisdictional Delineation Report completed by ICF in June 2018 for the proposed project. The Jurisdictional Delineation Report was prepared with the intent that the proposed project would seek a preliminary jurisdictional determination; it is included as Appendix E of the NES. The study area for the jurisdictional delineation included the project footprint and a 100-foot buffer. All channelized features within the study area eventually drain into the Santa Ana River, a direct tributary to the Pacific Ocean (a traditional navigable water).

ICF previously conducted a delineation of a portion of the current study area in 2010 and 2011 in support of the OCTA Measure M2 Freeway Program (ICF 2012) and its programmatic permitting coordination. Although the previous study area from 2010/2011 partially overlaps the current study area, it encompasses only the area between State Route (SR) 57 and SR-55 and excludes a significant portion of the 2017 study area, including the area that encompasses the SR-91/SR-57 interchange, the area west to Acacia Street, and the area east of the SR-91/SR-55 interchange past Lakeview Avenue. The 2017 delineation analyzed the entire current study area, including areas that were previously delineated in 2010 and 2011 and whose conditions may have changed since the previous delineation.

A total of 45 features were delineated within the study area, including concrete channels, earthen channels, and wetland waters; their total acreage and linear feet are summarized in Table 2.3.2-1, below. A comprehensive listing of the acreage and linear feet of each individual feature, as well as a concise description of each feature, is provided in Appendix B of the Jurisdictional Delineation Report.

Table 2.3.2-1. Summary of Potential USACE, RWQCB, and CDFW Jurisdiction

	USACE/RWQCB Non-Wetland WoUS/WoS[1]	USACE/RWQCB Wetland WoUS/WoS	CDFW Streambed	CDFW Riparian
Total acres	8.197	2.372	10.327	3.228
Total linear feet[2]	23,626	23,626	23,613	23,613

[1] WoUS/WoS = water of the U.S./waters of the state.
[2] Feature 102 in the Jurisdictional Delineation Report is roughly perpendicular to and flowing into Feature 101. Because the CDFW jurisdiction intersects at the top of bank of Feature 101 before the ordinary high-water mark, CDFW linear feet are less than USACE/RWQCB linear feet.

Concrete Channels

Of the 45 features mapped within the study area, 33 are partially or entirely concrete-lined flood-control channels and ditches that were constructed in uplands to convey precipitation and urban runoff. Four of these 45 features have both earthen and concrete sections and are therefore counted here as both types. Features 9 and 20 both have distinctive concrete and earthen sections. Feature 61 is entirely earthen in the bed but has grouted riprap banks. Feature 100 has grouted riprap or concrete banks along its entire length and a combination of distinctive concrete (under bridges) and earthen (uncovered) sections. Standing or slowly flowing water was observed in 13, or 39 percent, of all concrete/partially concrete channels. Most of this flow is assumed to be ephemeral, originating from rainfall events immediately prior to field surveys. Some of the larger channel features contained water during the delineation, whereas most smaller channels were dry. Numerous concrete channels contained sediment buildup that allowed vegetation growth, with Feature 35 having riparian vegetation growing on accumulated sediment over concrete. Two of the features are identified blue-line streams: Features 5 and 11. OHWM indicators associated with these features were generally based on the presence of water staining and sediment/debris deposition along the bottom of the drainage or channel invert.

The study area includes several types of concrete channels, the most common of which are the concrete trapezoidal channels, which are designed to convey large flows, with widths ranging from approximately 5 to 30 feet. There are 12 concrete or partially concrete trapezoidal channels. The next most common concrete channel is the concrete box channel, which has vertical walls. There are nine of these features. There are eight concrete v-ditches, which are typically narrower than other concrete features (approximately 1 to 4 feet). These v-ditches are constructed in uplands to convey ephemeral flows, prevent erosion, and facilitate drainage. The least common concrete features are the asphalt overside drainages (four features), which generally originate at the existing edge of pavement and typically drain into sheetflow in earthen portions of the associated shoulder.

Earthen Channels and Depressions

Of the 45 features in the study area, 16 are partially or entirely earthen-bottom channels and ditches or earthen depressions that were constructed in uplands to convey precipitation and urban runoff. Four of the 16 features, Features 9, 20, 61, and 100, have both earthen and concrete sections and are therefore counted here as both types. As mentioned above, Features 9 and 20 both have distinctive concrete and earthen sections, Feature 61 is entirely earthen in the bed but has grouted riprap banks. Feature 100 has grouted riprap or concrete banks along its entire length and a combination of distinctive concrete (under bridges) and earthen (uncovered) sections. Water was observed in seven, or 50 percent, of these 14 features during the delineation. Of these seven wet features, five are most likely perennial (Features 61, 63, 100 [the Carbon Canyon Diversion Channel], 101, and 103). Four of these 14 features (Features 3, 61, 100 [the Carbon Canyon Diversion Channel], and 101) are identified as blue-line features. Indicators used to delineate the OHWM commonly included terracing, sediment deposition, sediment sorting, the destruction of terrestrial vegetation, changes in the character of the soil, an abrupt change in a plant community, flow patterns, a natural line impressed on the bank, the presence of litter and debris, and the presence of a wrack line.

Wetland Waters

Four features (Features 36, 40, 100, and 101) contained areas that met the USACE definition of a wetland.

- Feature 36 is a pit located between SR-91 and La Mesa Street where a culvert exits from under the freeway. This pit was full of emergent hydrophytic vegetation at the time of the survey; a soil pit dug at the site confirmed that the location met the vegetation, soil, and hydrologic criteria to be classified as a jurisdictional wetland. There is some uncertainty as to whether a concrete layer is ultimately underneath the soil, but for the purposes of this delineation, it was assumed that the substrate is only soil. A non-wetland sample point was not dug for this feature because of the lack of wetland indicators outside the wetland limits. Specifically, the site consisted of a depressed pit at the base of a culvert that was full of hydrophytic vegetation; wetland hydrology indicators and hydrophytic vegetation were not observed outside of the pit limits.
- Feature 40 is located along the side of SR-91 where it receives runoff from nearby upland areas, emerges and receives flow from an adjacent feature (Feature 39), and then flows under the freeway. A small portion of Feature 40 contained emergent hydrophytic vegetation at the time of the delineation and was assumed to be a jurisdictional wetland, based on the presence of hydrophytic vegetation and hydrology (water in the feature). In lieu of digging soil pits, the soils at this location were assumed hydric.
- Feature 100 is also identified as the Carbon Canyon Diversion Channel, which crosses through the study area near Kraemer Boulevard/Glassell Street and drains directly into the Santa Ana River between Glassell Street and Lincoln Avenue. Within this feature are discrete pockets of emergent hydrophytic vegetation that, in lieu of digging soil pits, were presumed to qualify as wetland areas. No soil pits were dug because of standing or flowing water at depths greater than six inches at the time of the delineation surveys.
- Feature 101 is a recharge channel that runs parallel to and north of the Santa Ana River where the two features are separated by a large earthen levee. This feature was vegetated along its banks and along exposed areas outside the central wetted channel, which was otherwise unvegetated. In lieu of digging soil pits or determining whether the vegetation was hydrophytic, this feature was assumed to be a jurisdictional wetland along its upper limits where vegetation was present.

2.3.2.3 ENVIRONMENTAL CONSEQUENCES

Permanent Impacts

Build Alternative (Preferred Alternative)

Permanent direct impacts on jurisdictional features would occur as a result of implementation of the proposed project. The project would result in permanent impacts on approximately 0.03 acre of non-wetland and less than 0.01 acre of wetland USACE/RWQCB features as well as 0.01 acre of streambed and 0.01 acre of riparian CDFW resources. Impacts on concrete-lined features are considered temporary under the OCTA M2 programmatic permitting approach; therefore, all permanent impacts would be on earthen features, with no permanent impacts on concrete features. Permanent impacts on jurisdictional waters would generally result from existing earthen features being undergrounded below the new freeway sections or the use of pier extensions in the Santa Ana River and its associated groundwater recharge channel to support the widened SR-91 bridge. Impacts on potential USACE, RWQCB, and CDFW jurisdictional aquatic resources are summarized in Table 2.3.2-2, below, and shown in

Figures 2.3.2-1 and 2.3.2-2. A comprehensive listing of permanent impacts for each individual feature is provided in Appendix I of the NES. No coordination with the agencies has occurred to date; however, agency coordination will occur during the permitting phase.

Table 2.3.2-2. Summary of Potential Permanent Impacts on USACE, RWQCB, and CDFW Features

Permanent Impacts	Earthen or Concrete	USACE/RWQCB Waters of the U.S./Waters of the State Non-Wetland	USACE/RWQCB Waters of the U.S./Waters of the State Wetland	CDFW Streambed	CDFW Riparian
Total Acres	Earthen	0.03	< 0.01	0.01	0.01
	Concrete	0.00	0.00	0.00	0.00
Linear Feet	Earthen	354	28	20	65
	Concrete	0	0	0	0

-117.897 dd,
33.855 dd

-117.888 dd,
33.851 dd

E Canfield Ln
N Donacy Way
N Burton Pl
E Crestlane Ave
N Acacia St
N Crestridge Pl
N Vista Pl
E Rosewood Ave
N Ash Pl
N State College Blvd
E Pinewood Ave
N Lewellyn Ave
N Evergreen St
N Baxter St
E Arbutus Ave
E Hedgewood Ave
E Briarvale Ave
E Romneya Dr
N Placentia Ave
91

P15b
1'
15
P15a
P17
3'
17

N
0 100 200
Feet
Source: Bing Imagery (2010)

Photo Point
Culvert
Soil Pit
Jurisdictional Study Area (100-ft Buffer)
Maximum Limits of Disturbance
Permanent Impact
Temporary Impact

Waters of the U.S. Earthen Feature	Waters of the U.S. Concrete Feature
Non-Wetland	Non-Wetland
Wetland	

Figure 2.3.2-1 - Sheet 1
USACE/RWQCB Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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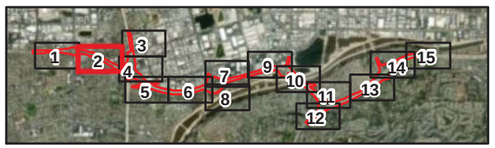
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Feet

Source: Bing Imagery (2010)



- # Photo Point
- Culvert
- Soil Pit
- Jurisdictional Study Area (100-ft Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact

Waters of the U.S. Earthen Feature
- Non-Wetland
- Wetland

Waters of the U.S. Concrete Feature
- Non-Wetland

Figure 2.3.2-1 - Sheet 2
USACE/RWQCB Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Figure 2.3.2-1 - Sheet 3
USACE/RWQCB Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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N Sunshine Way

N Sunshine Way

E Coronado St

N Blue Gum St

E Gretta Ln

E White Star Ave

N Blue Gum St

-117.869 dd,
33.851 dd

-117.876 dd,
33.848 dd

5'

35

P51

P35a

P35b

38

8'

57

6'

44

P44

91

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Feet

Source: Bing Imagery (2010)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Photo Point

Culvert

Soil Pit

Jurisdictional Study Area (100-ft Buffer)

Maximum Limits of Disturbance

Permanent Impact

Temporary Impact

Waters of the U.S. Earthen Feature

Non-Wetland

Wetland

Waters of the U.S. Concrete Feature

Non-Wetland

Figure 2.3.2-1 - Sheet 4
USACE/RWQCB Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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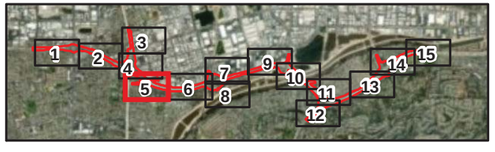
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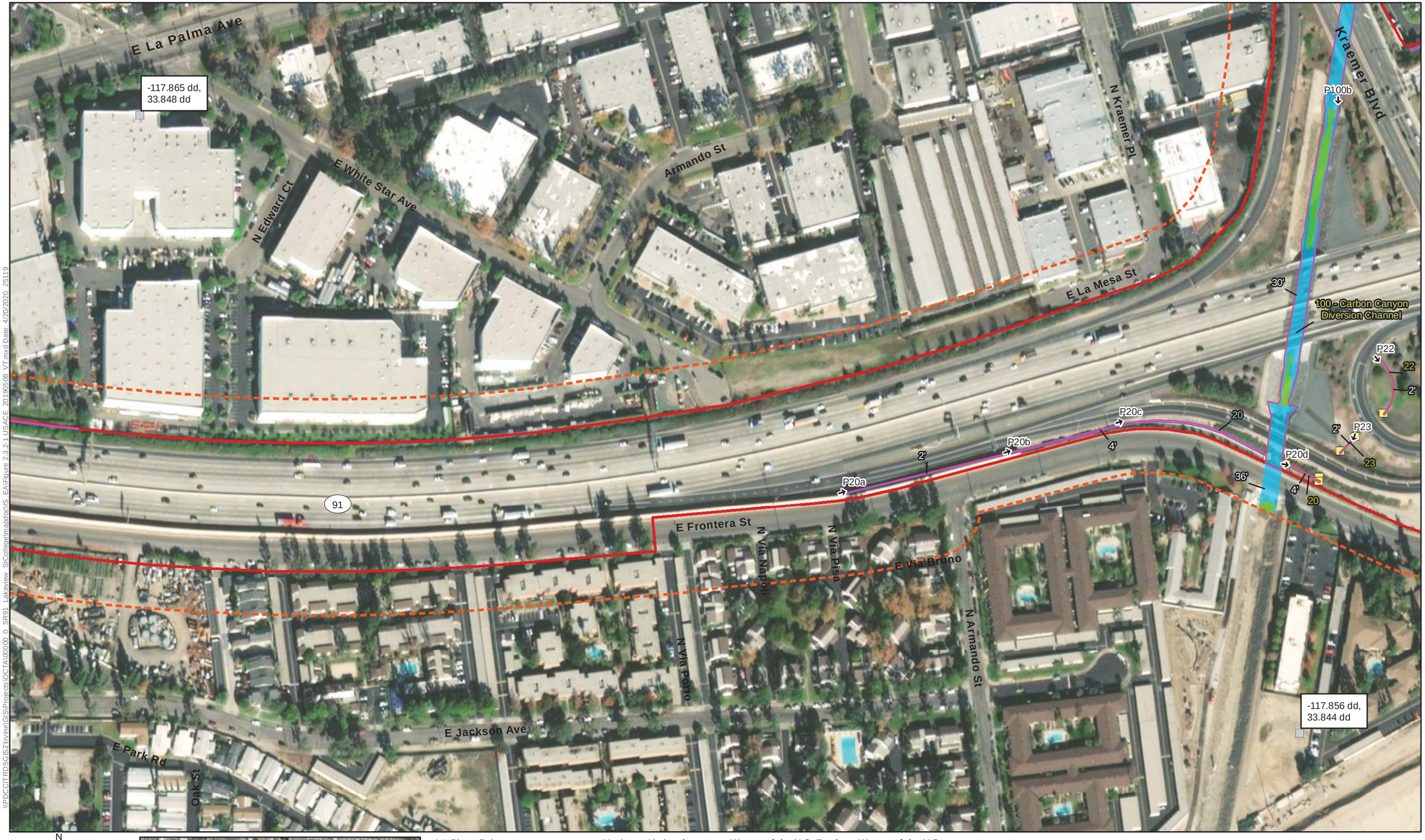
- # Photo Point
- Culvert
- Soil Pit
- Jurisdictional Study Area (100-ft Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact

Waters of the U.S. Earthen Feature
- Non-Wetland
- Wetland

Waters of the U.S. Concrete Feature
- Non-Wetland

Figure 2.3.2-1 - Sheet 5
USACE/RWQCB Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Figure 2.3.2-1 - Sheet 6
USACE/RWQCB Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
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Figure 2.3.2-1 - Sheet 7
USACE/RWQCB Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
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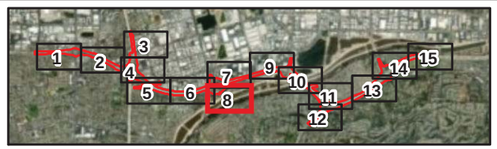
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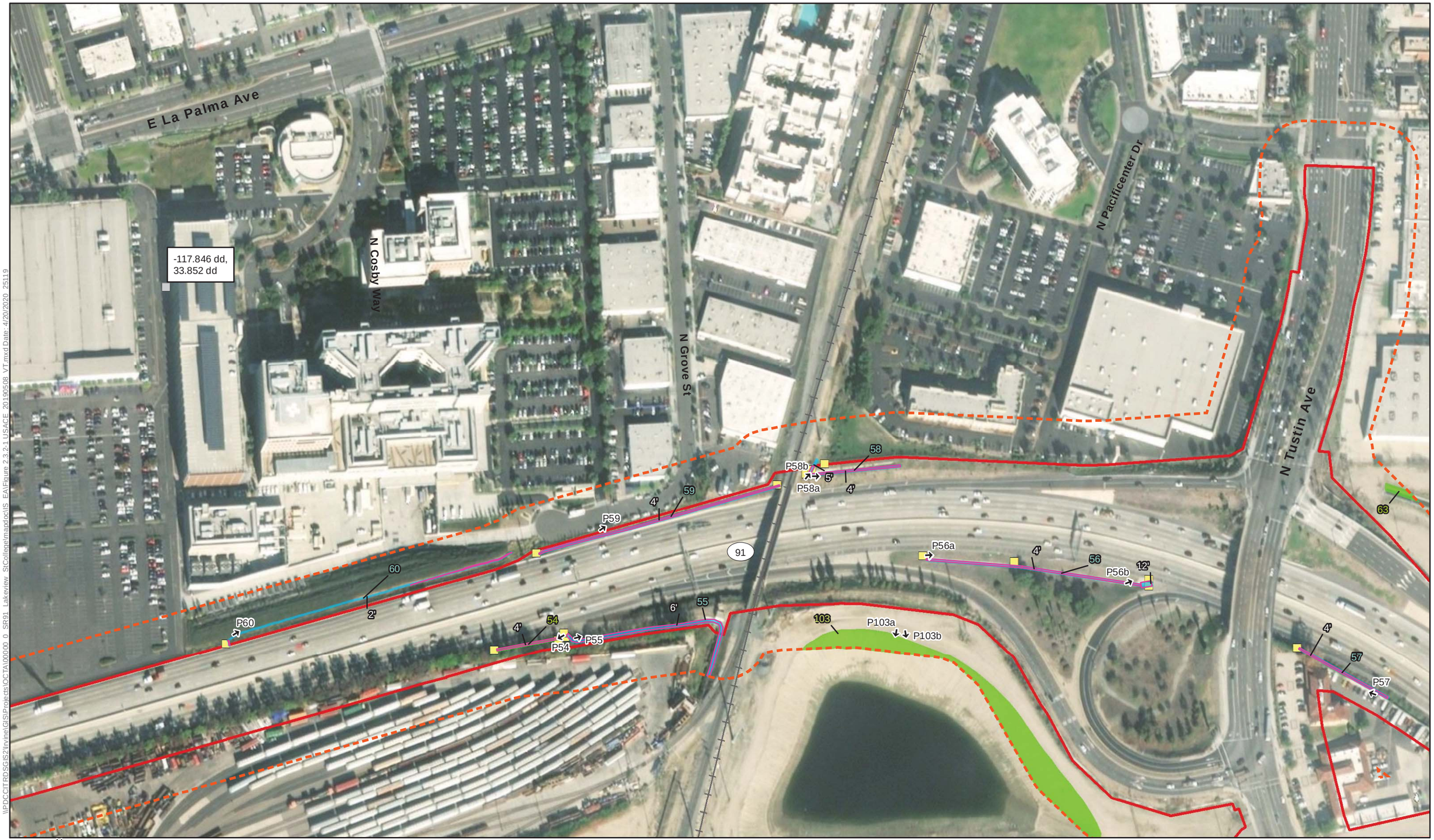


- # Photo Point
- Culvert
- Soil Pit
- Jurisdictional Study Area (100-ft Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact

Waters of the U.S. Earthen Feature	Waters of the U.S. Concrete Feature
Non-Wetland	Non-Wetland
Wetland	

Figure 2.3.2-1 - Sheet 8
USACE/RWQCB Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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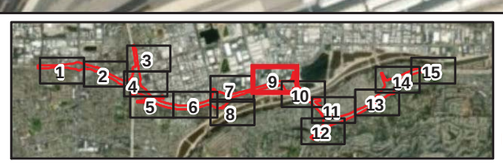
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Feet

Source: Bing Imagery (2010)



- # Photo Point
- Culvert
- Soil Pit
- Jurisdictional Study Area (100-ft Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact

Waters of the U.S. Earthen Feature
- Non-Wetland
- Wetland

Waters of the U.S. Concrete Feature
- Non-Wetland

Figure 2.3.2-1 - Sheet 9
USACE/RWQCB Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
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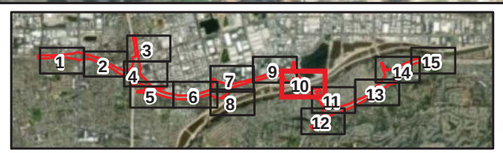
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Source: Bing Imagery (2010)



- #↑ Photo Point
- Culvert
- Soil Pit
- Jurisdictional Study Area (100-ft Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact

Waters of the U.S. Earthen Feature	Waters of the U.S. Concrete Feature
Non-Wetland	Non-Wetland
Wetland	

Figure 2.3.2-1 - Sheet 10
USACE/RWQCB Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
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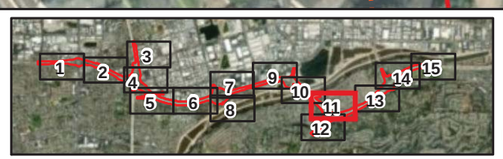
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Source: Bing Imagery (2010)



- #↑ Photo Point
- Culvert
- Soil Pit
- Jurisdictional Study Area (100-ft Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact

Waters of the U.S. Earthen Feature
- Non-Wetland
- Wetland

Waters of the U.S. Concrete Feature
- Non-Wetland

Figure 2.3.2-1 - Sheet 11
USACE/RWQCB Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
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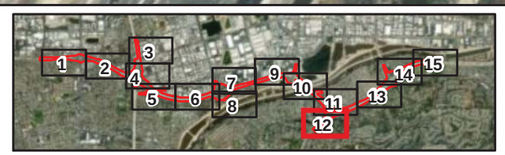
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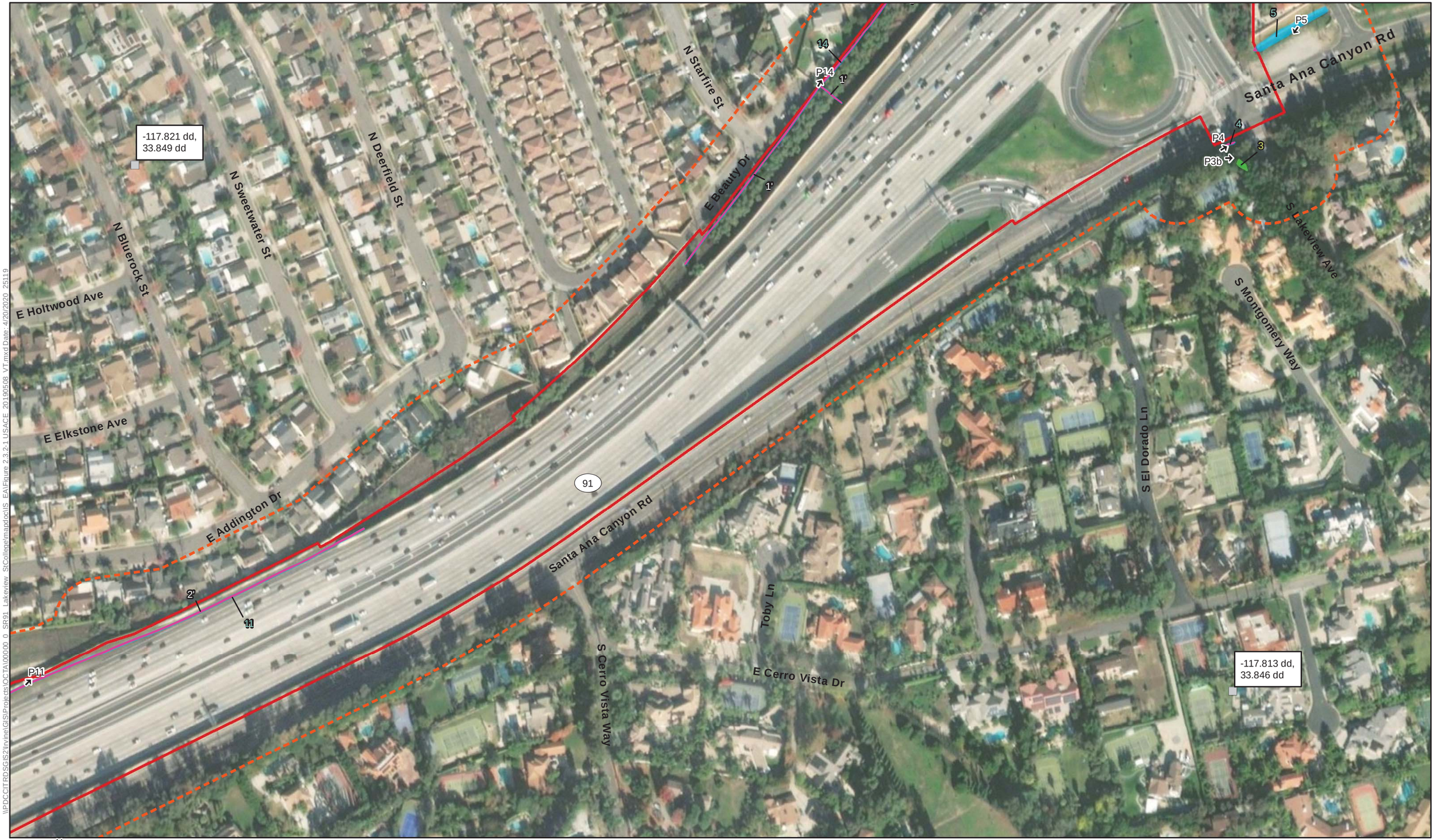


- # Photo Point
- Culvert
- Soil Pit
- Jurisdictional Study Area (100-ft Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact

Waters of the U.S. Earthen Feature	Waters of the U.S. Concrete Feature
Non-Wetland	Non-Wetland
Wetland	

Figure 2.3.2-1 - Sheet 12
USACE/RWQCB Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
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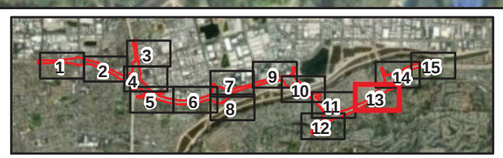
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N

0 100 200

Feet

Source: Bing Imagery (2010)



- #↑ Photo Point
- Culvert
- Soil Pit
- Jurisdictional Study Area (100-ft Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact

Waters of the U.S. Earthen Feature	Waters of the U.S. Concrete Feature
Non-Wetland	Non-Wetland
Wetland	

Figure 2.3.2-1 - Sheet 13
USACE/RWQCB Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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N Manti Dr
E McKinnon Dr
N Lakedale Dr
N Starling Way
N Starfire St
Lakeview Ave
E Wasatch Dr
N Deana St
Santa Ana Canyon Rd
91

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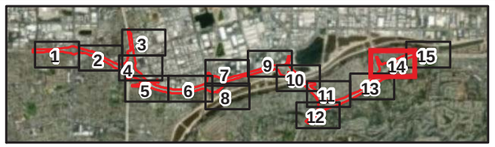
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Feet

Source: Bing Imagery (2010)



- # Photo Point
- Culvert
- Soil Pit
- Jurisdictional Study Area (100-ft Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact

Waters of the U.S. Earthen Feature	Waters of the U.S. Concrete Feature
Non-Wetland	Non-Wetland
Wetland	

Figure 2.3.2-1 - Sheet 14
USACE/RWQCB Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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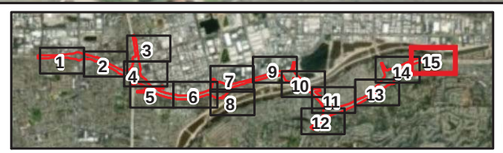
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Feet

Source: Bing Imagery (2010)



- # Photo Point
- Culvert
- Soil Pit
- Jurisdictional Study Area (100-ft Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact

Waters of the U.S. Earthen Feature	Waters of the U.S. Concrete Feature
Non-Wetland	Non-Wetland
Wetland	

Figure 2.3.2-1 - Sheet 15
USACE/RWQCB Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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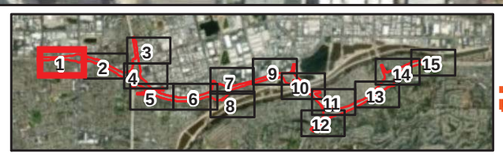
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N Crestridge Pl
N Vista Pl
E Rosewood Ave
N Ash Pl
N State College Blvd
E Pinewood Ave
N Lewellyn Ave
N Evergreen St
N Baxter St
E Arbutus Ave
E Hedgewood Ave
E Briarvale Ave
E Romneya Dr
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Feet

Source: Bing Imagery (2010)



- # Photo Point
- Culvert
- Jurisdictional Study Area (100' Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact
- Non-Jurisdictional Feature

Earthen Feature	Concrete Feature
Riparian	Riparian
Streambed	Streambed

Figure 2.3.2-2- Sheet 1
CDFW Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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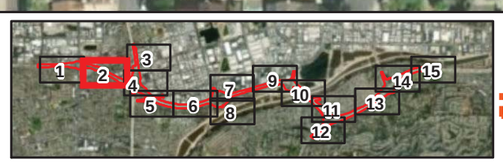
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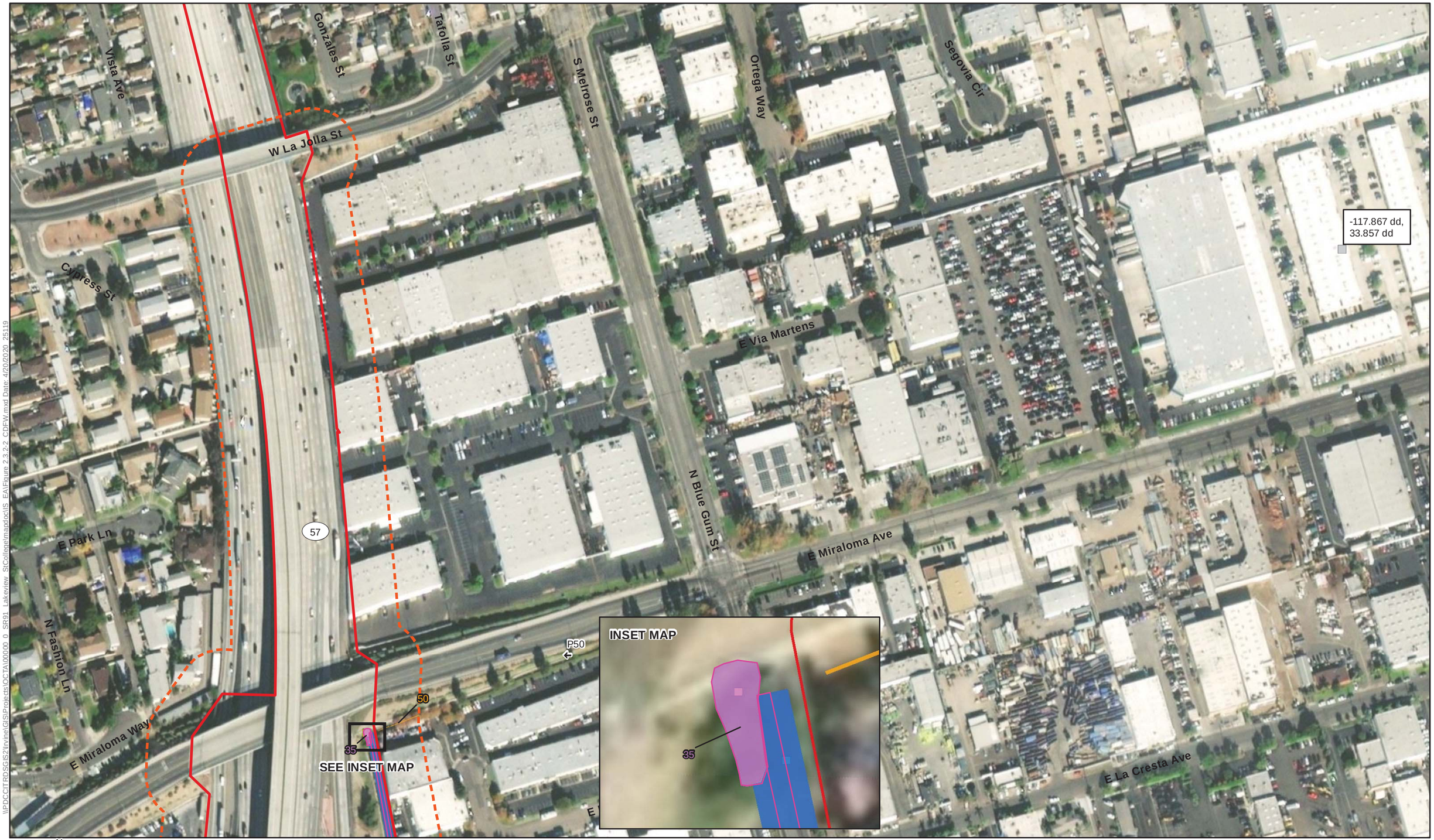
- #: Photo Point
- Culvert
- Jurisdictional Study Area (100' Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact
- Non-Jurisdictional Feature

Earthen Feature
- Riparian
- Streambed

Concrete Feature
- Riparian
- Streambed

Figure 2.3.2-2- Sheet 2
CDFW Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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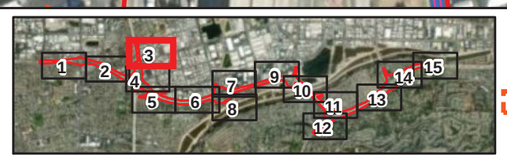
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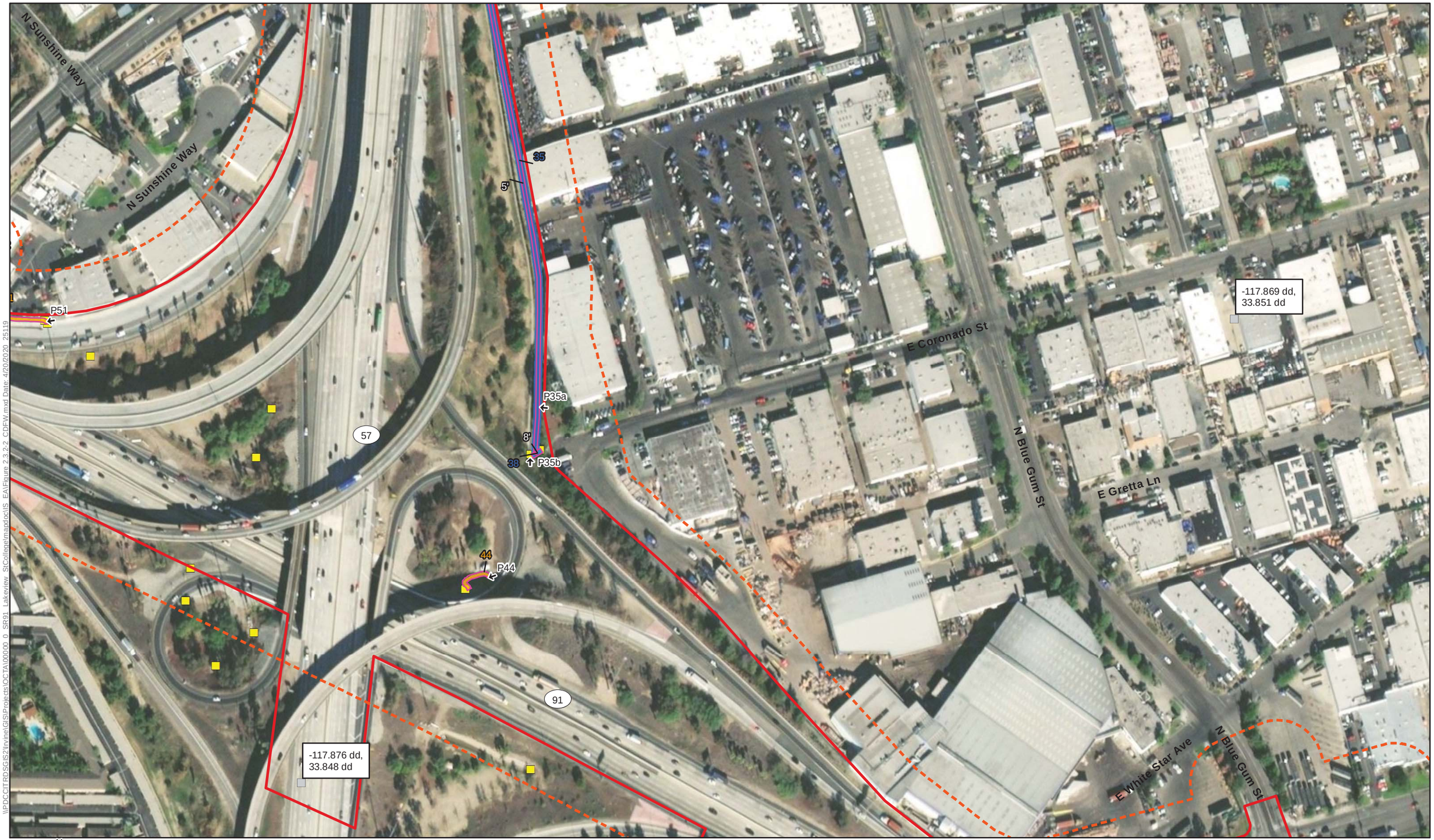


- #↑ Photo Point
- Culvert
- Jurisdictional Study Area (100' Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact
- Non-Jurisdictional Feature

Earthen Feature	Concrete Feature
Riparian	Riparian
Streambed	Streambed

Figure 2.3.2-2- Sheet 3
CDFW Aquatic Resources
Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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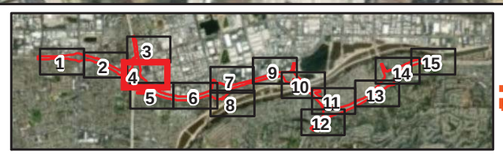
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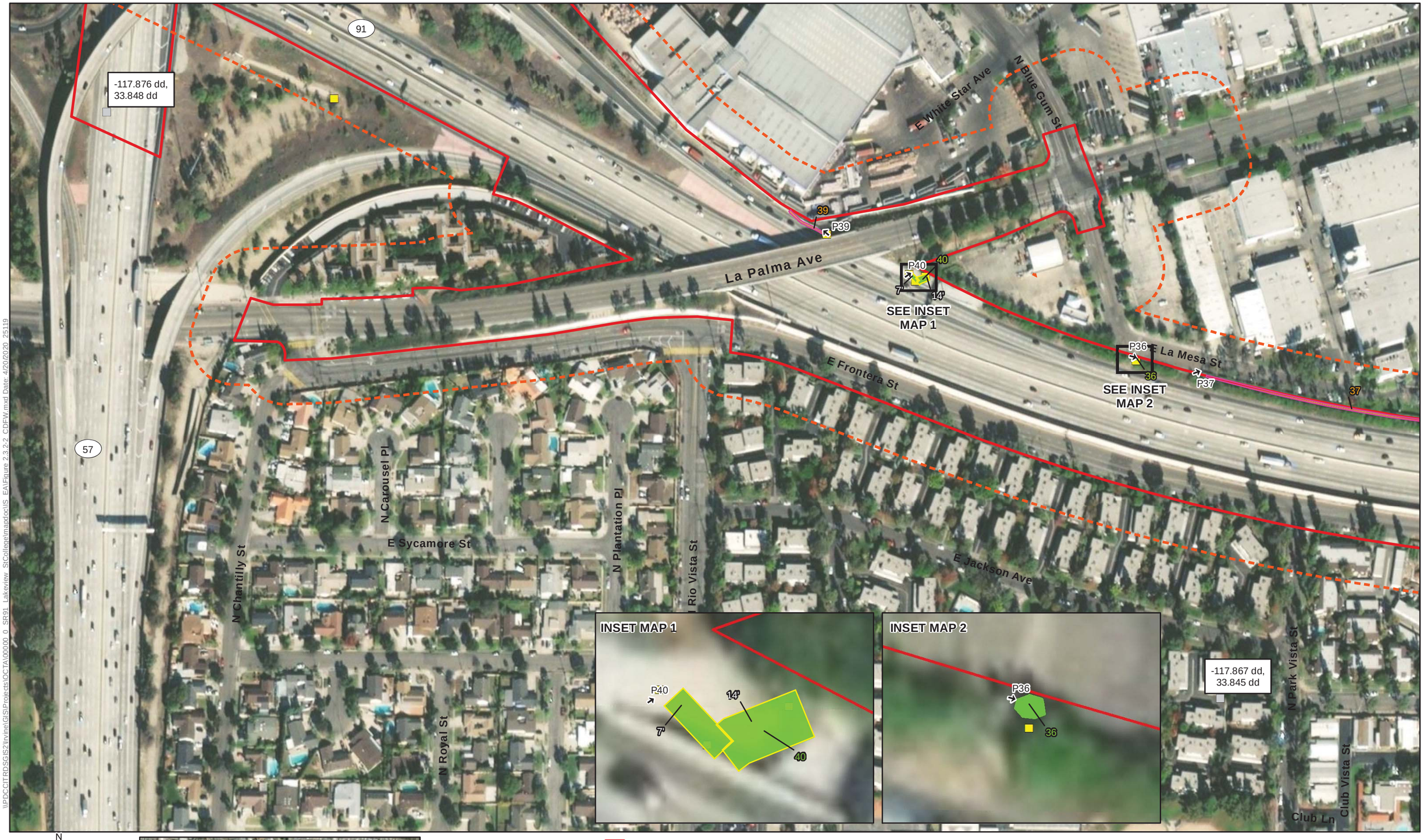


- ↑# Photo Point
- Culvert
- Jurisdictional Study Area (100' Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact
- Non-Jurisdictional Feature

Earthen Feature	Concrete Feature
Riparian	Riparian
Streambed	Streambed

Figure 2.3.2-2- Sheet 4
CDFW Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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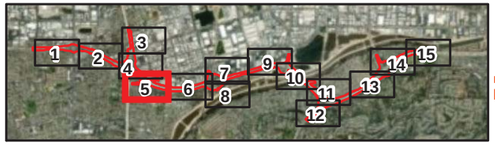
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Source: Bing Imagery (2010)



↑# Photo Point

Culvert

Jurisdictional Study Area (100' Buffer)

Maximum Limits of Disturbance

Permanent Impact

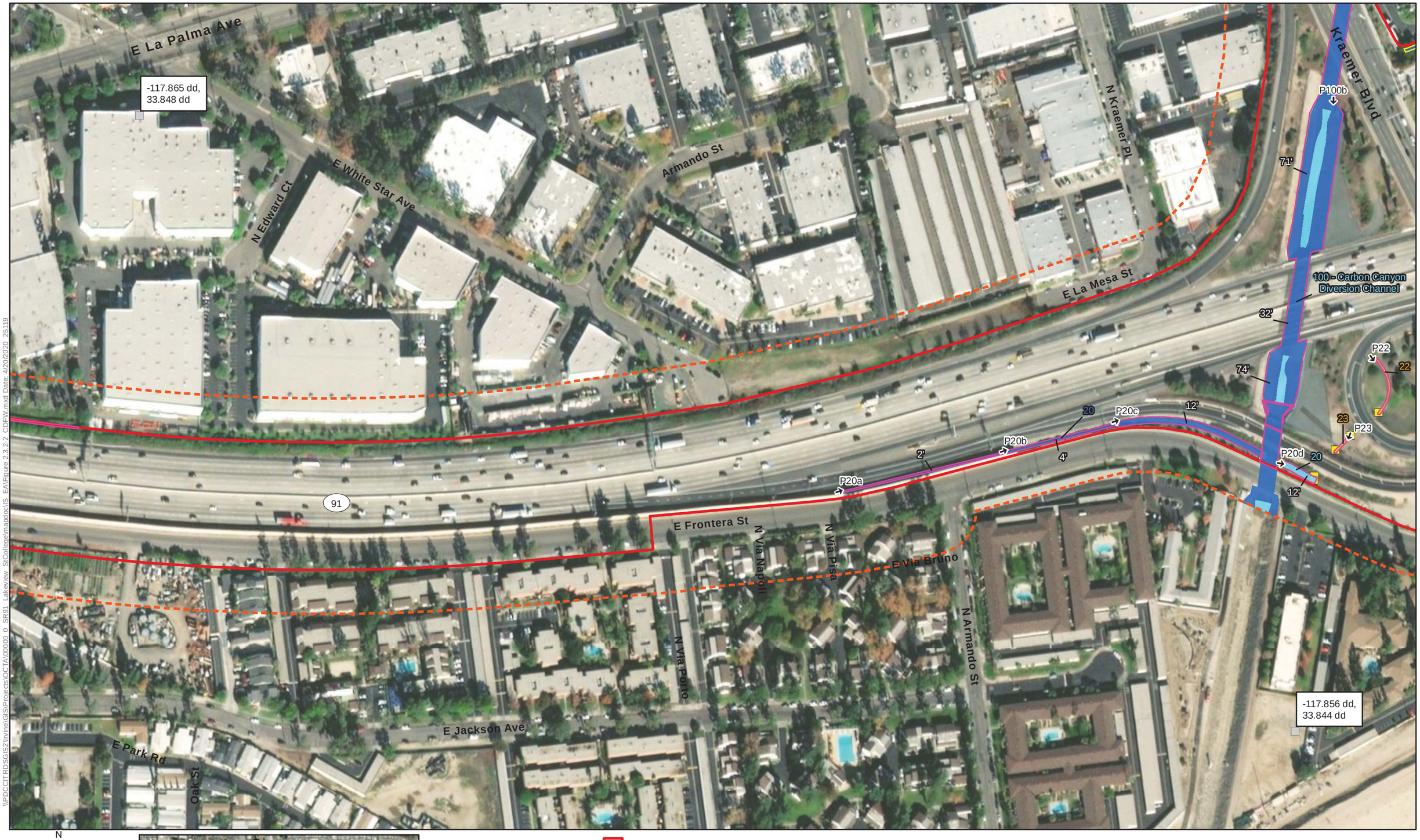
Temporary Impact

Non-Jurisdictional Feature

Earthen Feature	Concrete Feature
Riparian	Riparian
Streambed	Streambed

Figure 2.3.2-2- Sheet 5
CDFW Aquatic Resources
Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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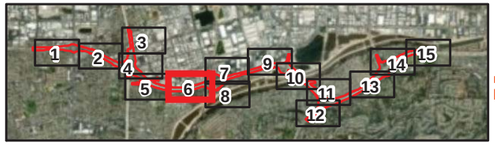
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Source: Bing Imagery (2010)



↑# Photo Point

Culvert

Jurisdictional Study Area (100' Buffer)

Maximum Limits of Disturbance

Permanent Impact

Temporary Impact

Non-Jurisdictional Feature

Earthen Feature	Concrete Feature
Riparian	Riparian
Streambed	Streambed

Figure 2.3.2-2- Sheet 6
CDFW Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Feet

Source: Bing Imagery (2010)



- #: Photo Point
- Culvert
- Jurisdictional Study Area (100' Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact
- Non-Jurisdictional Feature

Earthen Feature	Concrete Feature
Riparian	Riparian
Streambed	Streambed

Figure 2.3.2-2- Sheet 7
CDFW Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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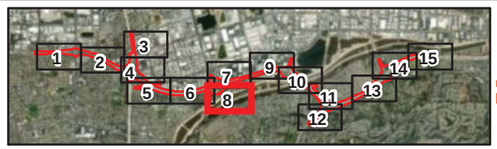
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Source: Bing Imagery (2010)



- # Photo Point
- Culvert
- Jurisdictional Study Area (100' Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact
- Non-Jurisdictional Feature

Earthen Feature
- Riparian
- Streambed

Concrete Feature
- Riparian
- Streambed

Figure 2.3.2-2- Sheet 8
CDFW Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
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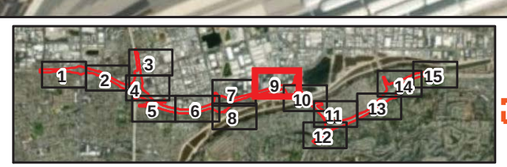
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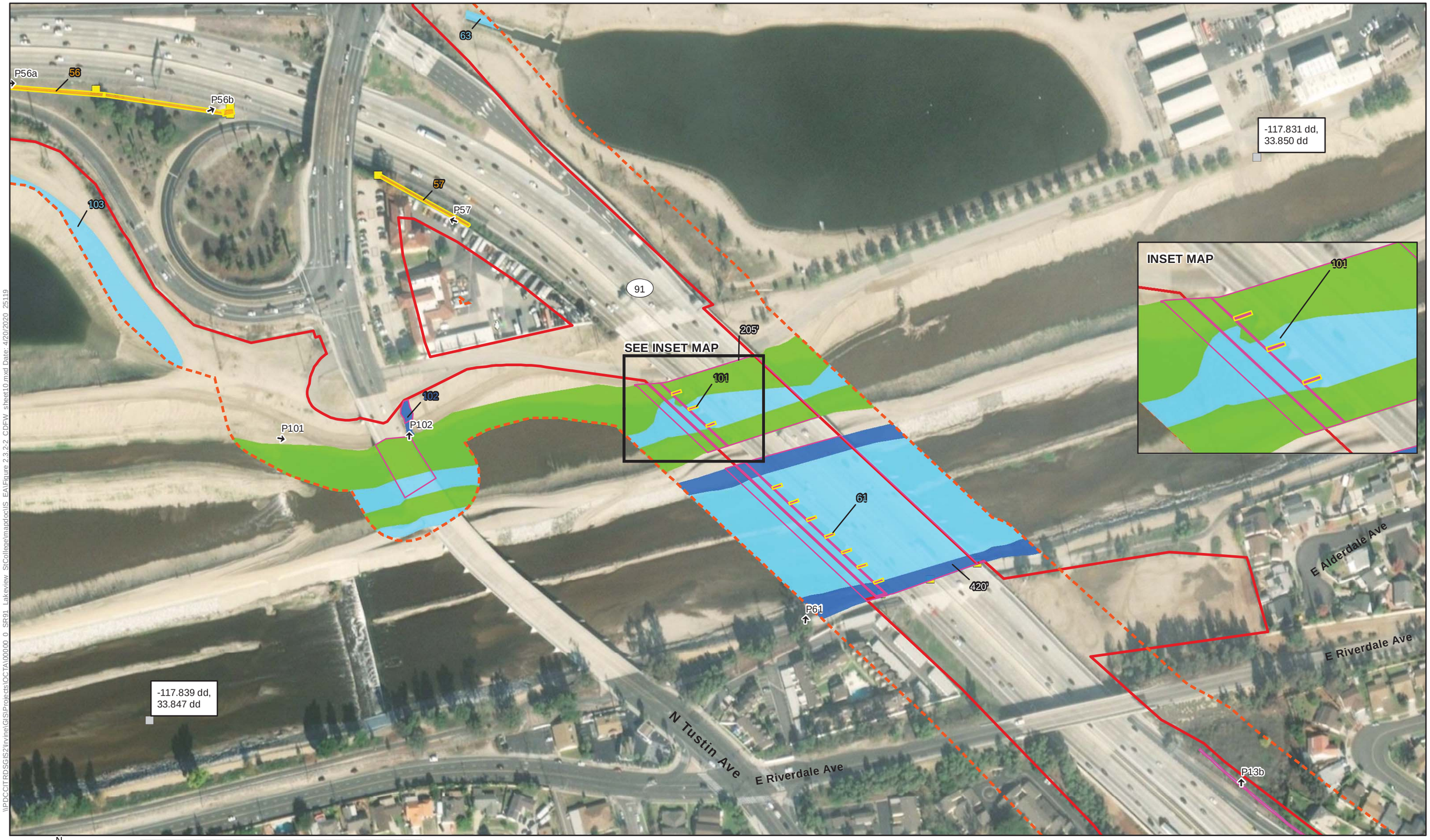
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- Culvert
- Jurisdictional Study Area (100' Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact
- Non-Jurisdictional Feature

Earthen Feature
- Riparian
- Streambed

Concrete Feature
- Riparian
- Streambed

Figure 2.3.2-2- Sheet 9
CDFW Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Feet

Source: Bing Imagery (2010)



#: Photo Point

Culvert

Jurisdictional Study Area (100' Buffer)

Maximum Limits of Disturbance

Permanent Impact

Temporary Impact

Non-Jurisdictional Feature

Earthen Feature

Riparian

Streambed

Concrete Feature

Riparian

Streambed

Figure 2.3.2-2 - Sheet 10
CDFW Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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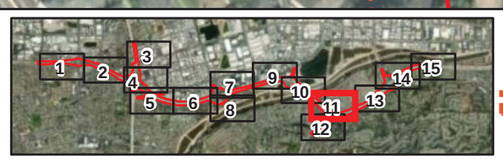
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Source: Bing Imagery (2010)



- #: Photo Point
- Culvert
- Jurisdictional Study Area (100' Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact
- Non-Jurisdictional Feature

Earthen Feature	Concrete Feature
Riparian	Riparian
Streambed	Streambed

Figure 2.3.2-2- Sheet 11
CDFW Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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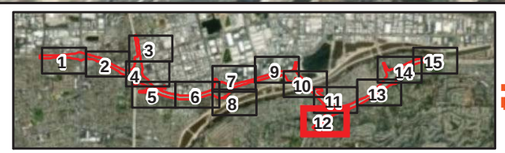
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Source: Bing Imagery (2010)



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Culvert

Jurisdictional Study Area (100' Buffer)

Maximum Limits of Disturbance

Permanent Impact

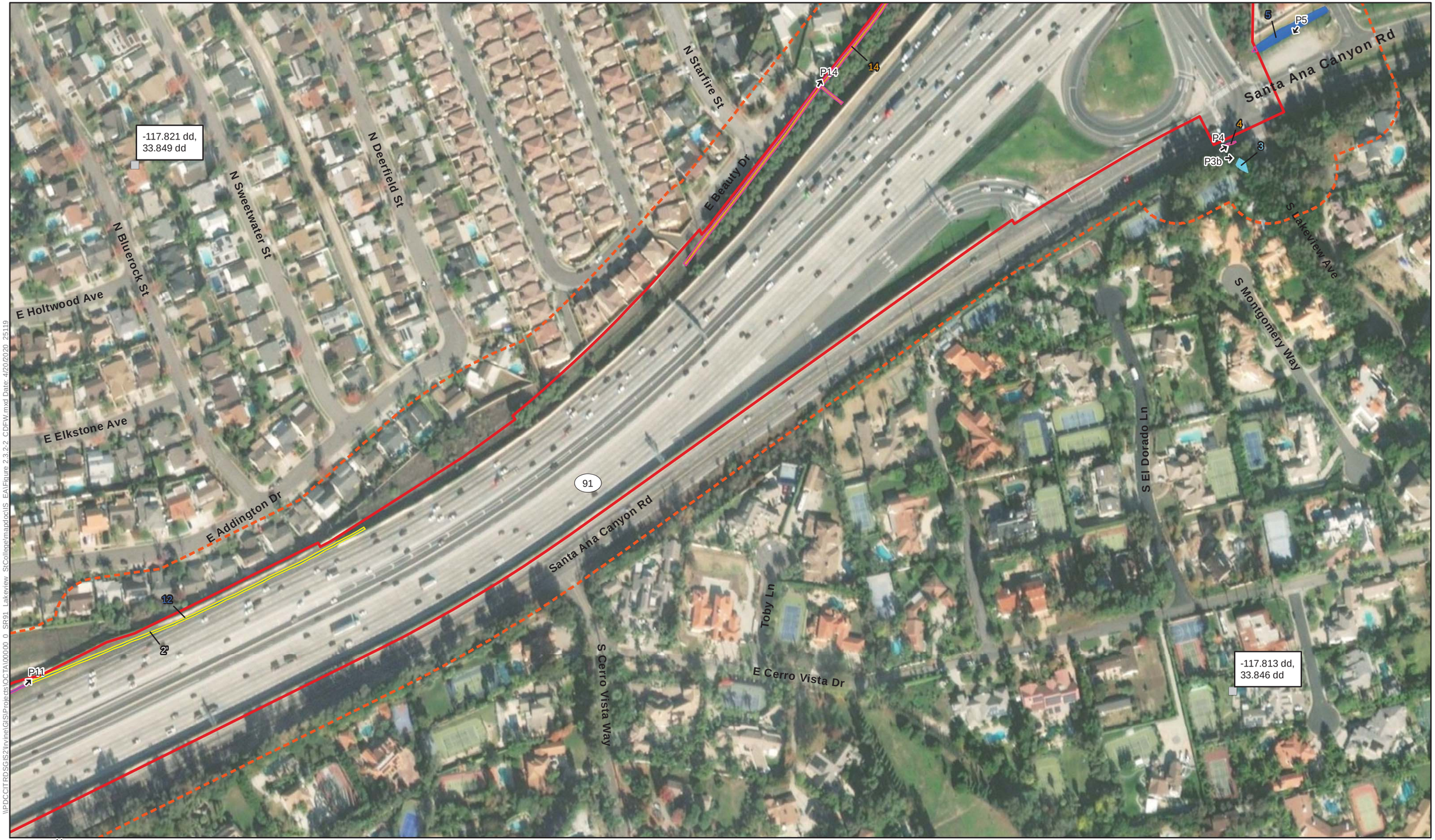
Temporary Impact

Non-Jurisdictional Feature

Earthen Feature	Concrete Feature
Riparian	Riparian
Streambed	Streambed

Figure 2.3.2-2- Sheet 12
CDFW Aquatic Resources
Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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Figure 2.3.2-2- Sheet 13
CDFW Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
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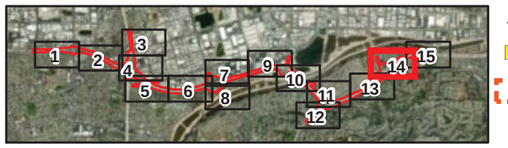
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Feet

Source: Bing Imagery (2010)



- #↑ Photo Point
- Culvert
- Jurisdictional Study Area (100' Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact
- Non-Jurisdictional Feature

Earthen Feature	Concrete Feature
Riparian	Riparian
Streambed	Streambed

Figure 2.3.2-2- Sheet 14
CDFW Aquatic Resources
Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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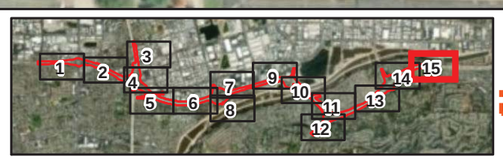
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Feet

Source: Bing Imagery (2010)



- # Photo Point
- Culvert
- Jurisdictional Study Area (100' Buffer)
- Maximum Limits of Disturbance
- Permanent Impact
- Temporary Impact
- Non-Jurisdictional Feature

Earthen Feature
- Riparian
- Streambed

Concrete Feature
- Riparian
- Streambed

Figure 2.3.2-2- Sheet 15
CDFW Aquatic Resources Potential Impacts
State Route 91 Improvement Project Between SR-57 and SR-55
EA0K9800, 12-ORA-91 PM 4.7/R10.8, 12-ORA-57 PM 15.5/16.2, 12-ORA-55 PM 17.4/R17.9

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No-Build Alternative

None of the proposed project improvements would be constructed or operated under the No-Build Alternative. Therefore, the No-Build Alternative would not result in adverse permanent impacts on USACE, RWQCB, or CDFW areas.

Temporary Impacts

Build Alternative (Preferred Alternative)

As shown in Table 2.3.2-3, direct temporary impacts on jurisdictional features would occur as a result of implementation of the proposed project. The Build Alternative (Preferred Alternative) would temporarily affect approximately 4.82 acres of non-wetland (2.70 acres of earthen features and 2.12 acres of concrete features) and 0.49 acre of wetland (0.49 acre of earthen features and 0.00 acre of concrete features) USACE/RWQCB features. The Build Alternative (Preferred Alternative) would temporarily affect approximately 6.28 acres of streambed (2.64 acres of earthen features and 3.64 acres of concrete features) and 0.84 acre of riparian (0.83 acre of earthen features and 0.01 acre of concrete features) CDFW resources.

Table 2.3.2-3. Summary of Potential Temporary Impacts on USACE, RWQCB, and CDFW Features

Temporary Impacts	Earthen or Concrete	USACE/RWQCB Waters of the U.S./Waters of the State Non-Wetland	USACE/RWQCB Waters of the U.S./Waters of the State Wetland	CDFW Streambed	CDFW Riparian
Total Acres	Earthen	2.70	0.49	2.64	0.83
	Concrete	2.12	0.00	3.64	0.01
Linear Feet	Earthen	2,540	439	1,914	439
	Concrete	15,441	0	11,315	30

Temporary impacts would generally be the result of equipment staging or site preparation within or adjacent to features, fugitive dust, the spread of non-native vegetation, and fluid spills. Temporary impacts may also result from relocation and/or modification of concrete channels. Temporarily affected areas are shown in Figures 2.3.2-1 and 2.3.2-2.

Furthermore, project features/standardized measures **PF BIO-3**, **PF BIO-4**, and **PF BIO-9** would include methods to address potential temporary impacts on jurisdictional features as a result of construction.

No-Build Alternative

None of the proposed project improvements would be constructed or operated under the No-Build Alternative. Therefore, the No-Build Alternative would not result in temporary impacts to USACE, RWQCB, or CDFW areas.

Least Environmentally Damaging Practicable Alternative (LEDPA)

The Build Alternative (Preferred Alternative) would both result in 0.49 acre of temporary impacts and < 0.01 acre of permanent impacts to jurisdictional wetlands. Given that the Build Alternative (Preferred Alternative) would result in minimal permanent impacts to jurisdictional wetlands, with

a total of < 0.01 acre (28 square feet), and given that the No-Build Alternative would not meet the purpose and need of the proposed project, making it impracticable, no LEDPA is identified.

2.3.2.4 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

Impacts on waters of the U.S., including wetlands and non-wetland waters, would be permitted under CWA Section 404 with an LOP through the Measure M2 Freeway Program's Standard Individual Permit and under CWA Section 401 with water quality certification through the SWRCB. Under the preapproved mitigation program in the OCTA M2 Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP), permanent project-related impacts on waters of the U.S. and waters of the state would be mitigated through restoration and monitoring in Aliso Creek. Under the terms of the agreement, the mitigation sites would need to be prepared and planted and restoration monitoring would need to commence before any fill material could be discharged into waters of the U.S.

Impacts on CDFW jurisdiction protected pursuant to California Fish and Game Code (CFGC) Section 1602, which requires a Streambed Alteration Agreement for impacts on the bed, bank, or channel, would be compensated for according to the OCTA M2 NCCP/HCP's Streambed Program, which provides guidance for compensating for streambed areas and riparian habitats under the jurisdiction of CDFW and approved by CDFW. The proposed project is one of a series of projects that fall under OCTA's Measure M2 Natural Community Conservation Plan/Habitat Conservation Plan (M2 NCCP/HCP), and project impacts on coastal sage scrub are considered fully addressed under the M2 NCCP/HCP.

If geotechnical borings need to be conducted within waters of the U.S. and/or within CDFW jurisdiction that is protected pursuant to CFGC prior to aquatic permits being obtained for the overall project, then separate permits under CWA Sections 401 and 404 and CFGC Section 1602 will need to be obtained specifically for the boring activities, as dictated by the resources that would be affected.

In addition, Avoidance and Minimization Measures **BIO-1**, **BIO-2**, **BIO-5** through **BIO-8**,**BIO-10**, and **BIO-18** would reduce the extent of temporary and permanent impacts on jurisdictional features as a result of construction.

2.3.2.5 ONLY PRACTICABLE FINDING

The Build Alternative (Preferred Alternative) would result in less than 0.01 acre of permanent impacts on jurisdictional wetlands. The No-Build Alternative would not adequately meet the purpose and need of the proposed project. Pursuant to EO 11990, federal agencies, such as FHWA and/or Caltrans, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: (1) that there is no practicable alternative to the construction and (2) the proposed project includes all practicable measures to minimize harm.

No practicable alternatives for the proposed project were identified given that the Build Alternative (Preferred Alternative) would result in minimal permanent impacts on jurisdictional wetlands, with a total of less than 0.01 acre, or 28 square feet. All practicable measures to minimize harm to wetlands will be taken. Refer to Section 2.3.2.4, Avoidance, Minimization, and/or Mitigation Measures, for all proposed measures to minimize impacts on jurisdictional features, including wetlands.

Based on the above considerations, it is determined that there is no practicable alternative to the proposed construction in wetlands, and the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use.

2.3.2.6 REFERENCES

ICF. 2018. State Route 91 Improvement Project Between State Route 57 and State Route 55 Natural Environment Study, Including a Delineation of Federal and State Jurisdictional Water Resources. June.

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2.3.3 Plant Species

2.3.3.1 REGULATORY SETTING

The U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW) have regulatory responsibility for the protection of special-status plant species. "Special-status" species are selected for protection because they are rare and/or subject to population and habitat declines. *Special status* is a general term for species that are provided varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). Please see the Threatened and Endangered Species section, Section 2.3.5, in this document for detailed information about these species.

This section of the document discusses all other special-status plant species, including CDFW species of special concern, USFWS candidate species, and California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at 16 United States Code (USC) Section 1531, et seq. See also 50 Code of Federal Regulations (CFR) Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code Section 2050, et seq. Department projects are also subject to the Native Plant Protection Act, found at California Fish and Game Code, Sections 1900–1913, and the California Environmental Quality Act (CEQA), found at California Public Resources Code, Sections 21000–21177.

2.3.3.2 AFFECTED ENVIRONMENT

The information in this section is based on the *Natural Environment Study* (NES) completed by ICF in June 2018 for the proposed project.

A literature review was conducted for the U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles containing the Biological Study Area (BSA), defined as the project footprint and a 300-foot buffer and the surrounding quadrangles. Quadrangles queried were Anaheim, Orange, Whittier, La Habra, Yorba Linda, Prado Dam, El Toro, Tustin, Newport Beach, Seal Beach, and Los Alamitos. The adjacent Black Star Canyon quadrangle, which contains mostly mountainous topography and high elevations, was excluded from the search because species occurrence records for this quadrangle would not be representative of the habitat within the BSA, and those species would not be expected to occur within the project area. The search determined that 43 special-status plant species may occur within the BSA. Eleven of these species are federally and/or state listed as endangered or threatened, and three of them are considered to be "covered species" under the Orange County Transportation Authority's Measure M2 Natural Community Conservation Plan/Habitat Conservation Plan. The BSA does not contain any habitat that would support any special-status plant species. Of the 43 special-status plants identified in the literature review, all 43 were determined to be absent, including all three covered plant species, because of a lack of suitable habitat within the BSA or negative findings during other comprehensive project surveys.

Reconnaissance field surveys were conducted within the BSA in January and February 2017 to characterize the project site, verify on-site vegetation communities, and determine, based on site conditions, if any special-status species were likely to occur. The project site was also comprehensively surveyed during jurisdictional delineation surveys.

A total of 110 plant species within 11 vegetation communities/land use types were identified in the BSA during field surveys. The most commonly occurring vegetated habitat type was ornamental/landscaped, surpassed only by developed areas, which typically contain mostly ornamental vegetation. Because the most dominant vegetation type was ornamental/ landscaped, some plants identified within the BSA included commonly occurring acacia (*Acacia* sp.), eucalyptus (*Eucalyptus* spp.), tipa (*Tipuana tipu*), Mexican fan palm (*Washingtonia robusta*), Peruvian pepper tree (*Schinus molle*), Brazilian pepper tree (*Schinus terebinthifolius*), and pine (*Pinus* sp.). Non-native grassland and ruderal communities were also presented in scattered patches throughout the BSA where some of the more commonly occurring species included rip-gut brome (*Bromus diandrus*), red brome (*Bromus madritensis* ssp. *rubens*), cheatgrass (*Bromus tectorum*), wild oats (*Avena* sp.), tree tobacco (*Nicotiana glauca*), common horehound (*Marrubium vulgare*), castor bean (*Ricinus communis*), western sunflower (*Helianthus annuus*), summer mustard (*Hirschfeldia incana*), and cheeseweed (*Malva parviflora*). Coastal sage scrub and mulefat scrub represented some of the smaller on-site communities where species such as California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), Menzies' goldenbush (*Isocoma menziesii*), bush sunflower (*Encelia californica*), and mulefat (*Baccharis salicifolia*) could be found.

2.3.3.3 ENVIRONMENTAL CONSEQUENCES

Permanent Impacts

Build Alternative (Preferred Alternative)

Based on the literature search and field surveys, there is no suitable habitat anywhere in the BSA for supporting federally or state-listed or otherwise special-status plant species, including the three covered plant species. Therefore, there would be no permanent impacts on listed or special-status plant species.

No-Build Alternative

The No-Build Alternative would not include construction of any of the proposed project improvements. As noted above, there is no suitable habitat for supporting federally or state-listed or otherwise special-status plant species, including the three covered plant species. Therefore, the No-Build Alternative would not result in permanent impacts on listed or special-status plant species.

Temporary Impacts

Build Alternative (Preferred Alternative)

Based on the literature search and field surveys, there is no suitable habitat anywhere in the BSA for supporting federally or state-listed or otherwise special-status plant species, including the three covered plant species. Therefore, there would be no temporary impacts on listed or special-status plant species.

No-Build Alternative

The No-Build Alternative would not include construction of any of the proposed project improvements. As noted above, there is no suitable habitat for supporting federally or state-listed or otherwise special-status plant species, including the three covered plant species. Therefore, the No-Build Alternative would not result in temporary impacts on listed or special-status plant species.

2.3.3.4 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

There is no potential for federally or state-listed special-status or covered plant species to occur in the BSA; therefore, there would be no temporary or permanent impacts on these species. As a result, no avoidance, minimization, or mitigation is necessary.

2.3.3.5 REFERENCES

ICF. 2018. State Route 91 Improvement Project Between State Route 57 and State Route 55 Natural Environment Study, Including a Delineation of Federal and State Jurisdictional Water Resources. June.

Table 2.3.3-1. Likelihood of Occurrence for Special-Status Plant Species

Common/Scientific Name	Status[a] Fed/State/CNPS/ CNDDB/M2 NCCP	Species Requirements	Specific Habitat[b] Present/Absent	Rationale
chaparral sand-verbena (*Abronia villosa* var. *aurita*)	-/-/1B.1/S2/-	Annual herb found in sandy soils within chaparral, coastal scrub, and coastal dunes between 150 and 5,000 feet in elevation. Blooming period is from January to September.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
aphanisma (*Aphanisma blitoides*)	-/-/1B.2/S3/-	Annual herb found in sandy or clay soils on ocean bluffs or slopes in coastal scrub, coastal dunes, and coastal bluff scrub between 3 and 600 feet in elevation. Blooming period is from March to June.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Braunton's milk-vetch (*Astragalus brauntonii*)	E/-/1B.1/S2/-	Perennial herb found in recently burned or disturbed areas, typically on sandstone substrates with carbonate layers, within chaparral, coastal scrub, and valley and foothill grassland between 13 and 2,100 feet in elevation. Blooming period is from January to August.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.
Ventura Marsh milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus*)	E/E/1B.1/S1/-	Perennial herb found in coastal dunes, coastal scrub, and along the edges of coastal salt or brackish marshes and swamps below 115 feet in elevation. Blooming period is from June to October.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.
Coulter's saltbush (*Atriplex coulteri*)	-/-/1B.2/S2/-	Perennial herb/shrub found in alkaline to clay soils on ocean bluffs, ridge tops within coastal bluff scrub, coastal dunes, coastal scrub, and valley and foothill grassland between 10 and 1,500 feet in elevation. Blooming period is from March to October.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
south coast saltscale (*Atriplex pacifica*)	-/-/1B.2/S2/-	Annual herb found in alkaline soils in coastal scrub, coastal dunes, coastal playas, and coastal bluff scrub between 0 and 460 feet in elevation. Blooming period is from March to October.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Parish's brittlescale (*Atriplex parishii*)	-/-/1B.1/S1/-	Annual herb found in alkaline soils within chenopod scrub, playas, and vernal pools between 80 and 6,160 feet in elevation. Blooming period is from June to October.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Common/Scientific Name	Status[a] Fed/State/CNPS/ CNDDB/M2 NCCP	Species Requirements	Specific Habitat[b] Present/Absent	Rationale
Davidson's saltscale (*Atriplex serenana* var*. davidsonii*)	-/-/1B.2/S1/-	Annual herb found in alkaline soils in coastal bluff scrub and coastal scrub between 30 and 650 feet in elevation. Blooming period is from April to October.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
thread-leaved brodiaea (*Brodiaea filifolia*)	T/E/1B.1/S2/-	Perennial bulbiferous herb found in clay, loamy sand, or alkaline soils within open grasslands at the edges or in vernal pools or floodplains between 82 and 3,675 feet in elevation. Blooming period is from March to June.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.
Plummer's mariposa lily (*Calochortus plummerae*)	-/-/4.2/S4/-	Bulbiferous perennial herb found on sandy or rocky sites of granitic or alluvial material in valley and foothill grassland, coastal scrub, chaparral, cismontane woodland, and lower coniferous forests between 328 and 5,577 feet in elevation. Blooming period is from May to July.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
intermediate mariposa lily (*Calochortus weedii* var*. intermedius*)	-/-/1B.2/S2/C	Perennial bulbiferous herb found in chaparral, cismontane woodland, coastal scrub, and valley and foothill woodland between 300 and 2,000 feet in elevation. Blooming period is from May to July.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
lucky morning-glory (*Calystegia felix*)	-/-/3.1/SH/-	Annual rhizomatous herb that was historically associated with wetland and marshy places but may have possibly occurred in drier areas as well and possibly in silty loam and alkaline soils. Found in (sometimes alkaline) meadows and seeps and in alluvial riparian scrub between 98 and 705 feet in elevation. Blooming period is from March to September.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Lewis' evening-primrose (*Camissoniopsis lewisii*)	-/-/3/S4/-	Annual herb found on sandy and clay soils within coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grassland between 0 and 600 feet in elevation. Blooming period is from March to June.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
southern tarplant (*Centromadia parryi* ssp*. australis*)	-/-/1B.1/S2/C	Annual herb found in alkaline soils and disturbed sites along coastal marsh edges, wetlands, valley foothill grasslands, salt marshes, and swamps between 0 and 1,300 feet in elevation. Blooming period is from May to November.	HP	Marginal habitat is present within BSA, although it is not expected because of the routine maintenance that occurs in this single area of marginal habitat.

Common/Scientific Name	Status[a] Fed/State/CNPS/ CNDDB/M2 NCCP	Species Requirements	Specific Habitat[b] Present/Absent	Rationale
smooth tarplant (*Centromadia pungens* ssp. *laevis*)	-/-/1B.1/S2/-	Annual herb found in alkali soils in seasonally wet chenopod scrub, meadows and seeps, playas, riparian woodland, fallow fields, drainage ditches, and moist parts of grasslands below 2,100 feet in elevation. Blooming period is from April to September.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
salt marsh bird's-beak (*Chloropyron maritimum* ssp. *maritimum*)	E/E/1B.2/S1/-	Annual herb found in higher zones of salt marsh habitat within coastal salt marsh, coastal dunes, and coastal wetlands between 0 and 90 feet in elevation. Blooming period is from May to October.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.
San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)	PT/E/1B.1/S1/-	Annual herb found in sandy soils in coastal sage scrub and valley and foothill grassland between 492 and 4,003 feet in elevation. Blooming period is from April to July.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.
slender-horned spineflower (*Dodecahema leptoceras*)	E/E/1B.1/S1/-	Annual herb found in sandy soils within chaparral, cismontane woodland, and coastal scrub (alluvial fan) between 650 and 2,500 feet in elevation. Blooming period is from April to June.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.
many-stemmed dudleya (*Dudleya multicaulis*)	-/-/1B.2/S2/C	Perennial herb found in heavy clayey soils on grassy slopes in chaparral, coastal scrub, and valley and foothill grasslands between 45 and 2,400 feet in elevation. Blooming period is from April to July.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Laguna Beach dudleya (*Dudleya stolonifera*)	T/T/1B.1/S1/-	Perennial stoloniferous herb found on rocky substrates in chaparral. Cismontane woodland, coastal scrub, and valley and foothill needlegrass between 30 and 780 feet in elevation. Blooming period is from May to July.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.

Common/Scientific Name	Status[a] Fed/State/CNPS/ CNDDB/M2 NCCP	Species Requirements	Specific Habitat[b] Present/Absent	Rationale
Santa Ana River woollystar (*Eriastrum densifolium ssp. sanctorum*)	E/E/1B.1/S1/-	Perennial herb found in sandy soils of floodplains and terraced fluvial deposits of the Santa Ana River and larger tributaries between 299 and 2,001 feet in elevation. Blooming period is from April to September.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.
San Diego button-celery (*Eryngium aristulatum* var*. parishii*)	E/E/1B.1/S1/-	Annual/perennial herb found in mesic coastal scrub, vernal pools, and valley and foothill grassland between 60 and 2,000 feet in elevation. Blooming is from April to June.	HA	No suitable habitat is present within the BSA; the project occurs below the species' known elevation range. This species is not expected to occur. No further constraint is present.
Los Angeles sunflower (*Helianthus nuttallii* ssp*. parishii*)	-/-/1A/SH/-	Perennial rhizomatous herb found in coastal and freshwater marsh and swamps between 30 and 5,000 feet in elevation. Blooming period is from August to October.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Tecate cypress (*Hesperocyparis forbesii*)	-/-/1B.1/S1/-	Perennial evergreen tree found in clay, gabbroic or metavolcanic soils within closed-cone coniferous forest and chaparral between 250 and 5,000 feet in elevation.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
vernal barley (*Hordeum intercedens*)	-/-/3.2/S3S4/-	Annual herb found in coastal dunes, coastal scrub, vernal pools, and valley and foothill grasslands between 15 and 3,000 feet in elevation. Blooming period is from March to June.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
decumbent goldenbush (*Isocoma menziesii var. decumbens*)	-/-/1B.2/S2/-	Perennial herb found in chaparral and coastal scrub, often in sandy, disturbed areas between 30 and 400 feet in elevation. Blooming period is from April to November.	HA	Sandy areas with naturally occurring sage scrub are not present within the BSA. This species is not expected to occur. No further constraint is present.
Coulter's goldfields (*Lasthenia glabrata* ssp*. coulteri*	-/-/1B.1/S2/-	Annual herb found in coastal salt marshes and swamps, playas, and vernal pools below 4,000 feet in elevation. Blooming period is from February to June.	HP	Plants of the parent taxon were found growing within the BSA along SR-91, most likely as a revegetation seed mix. The subspecies of the plants could not be determined during reconnaissance/ general surveys because of the age of the plants, but it is assumed that the sensitive subspecies was not part of the seed mix.

Common/Scientific Name	Status[a] Fed/State/CNPS/ CNDDB/M2 NCCP	Species Requirements	Specific Habitat[b] Present/Absent	Rationale
Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*)	-/-/4.3/S3/-	Annual herb found in chaparral and coastal scrub between 1 and 2,700 feet in elevation. Blooming period is from January to July.	HP	Potentially suitable habitat is present but only within the scrub habitat along the north edge of the BSA. Project activities are not anticipated in or immediately adjacent to this habitat.
Jokerst's monardella (*Monardella australis* ssp. *jokerstii*)	-/-/1B.1/S1/-	Perennial rhizomatous herb found on steep scree or talus slopes between breccia and on secondary alluvial benches along drainages and washes in chaparral and lower montane coniferous forest between 4,429 and 5,741 feet in elevation. Blooming period is from July to September.	HA	The project occurs below the species' known elevation range. This species is not expected to occur. No further constraint is present.
intermediate monardella (*Monardella hypoleuca* ssp. *intermedia*)	-/-/1B.3/S2S3/-	Perennial rhizomatous herb usually associated with an understory within chaparral, cismontane woodland, and lower montane coniferous forest between 1,300 and 4,000 feet in elevation. Blooming period is from April to September.	HA	The project occurs below the species' known elevation range. This species is not expected to occur. No further constraint is present.
mud nama (*Nama stenocarpum*)	-/-/2B.2/S1S2/-	Annual or perennial herb found in lake or river margin marshes and swamps between 15 and 1,500 feet in elevation. Blooming period is from January to July.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Gambel's water cress (*Nasturtium gambelii*)	E/T/1B.1/S1/-	Perennial rhizomatous herb found in freshwater and brackish marshes and swamps from 15 and 900 feet in elevation. Blooming period is from April to October.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.
prostrate vernal pool navarretia (*Navarretia prostrata*)	-/-/1B.1/S2/-	Annual herb found in alkaline soils in grassland, mesic sites within coastal scrub, valley and foothill grassland, and vernal pools between 9 and 3,600 feet in elevation. Blooming period is from April to July.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
coast woolly-heads (*Nemacaulis denudata* var. *denudata*)	-/-/1B.2/S2/-	Annual herb found in coastal dunes between 0 and 325 feet in elevation. Blooming period is from April to September.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Common/Scientific Name	Status[a] Fed/State/CNPS/ CNDDB/M2 NCCP	Species Requirements	Specific Habitat[b] Present/Absent	Rationale
chaparral nolina (*Nolina cismontana*)	-/-/1B.2/S3/-	Perennial evergreen shrub found in sandstone or gabbro soils within chaparral and coastal scrub between 459 and 4,183 feet in elevation. Blooming period is from March to July.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
California orcutt grass (*Orcuttia californica*)	E/E/1B.1/S1/-	Annual herb found in vernal pools between 49 and 2,165 feet in elevation. Blooming period is from April to August.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.
Allen's pentachaeta (*Pentachaeta aurea* ssp*. allenii*)	-/-/1B.1/S2/-	Annual herb found in coastal scrub and valley and foothill grassland between 225 and 1,600 feet in elevation. Blooming period is from March to June. Threats include development, habitat alteration, and vehicles.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
south coast branching phacelia (*Phacelia ramosissima* var*. austrolitoralis*)	-/-/3.2/S3/-	Perennial herb found in sandy and rocky substrates within chaparral, coastal dunes, coastal scrub, and coastal swamps and marshes between 10 and 900 feet in elevation. Blooming period is from March to August.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Brand's star phacelia (*Phacelia stellaris*)	-/-/1B.1/S1/-	Annual herb found in coastal dunes and coastal scrub between 3 and 1,312 feet in elevation. Blooming period is from March to June.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
white rabbit-tobacco *(Pseudognaphalium leucocephalum*)	-/-/2B.2/S2/-	Perennial herb found in sandy or gravelly soils in riparian woodland, cismontane woodland, coastal scrub, and chaparral between 0 and 6,825 feet in elevation. Blooming period is from July to December.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
chaparral ragwort (*Senecio aphanactis*)	-/-/2B.2/S2/-	Annual herb found in (sometimes alkaline) chaparral, cismontane woodland, and coastal scrub between 45 and 2,400 feet in elevation. Blooming period is from January to April.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Common/Scientific Name	Status[a] Fed/State/CNPS/ CNDDB/M2 NCCP	Species Requirements	Specific Habitat[b] Present/Absent	Rationale
salt spring checkerbloom (*Sidalcea neomexicana)*	-/-/2B.2/S2S3/-	Perennial herb found in alkali playas, brackish marshes, chaparral, coastal scrub, lower montane coniferous forest, Mojavean Desert scrub. Located on alkali springs and marshes between 45 and 4,960 feet in elevation. Blooming period is from March to June.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
estuary seablite (*Suaeda esteroa*)	-/-/1B.2/S2/-	Perennial herb found in coastal salt marshes and swamps. Located on clay, silt, and sandy substrates between 0 and 15 feet in elevation. Blooming period is from May to January.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
San Bernardino aster (*Symphyotrichum defoliatum*)	-/-/1B.2/S2/-	Perennial rhizomatic herb found in cismontane woodland, coastal scrub, lower montane coniferous forest, marsh and swamp, meadow and seep, valley and foothill grassland, and wetlands between 5 and 8,000 feet in elevation. Blooming period is from July to November.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

[a] Status Codes

Federal

E = Federally listed; Endangered

T = Federally listed; Threatened

State

E = State listed; Endangered

T = State listed; Threatened

PT = Proposed Threatened

CNPS Rare Plant Rank (CRPR)

1A = Plants presumed extirpated in California and either rare or extinct elsewhere

1B = Plants rare, threatened, or endangered in California and elsewhere

2B = Plants rare, threatened, or endangered in California but more common elsewhere

3 = Plants about which more information is needed (Review List)

4 = Plants of limited distribution (Watch List)

CNPS CRPR Threat Codes

0.1 = Seriously endangered in California (over 80% of occurrences threatened)

0.2 = Fairly endangered in California (20%–80% of occurrences threatened)

0.3 = Not very endangered in California (less than 20% of occurrences threatened)

Note: The California Natural Diversity Database (CNDDB) uses the same ranking methodology that was originally developed by The Nature Conservancy but now maintained and recently revised by NatureServe. The *state rank* (S-rank) refers to imperilment status only within California's state boundaries. It is a reflection of the overall status of an element through its state range. The state rank represents a letter-plus-number score that reflects a combination of rarity, threat, and trend factors, with weighting being heavier on rarity than the other two.

S1 = Critically Imperiled – Critically imperiled in the state because of extreme rarity (often five or fewer populations) or other factor(s) such as very steep declines, making it especially vulnerable to extirpation from the state.

S2 = Imperiled – Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors, making it very vulnerable to extirpation from the state.

S3 = Vulnerable – Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors, making it vulnerable to extirpation from the state.

Common/Scientific Name	Status[a] Fed/State/CNPS/ CNDDB/M2 NCCP	Species Requirements	Specific Habitat[b] Present/Absent	Rationale
S4 = Apparently Secure – Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors. **S5 = Secure** – Common, widespread, and abundant in the state. **SH** = All sites are historical; the element has not been seen for at least 20 years, but suitable habitat still exists. Uncertainty about the rank of an element is expressed in two major ways: • By expressing the ranks as a range of values (e.g., S2S3 means the rank is somewhere between S2 and S3). • By adding a ? to the rank (e.g., S2? represents more certainty than S2S3 but less certainty than S2).				
C = Covered by the Orange County Transit Authority's Measure M2 Natural Community Conservation Plan/Habitat Conservation Plan				
[b] Habitat Presence/Absence Codes HP = Habitat is or may be present within project footprint. The species may be present. Focused survey is warranted. HA = No habitat present, and no further work needed. Gray Highlight = No potential to occur in the BSA.				

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2.3.4 Animal Species

2.3.4.1 REGULATORY SETTING

Many state and federal laws regulate impacts on wildlife. The U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries), and the California Department of Fish and Wildlife (CDFW) are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the federal or state Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed in the Threatened and Endangered Species Section (Section 2.3.5) below. All other special-status animal species are discussed here, including CDFW fully protected species and species of special concern, and USFWS or NOAA Fisheries candidate species.

Federal laws and regulations relevant to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

State laws and regulations relevant to wildlife include the following:

- California Environmental Quality Act
- Sections 1600 – 1603 of the California Fish and Game Code
- Sections 4150 and 4152 of the California Fish and Game Code

2.3.4.2 AFFECTED ENVIRONMENT

The information in this section is based on the *Natural Environment Study* (NES) completed by ICF in June 2018 for the proposed project.

A literature review was conducted for the U.S. Geological Service (USGS) 7.5-Minute topographic quadrangles containing the Biological Study Area (BSA), defined as the project footprint and a 300-foot buffer, plus the surrounding quadrangles. Quadrangles queried included Anaheim, Orange, Whittier, La Habra, Yorba Linda, Prado Dam, El Toro, Tustin, Newport Beach, Seal Beach, and Los Alamitos. The adjacent Black Star Canyon quadrangle, which contains mostly mountainous topography and high elevations, was excluded from the search because species occurrence records for this quadrangle would not be representative of the habitat within the BSA and those species would not be expected to occur within the project area. The search determined that 76 special-status animal species may potentially occur within the BSA. Nineteen of these species are federally and/or state listed as endangered or threatened, and 10 of them are considered to be "covered species" under the Orange County Transportation Authority's Measure M2 Natural Community Conservation Plan/Habitat Conservation Plan (OCTA's M2 NCCP/HCP). The BSA supports suitable to marginally suitable habitat for several special-status wildlife species. Of the 76 special-status animal species identified in the literature review, 55 were determined to be absent because of a lack of suitable

habitat. The remaining 21 that could occur in the BSA or were documented on the site during project surveys are as follows (asterisked species are those that were found on the site):

- Cooper's hawk (*Accipiter cooperii*)*
- Pallid bat (*Antrozous pallidus*)
- Great egret (*Ardea alba*)*
- Great blue heron (*Ardea herodias*)*
- Snowy egret (*Egretta thula*)*
- White-tailed kite (foraging; *Elanus leucurus*)
- Western pond turtle (*Emys marmorata*)
- Western mastiff bat (*Eumops perotis californicus*)
- American peregrine falcon (foraging; *Falco peregrinus anatum*)
- Bald eagle (*Haliaeetus leucocephalus*)*
- California gull (*Larus californicus*)*
- Western yellow bat (*Lasiurus xanthinus*)
- Yuma myotis (Myotis yumanensis)
- Osprey (Pandion haliaetus)*
- American white pelican (*Pelecanus erythrorhynchos*)*
- Double-crested cormorant (*Phalacrocorax auritus*)*
- White-faced ibis (*Plegadis chihi*)*
- Coastal California gnatcatcher (*Polioptila californica californica*)
- Black skimmer (*Rhynchops niger*)
- Yellow warbler (*Setophaga petechia*)*
- California least tern (*Sternula antillarum browni*)

Biologists performed field reconnaissance work and a general habitat assessment survey in the BSA in January and February 2017. This allowed them to determine which focused evaluations and surveys were required.

ICF biologists also conducted a daytime habitat assessment for roosting bats on August 21, 2017. The bat survey area consisted of the project limits of disturbance plus a 100-foot buffer. The biologists surveyed the area looking for potential day-roost habitat. Day-roosts are features that could be occupied during the day by bats and include dispersal, bachelor, maternity, overwintering, and hibernacula roosts. Habitat that is considered potential for roosting bats includes bridges with expansion joints and weep holes, empty or abandoned buildings, rocky outcroppings, large tree cavities, basal hollows, loose or peeling bark, larger snags, large leaf trees, and palm trees with skirting fronds (i.e., intact dead fronds). All potentially suitable structures were inspected for bats or bat sign. Bat panels previously installed on the State Route 91 (SR-91) bridge over the Santa Ana River as mitigation for the SR-91 Westbound Widening were not evaluated during the habitat assessment as these panels were known to be

occupied and surveyed by Caltrans biologists each month (Caltrans monthly surveys of these bat panels concluded in 2017). Surfaces of potential features, as well as the ground below the features, were inspected for bat sign, such as guano, staining, and prey remains.

A total of 87 wildlife species were detected within or in areas adjacent to the BSA, the majority of which were birds (78), followed in species richness by mammals (6) and reptiles (3). No amphibians or fish were observed during the field surveys.

Commonly detected birds included Canada goose (*Branta canadensis*), gadwall (*Anas strepera*), American wigeon (*Anas americana*), mallard (*Anas platyrhynchos*), green-winged teal (*Anas crecca*), lesser scaup (*Aythya affinis*), common merganser (*Mergus merganser*), ruddy duck (*Oxyura jamaicensis*), American white pelican (*Pelecanus erythrorhynchos*), snowy egret (*Egretta thula*), American coot (*Fulica americana*), black-necked stilt (*Himantopus mexicanus*), killdeer (*Charadrius vociferous*), least sandpiper (*Calidris minutilla*), long-billed dowitcher (*Limnodromus scolopaceus*), ring-billed gull (*Larus delawarensis*), California gull (*Larus californicus*), rock pigeon (*Columba livia*), Eurasian collared-dove (*Streptopelia decaocto*), mourning dove (*Zenaida macroura*), white-throated swift (*Aeronautes saxatalis*), red-crowned parrot (*Amazona viridigenalis*), bushtit (*Psaltriparus minimus*), cedar waxwing (*Bombycilla cedrorum*), yellow-rumped warbler (*Setophaga coronata*), and house finch (*Haemorhous mexicanus*). All of these species are common to the region and have adapted at least in part to human-made habitats or disturbances.

Mammals detected included brush rabbit (*Sylvilagus bachmani*), California ground squirrel (*Otospermophilus beecheyi*), desert woodrat (*Neotoma lepida*), coyote, and raccoon. These species are common to the region. In addition, bats of indeterminate species were heard and bat guano was observed to be present on the ground on the upper banks of the Carbon Canyon Diversion Channel where it passes under SR-91.

Reptiles detected included San Diego alligator lizard (*Elgaria multicarinata webbii*), western fence lizard (*Sceloporus occidentalis*), and western side-blotched lizard (*Uta stansburiana elegans*). All three of these species are common to the region and are readily found in human-altered landscapes, especially fence lizards.

Special-Status Bats and Other Bridge-, Crevice-, and Cavity-Dwelling Species

Results from the habitat assessment confirmed both potential roosting habitat and direct sign of occupied bridges within the study area. Bat colonies were present at three locations within the study area: SR-91 Bridge over the Santa Ana River, La Palma Avenue, and SR-91 Bridge over the Carbon Canyon Diversion Channel. The other bridge structures within the BSA do not provide suitable bat day roosting habitat for colonies, as they do not contain sufficient roosting crevices and/or do not provide adequate drop height. Many structures are not recommended for outflight surveys based on current design plans; these structures would not be impacted in a manner that would disturb bats or require exclusion (i.e., no opening of the deck that would expose the inner structure where bats could be present, no pile driving or demolition). Bridges that only have weep holes and do not need to be opened for lane expansion are not recommended for outflight surveys. A number of locations within the study area contain palm trees with skirting fronds and are considered suitable bat roosting habitat.

The SR-91 crossing over the Santa Ana River was surveyed in 2012 and was found to have a maternity colony of Yuma myotis and a small population of Mexican free-tailed bats (*Tadarida brasiliensis*). Although bat panels were installed on the SR-91 bridge as mitigation for the

westbound expansion project, it is unknown if these species will be present at the time of construction for the eastbound expansion. A more in-depth assessment of the project's existing structures, including focused bat surveys, was not performed in 2017, but will be conducted in accordance with a standalone survey report and mitigation plan in order to satisfy avoidance and minimization requirements. The SR-91 bridge is also routinely surveyed for bats on a monthly basis by Caltrans biologists; bats continued to inhabit the panels in 2017. In addition to the SR-91 bridge, in February 2017 bats were heard and guano was found underneath the SR-91 crossing over the Carbon Canyon Diversion Channel.

Nesting bird surveys were not conducted within the BSA. However, through preliminary examinations of structures throughout the BSA, it was apparent that birds use the structures for nesting, as evidenced by abundant whitewash along the edges of weep holes on the undersides of bridges. Surveys for a previous project in the same study area found that swifts were using crevices in the structures. Finally, remnant (i.e., old) bird nests were found within the BSA, indicating that the BSA does support bird nesting habitat throughout.

Wildlife Corridors

Wildlife corridors are defined as habitat linkages that connect suitable wildlife habitat areas in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features such as canyon drainages, ridgelines, or areas with vegetation cover provide corridors for wildlife movement, as do engineered structures such as culverts and flood-control channels. Wildlife movement corridors are important because they provide access to mates, food, and water; allow the dispersal of individuals away from high population density areas; and facilitate the exchange of genetic traits between populations.

Historically, the Santa Ana River in the BSA was likely to have supported substantial regional wildlife movement. In recent years, however, loss of habitat due to development on the floodplain and surrounding lowlands is likely to have greatly reduced the amount of regional movement throughout the BSA. The detrimental effects on wildlife movement from SR-91, SR-57, and SR-55 and the surrounding residential, commercial, and industrial development have long been in place. Nevertheless, the Santa Ana River still contains discontinuous live-in habitat in some areas for wildlife, still links various habitat and drainages throughout the region, and continues to serve as an important corridor in the midst of widespread loss of habitat in the region. The Santa Ana River provides open space that is able to support regional wildlife movement and migration, including many species of water birds and small- to medium-sized mammals such as coyotes, bobcat (*Lynx rufus*), opossum (*Didelphis virginiana*), raccoon, and skunk (*Mephitis mephitis*) as they travel between Prado Dam and areas upstream and downstream, including associated waterways and open spaces.

2.3.4.3 ENVIRONMENTAL CONSEQUENCES

Permanent Impacts

Build Alternative (Preferred Alternative)

The proposed project would have no effect on state- or federally listed species that may occur within the BSA (refer to Table 2.3.4-1, provided at the end of this section). These species will be discussed in more detail in Section 2.3.5, Threatened and Endangered Species.

Special-Status Raptors

Foraging habitat is present within the BSA for Cooper's hawk, white-tailed kite, American peregrine falcon, and osprey. No nesting habitat is present for any of these species, which typically nest in oak woodlands (Cooper's hawk), riparian woodlands (white-tailed kite), cliff faces or on tall buildings (American peregrine falcon), or on open, elevated, wide platforms (osprey). The Build Alternative (Preferred Alternative) would have a permanent effect on their foraging habitat wherever highway expansion or other new construction is proposed over currently undeveloped areas (e.g., the Santa Ana River, open ground). However, whatever foraging habitat is present within the BSA for these species is highly degraded and already substantially affected; therefore, the loss of additional small amounts of habitat in order to construct the project would not result in a substantial negative impact on any of these species or on their local populations.

Special-Status Species (Non-Raptors, Non-Bats)

Foraging habitat for great blue herons, great egrets, snowy egrets, white-faced ibis, double-crested cormorant, American white pelican, and black skimmer is present within the BSA. There will be a permanent loss of foraging habitat within the Santa Ana River where footings and piers are expanded. However, this would have a miniscule impact on the foraging habitat that is available and would not result in a significant negative impact on these species or on their local populations.

There are designated and active nesting platforms for great blue herons located to the northeast of the SR-91 bridge over the Santa Ana River, outside of the BSA in the Santa Ana River Lakes complex. However, nesting trees or platforms would not be directly affected by the project or its construction. White-faced ibis and American white pelican do not nest in Orange County. None of the rest of these species are known to nest within the BSA, and nesting habitat for these species is not expected to be affected. Avoidance and minimization efforts listed below will ensure impacts on great blue heron are minimal.

There is foraging habitat for yellow warbler within the BSA, but little if any nesting habitat. The proposed project is not expected to result in any notable loss of foraging habitat and would be unlikely to disrupt any nesting activity, as this species prefers to nest in riparian habitat (specifically in willows [*Salix* spp.]), which is not present within the BSA. Project impacts on yellow warbler would generally be minimal and would not result in a substantially negative impact on this species or on its local populations. Avoidance and minimization efforts listed below will ensure impacts on yellow warbler are minimal.

Because western pond turtle is not expected to occur within the BSA, permanent impacts are not expected. However, should this species be present, project activities could cause loss or degradation of aquatic habitat as well as injury or mortality of individuals that may be present within water bodies that are within impacted areas.

Special-Status Bats and Other Bridge-, Crevice-, and Cavity-Dwelling Species

A small portion of roosting habitat (existing bat panels) may need to be removed during the construction process, but these would be replaced in-kind through consultation with CDFW and as detailed in **PF BIO-16.** As part of the project measures, the bridge hinges will be required to be designed to remain open and unsealed so as to continue to remain accessible to bat species. With this particular design decision, the widening and modification of bridges within the BSA may increase future potential roosting habitat by providing more roosting crevices. As a result, the project is not expected to substantially permanently affect bat roosting habitat.

Permanent impacts on bat species that may be present within the BSA or that may move into the area prior to construction could potentially occur.

The project also has the potential to result in displacement of nesting and roosting birds, potentially resulting in nest failure, as well as injury or death from culvert removals and structure demolitions.

PF BIO-16. Because bats may use remnant nests for wintering roosts, nests must not be removed before being examined and approved for removal by the bat biologist. Nest removal and exclusion-device installation will be monitored by a qualified avian biologist and the bat biologist. All nest exclusion techniques will be coordinated between Caltrans and resource agencies, as applicable.

Wildlife Corridors

No permanent impacts are expected on wildlife corridors, primarily as they occur in the Santa Ana River. The proposed project would elongate existing piers supporting the SR-91 bridge in the river; because the piers are angled roughly parallel to the river's flow, elongating them by an estimated 20 feet each would not result in any appreciable permanent impact on wildlife movement in the area. This may instead result in temporary impacts on wildlife movement at the time of construction due to wildlife avoiding active construction sites.

No-Build Alternative

The No-Build Alternative would not include construction of any improvements and would not result in any disturbance within or near the project site. Therefore, the No-Build Alternative would not result in permanent impacts on special-status animal species in the BSA.

Temporary Impacts

Build Alternative (Preferred Alternative)

Special-Status Raptors

As previously discussed, foraging habitat is present within the BSA for Cooper's hawk, white-tailed kite, American peregrine falcon, and osprey, and no nesting habitat is present for any of these species. Project construction would have a temporary effect (e.g., noise, human presence) on Cooper's hawk, white-tailed kite, American peregrine falcon, and osprey. Implementation of **PF BIO-3, PF BIO-4**, and **PF BIO-9** would reduce impacts on special-status raptors.

Special-Status Species (Non-Raptors, Non-Bats)

Foraging habitat for great blue herons, great egrets, snowy egrets, white-faced ibis, double-crested cormorant, American white pelican, and black skimmer is present within the BSA. Project construction may have a temporary impact (e.g., noise, human presence) on any of these species that are foraging nearby; this is most likely to occur on and in the vicinity of the Santa Ana River. Avoidance and minimization efforts listed below will ensure impacts on great blue heron are minimal.

There is foraging habitat for yellow warbler within the BSA, but little if any nesting habitat. Project construction may have a temporary impact (e.g., noise, human presence) on foraging yellow warblers within the BSA. Avoidance and minimization efforts listed below will ensure impacts on yellow warbler are minimal.

Diurnal roosting habitat for California gull is present within the BSA in the Santa Ana River. This species does not nest in Orange County, and local foraging primarily occurs at the Anaheim Collection Center directly northeast of the SR-91/SR-57 interchange, where large numbers of gulls commute throughout the day to forage for food in garbage piles. As such, any temporary or permanent impacts on California gull diurnal roosting habitat would be miniscule at most, particularly because the gulls turn over and move around throughout the day. There is unlikely to be any effect from the project on California gulls.

Western pond turtle is not expected to occur within the BSA; therefore, temporary impacts are not expected.

Implementation of **PF BIO-3, PF BIO-4**, and **PF BIO-9** would reduce impacts *on* Special-Status Species (Non-Raptors, Non-Bats).

Special-Status Bats and Other Bridge-, Crevice-, and Cavity-Dwelling Species

Project impacts on bat species that may be present within the BSA or that may move into the area prior to construction may include direct impacts from construction-related activity (e.g., structure demolitions, culvert removal), as well as temporary indirect disturbance such as noise, vibration, dust, night lighting, and human encroachment from construction. Project-related pile driving may result in adverse impacts on bats if present in proximity to the pile driving locations; pile driving has been determined by Caltrans to cause a moderate to extreme noise impact on bats. In addition, construction could temporarily impede access to roost sites in the holes and crevices of bridges, culverts, and overhead structures; and night work, if it occurs, could disorient or negatively affect foraging behavior by bats in the vicinity of construction.

The project also has the potential to result in displacement of nesting and roosting birds, potentially resulting in nest failure, as well as injury or death from culvert removals and structure demolitions. Implementation of project feature/standardized measure **PF BIO-16** would minimize impacts on special-status bats and other species that may use crevices or cavities within the BSA, including on bridges.

Wildlife Corridors

Temporary impacts on wildlife movement may occur at the time of construction due to wildlife avoiding active construction sites. Implementation of **PF BIO-3, PF BIO-4**, and **PF BIO-9** would reduce impacts on wildlife corridors.

No-Build Alternative

The No-Build Alternative would not include construction of any improvements and would not result in any disturbance within or near the project site. Therefore, the No-Build Alternative would not result in temporary impacts on special-status animal species in the BSA.

2.3.4.4 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

Along with avoidance and minimization measures **BIO-1**, **BIO-2**, **BIO-5** through **BIO-8**, **BIO-10**, **BIO-13**, **BIO-17**, and **BIO-18**, the following measures would be required to reduce impacts on the aforementioned special-status animals within the BSA. Although no permanent impacts on species that are covered under the OCTA M2 NCCP/HCP are expected to occur, applicable avoidance and minimization measures from the approved OCTA M2 NCCP/HCP have been included here.

BIO-11. No pets will be allowed in, or adjacent to, the project site.

BIO-12. Herbicides and insecticides that are not approved as safe to use around water, or other rodenticides, all of which could poison potential food sources for raptors or other foraging birds, will not be used.

BIO-14. During final design, a Bat Management Plan will be developed to avoid and minimize any potential impacts on bats in the project footprint. The management plan will at a minimum require the designation of alternative offsite locations for bat panels, early coordination with wildlife agencies, a full-time biologist during spring construction in areas where bats are known or expected to occur as a result of project surveys, and the oversight and direct involvement of a permitted bat specialist who has worked on at least one large-scale bat project in the past. The Bat Management Plan will be prepared and submitted to CDFW for review and approval prior to the bat maternity season in which project construction would commence.

BIO-15. All bridge hinges will be left open and unsealed so as to continue to provide bat roosting habitat after the conclusion of construction.

BIO-17. A Nesting Bird Management Plan (NBMP) will be written for this project that would take into account the various nesting conditions throughout the Biological Study Area (BSA), including nesting conditions and possible nesting locations to monitor for species that may require specialized habitat such as raptors and corvids, colonial nesting birds, crevice- and cavity-nesting birds, and waterbirds, as appropriate. This would provide a comprehensive approach to handling nesting birds prior to the commencement of construction. The NBMP will implement requirements of the Bat Management Plan as appropriate and will require that all areas proposed for vegetation removal or disturbance of potential nesting habitat be cleared beforehand by both bird and bat biologists. Because bats may use remnant nests for wintering roosts, nests must not be removed before being examined and approved for removal by the bat biologist. Nest removal and exclusion device installation will be monitored by a qualified avian biologist and the bat biologist. All nest exclusion techniques would be coordinated between Caltrans and resource agencies, as applicable.

Special-Status Raptors

Measures **BIO-1, BIO-2**, **BIO-5**, **BIO-7, BIO-8, BIO-10** through **BIO-13**, and **BIO-18** will be incorporated to avoid and minimize impacts on special-status raptors, none of which are expected to nest within the BSA.

Special-Status Species (Non-Raptors, Non-Bats)

Measures **BIO-1, BIO-2**, **BIO-5**, **BIO-7, BIO-8, BIO-10** through **BIO-13**, **BIO-17**, and **BIO-18** will be incorporated to avoid and minimize impacts on special-status non-raptor bird species, none of which are expected to nest within the BSA. The only species that is known to nest in the vicinity is great blue heron, and its nesting habitat is well outside of the project footprint and BSA and will not be affected. Western pond turtle is a covered species under the OCTA M2 NCCP/HCP, which requires focused turtle surveys whenever there is ground disturbance in or near aquatic habitat. However, the aquatic habitat that is present in the BSA is not suitable to support this species, and focused surveys are determined to not be necessary.

Special-Status Bats and Other Bridge-, Crevice-, and Cavity-Dwelling Species

Measures **BIO-1**, **BIO-5**, **BIO-6**, and **BIO-14** through **BIO-15,** and **BIO-17** will be incorporated to avoid and minimize impacts on special-status bats and other species that may use crevices or cavities within the BSA, including on bridges.

Wildlife Corridors

Because there would be no permanent impacts on wildlife corridors in the BSA, successful implementation of avoidance and minimization measures **BIO-1**, **BIO-2**, **BIO-5** through **BIO-8**, **BIO-10**, and **BIO-18** would reduce any otherwise adverse temporary impacts during project construction.

2.3.4.5 REFERENCES

ICF. 2018. State Route 91 Improvement Project Between State Route 57 and State Route 55 Natural Environment Study, Including a Delineation of Federal and State Jurisdictional Water Resources. June.

Table 2.3.4-1. Habitat Presence for U.S. Fish and Wildlife Service Animal Species

Common/Scientific Name	Status[a] Fed/State/CNPS/ CNDDB/M2 NCCP	Species Requirements	Specific Habitat[b] Present/ Absent	Rationale
Invertebrates				
crotch bumble bee (*Bombus crotchii*)	-/-/-/S1S2/-	Occurs in coastal California east to the Sierra-Cascade crest and south into Mexico, generally utilizing flowers from the *Antirrhinum*, *Phacelia*, *Clarkia*, *Dendromecon*, *Eschscholzia*, and *Eriogonum* genera.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
San Diego fairy shrimp (*Branchinecta sandiegonensis*)	E/-/-/S2/-	Species found in deep vernal pools, road cuts, and depressions that retain water through the warm weather of late April and May. Distribution is limited to discrete localities from Los Angeles County (LAX), Orange County, Riverside, and San Diego Counties south to Baja California.	HA	No suitable habitat is present within the BSA. Vernal pools are not present. This species is not expected to occur. No further constraint is present.
western tidal-flat tiger beetle (*Cicindela gabbii*)	-/-/-/S1/-	Found in salty coastal habitats including salt marshes, mudflats, tidal flats, and beaches. Species uses burrows in soil.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
sandy beach tiger beetle (*Cicindela hirticollis gravida*)	-/-/-/S1/-	Inhabits clean, dry, light-colored sand in the upper zone of the beach dunes, usually close to non-brackish water. Occurs along the coast of California from San Francisco Bay to northern Mexico.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
western beach tiger beetle (*Cicindela latesignata latesignata*)	-/-/-/S1/-	Inhabits mudflats and beaches in coastal southern California.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
senile tiger beetle (*Cicindela senilis frosti*)	-/-/-/S1/-	Inhabits marine shoreline, from Central California coast south to salt marshes of San Diego. Also found at Lake Elsinore Inhabits dark-colored mud in the lower zone and dried salt pans in the upper zone.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
globose dune beetle (*Coelus globosus*)	-/-/-/S1S2/-	Inhabitant of coastal sand dune habitat, typically foredunes and sand hummocks, from Bodega Head in Sonoma County, south to Ensenada, Mexico. Burrows beneath soil and commonly found under dune vegetation.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Common/Scientific Name	Status[a] Fed/State/CNPS/ CNDDB/M2 NCCP	Species Requirements	Specific Habitat[b] Present/ Absent	Rationale
monarch butterfly (*Danaus plexippus*)	-/-/-/S3/-	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	HA	No suitable winter roost sites are present within the BSA. This species is not expected to occur. No further constraint is present.
wandering (=saltmarsh) skipper (*Panoquina errans*)	-/-/-/S2/-	Inhabits southern California coastal salt marshes. Requires moist saltgrass for larval development.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Riverside fairy shrimp (*Streptocephalus woottoni*)	E/-/-/S1S2/-	Found in shallow depressions containing a clay hard pan soil layer. Discontinuously distributed along coastal southern California and northern Baja California.	HA	No suitable habitat is present within the BSA. Vernal pools are not present. This species is not expected to occur. No further constraint is present.
Dorothy's El Segundo Dune weevil (*Trigonoscuta dorothea dorothea*)	-/-/-/S1/-	Distributed only along coastal southern California from Point Dume to Point Fermin and is associated with southern dune scrub plant community.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Fish				
Santa Ana sucker (*Catostomus santaanae*)	T/-/-/S1/-	As a freshwater fish, this species occurs in watersheds draining the San Gabriel and San Bernardino Mountains of southern California. Most abundant in unpolluted, clear water that is less than 72F, but can tolerate warmer water temperatures and turbid water conditions. Prefer gravel and cobble with sand substrates and riffle, runs, and pools with riparian vegetation that provides shade and cover.	HA	No suitable habitat is present within the BSA. This species occurs farther upstream in the Santa Ana River, where there are widespread gravel and cobble deposits. This species is not expected to occur. No further constraint is present.
arroyo chub (*Gila orcuttii*)	**-/**CSC**/**-/S2/-	Occurs within warm fluctuating streams and slow-moving sections of streams with sandy or muddy bottoms.	HP	Although habitat is present within the Santa Ana River, the species is not known to occur in this section of the river. The closest known occurrences to the BSA are in Temescal Creek in the Prado Basin, to the northeast, and in Arroyo Trabuco in south Orange County, to the southeast.
steelhead – southern California DPS	E/-/-/S1/-	Spawns in water bodies with gravel substrates that are relatively free of silt. Young fish grow near spawning areas before	HA	No suitable habitat is present within the BSA. The Santa Ana River within the BSA is primarily soft-bottomed and lacks

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(*Oncorhynchus mykiss irideus*)		swimming downstream to coastal/brackish lagoons to continue maturing while preparing to go to sea (smoltification). After spending 2-4 years at sea, fish return to freshwater as adults and spawn upstream again.		a predominantly gravel substrate for spawning. Areas upstream are cut off by Prado Dam only a few miles away and Seven Oaks Dam at the base of the San Bernardino Mountains. Areas upstream of Colton to Seven Oaks Dam are primarily dry except for during seasonal rainfalls. Downstream of the BSA the river is seasonally dry for typically 8-10 miles until the Harbor Boulevard overpass where a narrow low-flow channel is fed by an urban runoff tributary.
Santa Ana speckled dace (*Rhinichthys osculus* ssp. *3*)	-/SSC/-/S1/-	Inhabits rocky riffles, runs, and pools of headwaters, creeks, and small to medium rivers.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Reptiles and Amphibians				
arroyo toad (*Anaxyrus californicus*)	E/SSC/-/S2S3/-	Inhabits washes, arroyos, sandy river banks, riparian areas with willows, sycamores, oaks, cottonwoods. Specialized habitat needs, including exposed sandy stream sides with stable terraces for burrowing with scattered vegetation for shelter, and areas of quiet water or pools free of predatory fishes with sandy or gravel bottoms without silt for breeding. Adults typically breed in overflow pools adjacent to the inflow channel of third or greater-order predator-free streams. Adult estivation sites are typically in stream terraces or uplands with friable soils, usually near active use areas but potentially more than 1 kilometer away. Young toads require moderately vegetated sandbars.	HA	No suitable habitat is present within the BSA. The BSA does not contain any sandy wash habitat, gravel-or cobble-dominated substrates, or suitable vegetation for this species. This species is not expected to occur. No further constraint is present.
orangethroat whiptail (*Aspidoscelis hyperythra*)	-/SSC/-/S2S3/C	Inhabits low-elevation coastal scrub, chaparral, and valley-foothill hardwood habitats. Prefers washes & other sandy areas with patches of brush & rocks. Perennial plants necessary for its major food-termites.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

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coastal whiptail (*Aspidoscelis tigris stejnegeri*)	-/SSC/-/S3/-	Habitats include disturbed coastal sage scrub-chaparral mix and cleared areas of chaparral with a sandy/rocky substrate.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
green sea turtle (*Chelonia mydas*)	-/T/-/S1/-	Found in marine bays and, in particular areas like the San Gabriel River and at Seal Beach National Wildlife Refuge, upstream in water bodies as well.	HA	No suitable habitat is present within the BSA. This species' occurrences in local water bodies are well known and do not include the Santa Ana River or areas far upstream like the BSA. This species is not expected to occur. No further constraint is present.
red-diamond rattlesnake (*Crotalus ruber*)	-/SSC/-/S2? /-	Chaparral, woodland, grassland, & desert areas from coastal San Diego County to the eastern slopes of the mountains. Occurs in rocky areas & dense vegetation. Needs rodent burrows, cracks in rocks or surface cover objects.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
western pond turtle (*Emys marmorata*)	-/SSC/-/S3/C	A thoroughly aquatic turtle of ponds, marshes, rivers, streams & irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation. Need basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	HP	There is marginal habitat within the BSA, but it is generally atypical for this species (i.e., wide, shallow, and riverine) and this species has a low potential to occur. No further constraint is present.
northern leopard frog (*Lithobates pipiens*)	-/SSC/-/S2/-	A highly aquatic species that is typically found in permanent or semi-permanent water, utilizing shoreline cover as well as both submerged and emergent aquatic vegetation as cover.	HA	No suitable habitat is present within the BSA, which is outside of this species' known geographic range. This species is not expected to occur. No further constraint is present.
coast horned lizard (*Phrynosoma blainvillei*)	-/SSC/-/S3S4/C	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Prefers open areas for sunning, bushes for cover, patches of loose soil for burial, & abundant supply of ants & other insects.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
coast patch-nosed snake (*Salvadora hexalepis virgultea*)	-/SSC/-/S2S3/-	Inhabits semi-arid brushy areas and chaparral in canyons, rocky hillsides, and plains.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

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western spadefoot (*Spea hammondii*)	-/SSC/-/S3/-	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
two-striped gartersnake (*Thamnophis hammondii*)	-/SSC/-/S3S4/-	Inhabits perennial and intermittent streams with rocky beds and bordered by willow thickets or other dense vegetation.	HA	There is marginal habitat within the BSA, but it is generally atypical for this species (i.e., wide, shallow, and riverine) and this species is not expected to occur. No further constraint is present.
Birds				
Cooper's hawk (*Accipiter cooperii*)	-/WL/-/S4/-	Found in cismontane woodland, riparian forest, riparian woodland, upper montane coniferous forest woodland, chiefly of open, interrupted, or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	Breeding: HA Migrants/Foraging: P	There is no breeding habitat but potential foraging habitat is present throughout the BSA. This species was observed foraging within the BSA.
tricolored blackbird (*Agelaius tricolor*)	-/T/-/S1S2/-	Range is restricted to the Central Valley and surrounding foothills, throughout coastal and some inland localities in southern California, and scattered sites in Oregon, western Nevada, central Washington, and western coastal Baja California. Breed in dense colonies and may travel several kilometers to secure food for their nestlings; males defend small territories within colonies and mate with 1 to 4 females. They are itinerant breeders, nesting more than once at different locations during the breeding season.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. The BSA does not contain freshwater marsh habitat, agricultural fields, or grasslands that would be suitable to support this species and its various ecological needs. This species is not expected to occur. No further constraint is present.
southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	-/WL/-/S2S3/-	Found in chaparral and coastal scrub. Resident in Southern California coastal sage scrub and sparse mixed chaparral. Frequents relatively steep, often rocky hillsides with grass & forb patches.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
grasshopper sparrow (*Ammodramus savannarum*)	-/SSC/-/S2/-	Found in valley & foothill grassland. Dense grasslands on rolling hills, lowland plains, in valleys & on hillsides on lower mountain slopes. Favors native grasslands with a mix of grasses, forbs & scattered shrubs. Loosely colonial when nesting.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

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golden eagle (*Aquila chrysaetos*)	-/FP & WL/-/S3/-	Nest on cliff ledges or trees on steep slopes. Forage in grasslands, sage scrub or broken chaparral.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
great egret (*Ardea alba*)	-/-/-/S4/-	Frequents both freshwater and saltwater habitats. They are colonial nesters, typically placing stick nests high in trees, often on islands that are isolated from mammalian predators.	Breeding: HA Migrants/Foraging: P	There is no suitable nesting habitat within the BSA. Species was observed foraging in areas directly adjacent to the BSA and could potentially forage in the BSA.
great blue heron (*Ardea herodias*)	-/-/-/S4/-	Nests colonially in tall trees, on cliffs, and in isolated spots in marshes, foraging in nearby habitat in marshes, lakes, tidal areas, rivers and streams, and wet meadows.	Breeding: HA Migrants/Foraging: P	There is no suitable nesting habitat within the BSA. Species could potentially forage in the BSA. This species was observed using nearby nesting platforms.
long-eared owl (*Asio otus*)	-/SSC/-/S3? /-	Nests in conifer, oak, riparian, pinyon-juniper, and desert woodlands that are either open or are adjacent to grasslands, meadows, or shrublands. In southern California, long-eared owl breeds and roosts in riparian and oak forests, and hunts small mammals at night in adjacent open habitats.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
burrowing owl (*Athene cunicularia*)	-/SSC/-/S3/-	Level, open, dry, heavily grazed, or low grassland or desert vegetation with available burrows. In coastal Southern California, a substantial fraction of Burrowing Owls are found in microhabitats highly altered by humans, including flood control and irrigation basins, dikes, banks, abandoned fields surrounded by agriculture, and road cuts and margins. Several factors in combination probably explain the species' distribution on local scales: vegetation density, availability of suitable prey, availability of burrows or suitable soil, and disturbance.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
ferruginous hawk (*Buteo regalis*)	-/WL/-/S3S4/-	This large relative of the common red-tailed hawk is primarily a winter visitor to California, with the bulk of its breeding range in the Great Basin to the east. Small numbers breed in the northeast corner of the state. Ferruginous hawks feed on a variety of prey, but mostly small mammals, hunting in open country from low perches.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

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Swainson's hawk (*Buteo swainsoni*)	-/T/-/S3/-	This slim relative of the common red-tailed hawk nests today primarily in low-intensity agricultural areas of the western United States, migrating through Central America to Argentina and Brazil each fall and spring.	Breeding: HA Migrants/Foraging: HA	This species does not breed in Orange County and is not expected to occur except as a flyover during migration. Stopover habitat consisting of wide open agricultural fields or grasslands is not present within the BSA.
coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*)	-/SSC/-/S3/C	Found in southern California coastal sage scrub. Wrens require tall opuntia cactus for nesting and roosting.	Breeding: HA Migrants/Foraging: HA	The BSA is outside of the geographic range of this subspecies, which is not expected to occur. No further constraint is present.
western snowy plover (*Charadrius alexandrinus nivosus*)	T/SSC/-/S2/-	Breeds primarily above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely-vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries. In winter, found on beaches used for nesting and other beaches, in manmade salt ponds and on estuarine sand and mud flats.	Breeding: HA Migrants/Foraging: HA	In Orange County this species is restricted to the coast. It is extremely rare for this species to occur anywhere in the county away from the coast. This species is not expected to occur. No further constraint is present.
western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	T/E/-/S1/-	This Neotropical migrant is a relative of the roadrunner and an inhabitant of extensive riparian forests. It formerly occurred from southwestern British Columbia south to the highlands of northern Mexico and the Yucatan Peninsula, wintering in South America. It has declined from a fairly common, local breeder in much of California sixty years ago, to virtual extirpation, with only a handful of tiny populations remaining in all of California today.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. The BSA does not contain the large, multi-acre swaths of riparian vegetation that this species requires for nesting. This species is not expected to occur. No further constraint is present.
snowy egret (*Egretta thula*)	-/-/-/S4/-	Common along the coast, though they do breed patchily in inland wetlands. They nest colonially, usually on protected islands, and often with other small herons. Can be found in mudflats, beaches, and wetlands, but also forage in wet agricultural fields and along the edges of rivers, stream, channels and lakes.	Breeding: HA Migrants/Foraging: P	This species was observed on the Santa Ana River in areas immediately adjacent to the BSA.

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white-tailed kite (*Elanus leucurus*)	-/FP/-/S3S4/-	Hunts in open country. It is found across most of California west of the Sierra Nevada and deserts, from north of the San Francisco Bay south into northern Baja California, Mexico. Separate populations also occur from southern Texas across lowland Mexico, and in southern Florida. This is a strongly lowland species, apparently rare anywhere in California above 2000 feet (610 m), though there are records of wanderers to over 10,000 feet (3050 m). Nests are flimsy, often not lasting to the next breeding season, and are located low in trees and large shrubs near foraging areas in savannahs and at edges between open habitat and woodland or forest areas.	Breeding: HA Migrants/Foraging: HPB	There is no suitable nesting habitat within the BSA. Species could potentially forage in the BSA.
southwestern willow flycatcher (*Empidonax traillii extimus*)	E/E/-/S1/C	Restricted to riparian woodlands along streams and rivers with mature, dense stands of willows, cottonwoods or smaller spring fed or boggy areas with willows or alders.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. Suitable breeding habitat has been extirpated from the county and most of the entire southern California region. This species is not expected to occur. No further constraint is present.
California horned lark *(Eremophila alpestris actia*)	-/WL/-/S3/-	Found in marine intertidal & splash zone communities, meadow & seep, coastal regions, chiefly from Sonoma Co. to San Diego Co. Also main part of San Joaquin Valley & east to foothills. Short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
American peregrine falcon (*Falco peregrinus anatum*)	D/D/-/S3S4/-	This species catch medium-sized birds in the air with swift, spectacular dives, called stoops. In cities they are masterful at catching pigeons. Elsewhere they feed especially on shorebirds and ducks. Often perching or nesting on skyscrapers, water towers, cliffs, power pylons, and other tall structures. Peregrines can be seen all over North America, but they are more common along coasts.	Breeding: HA Migrants/Foraging: HP	There is no suitable nesting habitat within the BSA. Species could potentially forage in the BSA.

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bald eagle (*Haliaeetus leucocephalus*)	D/E & FP/-/S3/-	It eats mainly fish and carrion, and formerly nested locally along the coast of southern California. It is now a very localized winter resident and rare migrant, with only very rare breeding efforts in coastal southern California (e.g., Lake Skinner, Riverside County).	Breeding: HA Migrants/Foraging: P	There is no suitable nesting habitat within the BSA, but an adult of this species has wintered on the Santa Ana River in the vicinity of Lakeview Avenue since 2015. This species was observed within the BSA.
yellow-breasted chat (*Icteria virens*)	-/SSC/-/S3/-	Found in riparian forest, riparian scrub, and riparian woodlands. Summer resident; inhabits riparian thickets of willow & other brushy tangles near watercourses. Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 feet of ground.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
California gull (*Larus californicus*)	-/WL/-/S4/-	Winters on the West Coast, and breeds inland across large areas of the West. It can be found in parking lots and lakes from California to Manitoba.	Breeding: HA Migrants/Foraging: P	This species does not nest in Orange County but is commonly found in winter. Large flocks of California Gulls were observed commuting back and forth over the BSA throughout each field day between the Santa Ana River and the Anaheim Collection Center (recycling and garbage collection).
California black rail (*Laterallus jamaicensis coturniculus*)	-/T & FP/S1/-	Tidal salt marshes associated with heavy growth of tule and pickleweed; also occurs in brackish marshes or freshwater marshes at low elevations. Primarily restricted to the San Francisco Bay, with smaller numbers in wetlands from the Salton Sea area to Arizona. This species has essentially disappeared from coastal wetlands in coastal southern and central California, although small populations have recently been discovered about 100 miles south of the U.S. border in northwestern Baja California.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA, which is far outside of this species' geographic range. This species is not expected to occur. No further constraint is present.
osprey (*Pandion haliaetus*)	-/WL/-/S4/-	This large, distinctive hawk is highly adapted to a diet consisting almost entirely of fish. One of the most widespread bird species in the world, it was formerly a common and widespread breeder in southern California, and still breeds in several discrete locations in Orange County.	Breeding: HA Migrants/Foraging: P	There is no suitable nesting habitat within the BSA, although there are nesting platforms in the general area. Several individuals of this species were observed foraging over the Santa Ana River Lakes.

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Belding's savannah sparrow (*Passerculus sandwichensis beldingi*)	-/E/-/S3/-	Inhabits coastal salt marshes, from Santa Barbara south through San Diego County. Nests in *Salicornia* on and about margins of tidal flats.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA, which is outside of this subspecies' geographic range (coastal salt marshes). No further constraint is present.
American white pelican (*Pelecanus erythrorhynchos*)	-/SSC/-/S1S2/-	Typically breed on islands in shallow wetlands in the interior of the continent. Winter mainly on coastal waters, bays, and estuaries, or a little distance inland.	Breeding: HA Migrants/Foraging: P	This species was observed in areas immediately adjacent to and within the BSA, at the Santa Ana River Lakes.
double-crested cormorant (*Phalacrocorax auritus*)	-/WL/-/S4/-	Very adaptable found in most aquatic habitats including coasts, bays, lakes, small to large ponds, reservoirs, and rivers. Nests in trees near or over water, on sea cliffs, or on ground on islands.	Breeding: HA Migrants/Foraging: P	This species commonly occurs on the Santa Ana River and at the Santa Ana River Lakes and was observed during surveys.
white-faced ibis (*Plegadis chihi*)	-/WL/-/S3S4/-	Found in fresh marshes, irrigated land, tules. For foraging in very shallow water, as in marshes, flooded pastures, irrigated fields. Sometimes in damp meadows with no standing water. Prefers fresh water marsh, but sometimes forages in salt marsh.	Breeding: HA Migrants/Foraging: P	This species was observed foraging along the banks of the Santa Ana River within the BSA.
coastal California gnatcatcher (*Polioptila californica californica*)	T/SSC/-/S2/C	Obligate, permanent resident of coastal sage scrub below 2500 ft in Southern California. Low, coastal sage scrub in arid washes, on mesas & slopes. Not all areas classified as coastal sage scrub are occupied. Generally prefers open sage scrub with California sagebrush (Artemisia californica) as a dominant or co-dominant species. Nest placement typically in areas with less than 40 percent slope gradient. Monogamous pairs tend to stay in the same locale. Both parents build nest, incubate, and care for young	Breeding: HA Migrants/Foraging: HP	There are several small patches of planted/restored coastal sage scrub in the BSA representing marginal habitat for this species. However, this species typically requires "stepping stone" habitat during dispersal to move between habitat patches, and there is no "stepping stone" habitat anywhere in the vicinity of these areas to connect it to naturally-occurring sage scrub. Moreover, the on-site habitat is insufficient in size and resources to support nesting birds, although in extremely rare circumstances (due to the isolation of the area) it could temporarily support a wayward juvenile during the dispersal period. This species is not expected to occur.

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light-footed Ridgway's (= clapper) rail (*Rallus obsoletus (= longirostris) levipes*)	E/E & FP/-/S1/-	This subspecies of the large and widespread Ridgway's rail is restricted to the lower elevations of coastal marshes with active tidal flow and dense pickleweed and/or cordgrass thickets from Hueneme, Ventura County (formerly to Santa Barbara County) south to Bahia de San Quintin, Baja California, Mexico. No substantial seasonal movements occur, although rare individuals wander away from known breeding locales.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. The BSA does not contain any of the dynamic, tidal-influenced marsh habitat that this species requires. In Orange County, this species is restricted to the immediate coast and very rarely occurs up to a couple miles away from the coastline in marsh habitat (San Joaquin Wildlife Sanctuary). This species is not expected to occur. No further constraint is present.
bank swallow (*Riparia riparia*)	-/T/-/S2/-	This species historically bred interruptedly along the entire coast of California, as well as in the Central Valley and Great Basin portions of the state.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
black skimmer (*Rhynchops niger*)	-/SSC/-/S2/-	Forage for small fish and possibly crustaceans in calm shallows of harbors, lagoons, bays, estuaries, ponds, and river channels. In winter, flocks commonly roost on urban beaches well above the tide line or on mud flats in estuaries. Beach sites that are habitually used by skimmers are often associated with estuaries or protected harbors and are near the mouths of rivers or other drainage channels.	Breeding: HA Migrants/Foraging: HPB	This species nests downstream in Burris Basin and forages upstream. Suitable foraging habitat is present in the BSA and this species is expected.
yellow warbler (*Setophaga petechia*)	-/SSC/-/S3S4/-	Generally occupy riparian vegetation in close proximity to water along streams and in wet meadows. Throughout their range, they are found in willows and cottonwoods and in California they are found in numerous other species of riparian shrubs or trees, varying by biogeographic region.	Breeding: HA Migrants/Foraging: P	There is marginal foraging habitat for this species in the BSA. This species was detected in the BSA during jurisdictional delineation surveys.
California least tern (*Sternula antillarum browni*)	E/E & FP/-/S2/-	Nests on sandy upper ocean beaches, open barren sites, and occasionally uses mudflats. Forages on adjacent surf line, estuaries, or the open ocean. Colonies are located near the ocean shoreline (within 0.5 mile [about 800 meters]), typically on nearly flat, loose sandy substrates with lightly scattered short vegetation and debris, although some	Breeding: HA Migrants/Foraging: HPB	There is no suitable nesting habitat within the BSA, although there is active nesting habitat in the surrounding area. This species forages within the BSA.

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		colonies have been located on hard-packed surfaces, even unused asphalt. Colony sites must provide access to the shoreline for juveniles, and must be relatively free of predators or the colony may abandon breeding efforts before completion.		
least Bell's vireo (*Vireo bellii pusillus*)	E/E/-/S2/C	Nesting elevation ranges from below sea level to at least 4,100 feet. The subspecies winters in southern Baja California. Least Bell's Vireos select dense vegetation low in riparian zones for nesting.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. The BSA does not contain any riparian vegetation that would be suitable for this species to nest in. This species is not expected to occur. No further constraint is present.
Mammals				
pallid bat (*Antrozous pallidus*)	-/SSC/-/S3	This bat species is widely distributed in the southwestern United States and northern Mexico. They are locally common across most of California except in the far northwest and in higher portions of the Sierra Nevada. Habitats utilized include a wide variety of grasslands, shrublands, woodlands, and forests, including mixed conifer forest. They appear to be most common in open, dry, rocky lowlands. Roosts are in caves, mines, as well as crevices in rocks, buildings and trees. This is a colonial species that forages low over open ground, often picking up beetles and other species of prey off the ground.	HP	Roosting habitat is present within the bridge crossing over the Santa Ana River, as well as in crevices in other overcrossings.
Mexican long-tongued bat (*Choeronycteris Mexicana*)	-/SSC/-/S1	Occasionally found in San Diego Co., which is on the periphery of their range. Feeds on nectar & pollen of night-blooming succulents. Roosts in relatively well-lit caves, and in and around buildings.	HA	No suitable roosting habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
western mastiff bat (*Eumops perotis californicus*)	-/SSC/-/S3S4	Occurs in many open, semi-arid to arid habitats, including conifer & deciduous woodlands, coastal scrub, grasslands, chaparral etc. Roosts in crevices in cliff faces, high buildings, trees & tunnels.	HP	Roosting habitat is present within the bridge crossing over the Santa Ana River, as well as in crevices in other overcrossings.

Common/Scientific Name	Status[a] Fed/State/CNPS/ CNDDB/M2 NCCP	Species Requirements	Specific Habitat[b] Present/ Absent	Rationale
silver-haired bat (*Lasionycteris noctivagans*)	-/-/-/S3S4	Coastal and montane forests from the Oregon border south along the coast to San Francisco Bay, and along the Sierra Nevada and Great Basin region to Inyo Co. It also occurs in southern California from Ventura and San Bernardino, south to Mexico and on some of the Channel Islands. During spring and fall migrations this species may be found anywhere in California. Summer habitats include coastal and montane coniferous forests, valley foothill woodlands, pinyon-juniper woodlands, and valley foothill and montane riparian habitats. Summer range is generally below 2750 m (9000 feet). Roosts in hollow trees, snags, buildings, rock crevices, caves, and under bark. Primarily a forest dweller, feeding over streams, ponds, and open brushy areas.	HA	No suitable roosting habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
hoary bat (*Lasiurus cinereus*)	-/-/-/S4	Prefers open habitats or habitat mosaics, with access to trees for cover & open areas or habitat edges for feeding within broadleaved upland forest, cismontane woodland, lower montane coniferous forest, and north coast coniferous forest. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.	HA	No suitable roosting habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
western yellow bat (*Lasiurus xanthinus*)	-/SSC/-/S3	Some populations may be migratory, although some individuals appear to be present year-round. Species probably does not hibernate. Associated with water features in open grassy areas and scrub, as well as canyon and riparian areas. Thought to be non-colonial. Individuals usually roost in trees, hanging from the underside of a leaf and are commonly found in the southwestern U.S. roosting in the skirt of dead fronds in both native and non-native palm trees.	HP	There is suitable roosting habitat in the form of untrimmed fan palms throughout the BSA.

Common/Scientific Name	Status[a] Fed/State/CNPS/ CNDDB/M2 NCCP	Species Requirements	Specific Habitat[b] Present/ Absent	Rationale
bobcat (*Lynx rufus*)	-/-/-/-/C	Generally inhabits areas with abundant brushy and/or rocky habitat, particularly where there is an adequate prey base (generally rabbits but also squirrels, rats/mice, birds, etc.).	HA	Although bobcats may use the Santa Ana River channel/ floodplain for occasional safe movement, the actual BSA does not contain any habitat, either in the river or in upland habitats, that could be used as even short-term shelter, let alone a permanent den.
south coast marsh vole (*Microtus californicus stephensi*)	-/SSC/-/S1S2	Occurs in the area of tidal marshes in Los Angeles, Orange, and southern Ventura Counties.	HA	The BSA is outside of this species' known distribution. This species is not expected to occur. No further constraint is present.
Yuma myotis (*Myotis yumanensis*)	-/-/-/S4	Found near lakes, creeks or ponds. Roosts by day under building sidings or shingles. Nursery colonies choose caves, mines, buildings or under bridges.	HP	While not observed during general 2016 surveys, this species was recorded in 2012 to have a maternity colony in the bridge over the Santa Ana River.
San Diego desert woodrat (*Neotoma lepida intermedia*)	-/SSC/-/S3S4	Variety of shrub and desert habitats primarily associated with rock outcroppings, boulders, cacti, or areas of dense undergrowth.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
pocketed free-tailed bat (*Nyctinomops femorosaccus*)	-/SSC/-/S3	Lives in deserts and sage scrub, roosts in rocky crevices.	HA	No suitable roosting habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
big free-tailed bat (*Nyctinomops macrotis*)	-/SSC/-/S3	Occurs in low-lying arid areas in Southern California. Need high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	HA	No suitable roosting habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Pacific pocket mouse (*Perognathus longimembris pacificus*)	E/SSC/-/S1	Found in coastal scrub. Inhabits the narrow coastal plains from the Mexican border north to El Segundo, Los Angeles Co. Seems to prefer soils of fine alluvial sands near the ocean.	HA	In Orange County, this species is only known to occur in the Dana Point Headlands area and is not expected to occur in the BSA. No further constraint is present.
mountain lion (*Puma concolor*)	-/-/-/-/C	Generally inhabits the same areas as its primary prey, mule deer, which inhabits a variety of habitats. In particular, this species can be found in brushland, woodland, and riparian areas where there are generally solitary-use cavities, caves, or other natural	HA	Mountain lions are unlikely to occur anywhere within the BSA, including the Santa Ana River channel, where (within the BSA) there is essentially no cover, except under the SR-91 bridge.

Common/Scientific Name	Status[a] Fed/State/CNPS/ CNDDB/M2 NCCP	Species Requirements	Specific Habitat[b] Present/ Absent	Rationale
		shelters, rest areas, or cover areas, such as logs, trees, and rocks.		
southern California saltmarsh shrew (*Sorex ornatus salicornicus*)	-/SSC/-/S1	Found in coastal salt marshes in Los Angeles, Orange and Ventura counties. Requires dense vegetation and woody debris for cover.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
American badger (*Taxidea taxus*)	-/SSC/-/S3	Found in a wide variety of habitats. Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils & open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Gray Highlight = No potential to occur in the BSA.

[a] **Status Codes**

Federal

E = Federally listed; Endangered
T = Federally listed; Threatened
D = Delisted

State

E = State listed; Endangered
T = State listed; Threatened
D = Delisted
SSC = California Species of Special Concern
FP = California Fully Protected Species
WL = Watch List

Note: The California Natural Diversity Database (CNDDB) uses the same ranking methodology originally developed by The Nature Conservancy and now maintained and recently revised by NatureServe. The *state rank* (S-rank) refers to the imperilment status only within California's state boundaries. It is a reflection of the overall status of an element through its state range. The state rank represent a letter + number score that reflects a combination of Rarity, Threat, and Trend factors, with weighting being heavier on Rarity than the other two.

S1 = Critically Imperiled - Critically imperiled in the state because of extreme rarity (often 5 or fewer populations) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state.

S2 = Imperiled - Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.

S3 = Vulnerable - Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state.

S4 = Apparently Secure - Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors.

Uncertainty about the rank of an element is expressed in two major ways:

- By expressing the ranks as a range of values: e.g., S2S3 means the rank is somewhere between S2 and S3.
- By adding a ? to the rank: e.g., S2? This represents more certainty than S2S3, but less certainty than S2.

C = Covered by the Orange County Transit Authority's M2 Natural Community Conservation Plan/Habitat Conservation Plan

[b] **Habitat Presence/Absence Codes**

P = The species is present and was observed during survey efforts.
HP = Habitat is or may be present within Project footprint. The species may potentially be present. Focused survey is warranted.
HPB = Habitat is or may be present within 300-ft biological study area (BSA). The species may potentially be present. Focused survey is warranted.
HA = No habitat present and no further work needed.

2.3.5 Threatened and Endangered Species

2.3.5.1 REGULATORY SETTING

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC) Section 1531, et seq. See also 50 Code of Federal Regulations (CFR) Part 402. This act and later amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration (FHWA) (and the Department, as assigned), are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 may include a Biological Opinion with an Incidental Take Statement or a Letter of Concurrence. Section 3 of FESA defines take as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct."

California has enacted a similar law at the state level, the California Endangered Species Act (CESA), California Fish and Game Code Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The California Department of Fish and Wildlife (CDFW) is the agency responsible for implementing CESA. Section 2080 of the California Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFW. For species listed under both FESA and CESA requiring a Biological Opinion under Section 7 of FESA, the CDFW may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the California Fish and Game Code.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976, was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

Senate Bill (SB) 857 requires Caltrans to prepare an annual report to the Legislature describing the status of Caltrans' progress in locating, assessing, and remediating barriers to fish passage, as defined. The bill requires Caltrans to complete assessments of potential barriers to anadromous fish prior to commencing any project using state or federal transportation funds. The bill also requires Caltrans to submit these assessments to the Department of Fish and Wildlife to be added to the CALFISH database. Furthermore, the bill requires projects to be constructed without presenting barriers to fish passage. Existing law prohibits the construction or

maintenance, in certain California Department of Fish and Wildlife Districts, of any device or contrivance that prevents, impedes, or tends to prevent or impede, the passing of fish up and down stream.

2.3.5.2 AFFECTED ENVIRONMENT

The information in this section is based on the *Natural Environment Study* (NES) (ICF 2018) completed by ICF in June 2018 for the proposed project, as well as the August 2019 *Natural Environment Study (NES) Amendment* (ICF 2019), provided in Appendix K, which discusses potential fish passage effects from the proposed project.

A literature review was conducted for the U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles containing the Biological Study Area (BSA) (i.e., the project footprint and a 300-foot buffer) plus the surrounding quadrangles. Quadrangles queried were Anaheim, Orange, Whittier, La Habra, Yorba Linda, Prado Dam, El Toro, Tustin, Newport Beach, Seal Beach, and Los Alamitos. The adjacent Black Star Canyon quadrangle, which contains mostly mountainous topography and high elevations, was excluded from the search because species occurrence records for this quadrangle would not be representative of the habitat within the BSA, and those species would not be expected to occur within the project area. The search included results from the following resources:

- California Natural Diversity Database (CNDDB) (ICF 2018).
- California Native Plant Society (CNPS) On-Line Electronic Inventory of Rare and Endangered Vascular Plants of California (ICF 2018).
- USFWS Information, Planning, and Conservation System (IPaC) List of Proposed, Threatened, and Endangered Species, and Critical Habitats for the SR-91 Improvement Project, 08ECAR00-2017-SLI-0405 (ICF 2018). A revised species list was obtained in April 2020.
- National Marine Fisheries Service (NMFS) West Coast Region, California Species List (ICF 2018). A revised species list was obtained in April 2020.

Based on the literature review results, 11 state- and/or federally listed plant species and 20 state- and/or federally listed animal species were determined to potentially occur within the BSA. Of these, all of the plant species and 17 of the animal species were determined to be absent from the BSA because of a lack of suitable habitat. The remaining three state- and/or federally listed animal species that could occur in the BSA or were documented on-site during project surveys include the following:

- Bald eagle (*Haliaeetus leucocephalus*)
- Coastal California gnatcatcher (*Polioptila californica californica*)
- California least tern (*Sternula antillarum browni*)

For federal consultation purposes under the FESA, on November 18, 2015, USFWS provided an official list of federally listed species that, according to its records, had the potential to occur within the BSA. During the drafting of this NES, more than 180 days had elapsed since the original project IPaC List was obtained; therefore, an updated official list was obtained on April 21, 2020 (ICF 2020). This list includes coastal California gnatcatcher, least Bell's vireo (*Vireo bellii pusillus*), Santa Ana sucker (*Catostomus santaanae*), and Ventura Marsh milk-vetch

(*Astragalus pycnostachyus* var*. lanosissimus*). In addition, as part of official NMFS policy, on August 21, 2017, a request was sent to NMFS to provide an official list on letterhead of federally listed species protected by NMFS that, according to its records, had the potential to occur within the BSA (ICF 2018 and 2020). A revised species list was obtained in April 2020. Based on the initial record search of NMFS data, the unofficial list includes only one species: the Southern California steelhead (*Oncorhynchus mykiss*) Distinct Population Segment (DPS). Because coastal California gnatcatcher, least Bell's vireo, Santa Ana sucker, Ventura Marsh milk-vetch, and Southern California steelhead are the species that were provided for analysis by USFWS and NMFS, only these five species require official effects determinations under FESA.

2.3.5.3 ENVIRONMENTAL CONSEQUENCES

The following sections describe expected environmental consequences for the five federally listed species from the USFWS and NMFS record searches that are required to be analyzed as well as the two state-listed species that are known to use the project site. Results of record search is provided at the end of this section in Table 2.3.5-2.

Based on the surveys and analysis presented in this NES, as well as the general lack of suitable habitat to support the species, a *no effect* determination is proposed for coastal California gnatcatcher, least Bell's vireo, Santa Ana sucker, Ventura Marsh milk-vetch, and Southern California steelhead. No further FESA consultation with either the USFWS or NMFS is anticipated. FESA Effect Findings are presented in Table 2.3.5-1 below.

Table 2.3.5-1. FESA Effect Findings

Common Name	Scientific Name	Status	Effect Finding	Effect Finding for Critical Habitat (if applicable)
Plants				
Ventura Marsh Milk-Vetch	*Limnanthes floccose ssp. californica*	FE*	No Effect	No Effect
Invertebrates				
Santa Ana Sucker	*Catostomus Santaanae*	FT	No Effect	No Effect
Southern California Steelhead	*Oncorhynchus mykiss irideus*	FE	No Effect	No Effect
Birds				
Coastal California Gnatcatcher	*Polioptila californica*	FT	No Effect	No Effect
Least Bell's Vireo	*Vireo bellii pusillus*	FE	No Effect	No Effect

*Federal Endangered (FE); Federal Threatened (FT)

Permanent Impacts

Build Alternative (Preferred Alternative)

Ventura Marsh milk-vetch, Santa Ana sucker, Southern California steelhead, and least Bell's vireo are not expected to occur in the BSA because of the lack of suitable habitat. Therefore, no permanent impacts are expected. It is Caltrans' determination that there would be no effect on these species. A fish passage assessment was completed in August 2019 pursuant to Senate Bill (SB) 857 and is provided in Appendix K. The assessment concluded that the minor

extensions of the bridge piers within the Santa Ana River would not present any passage barrier for Southern California steelhead as the piers would be extended parallel to river.

Coastal California Gnatcatcher

The project would not result in permanent impacts on coastal California gnatcatcher. There is no connectivity between the three patches of restored coastal sage scrub habitat within the BSA and any naturally occurring and occupied or suitable habitat. No new construction is planned on State Route (SR) 55 where the best gnatcatcher habitat is found, off of Santiago Boulevard. Up to 1.69 acres of coastal sage scrub habitat may be permanently affected elsewhere by the project in the area near Glassell/Kraemer; this area is not expected to support coastal California gnatcatcher because of its isolation and general low quality. Because coastal California gnatcatcher is not expected to occupy any of the small patches of restored coastal sage scrub in the BSA now or in the future because of their isolation from source populations, it is Caltrans' determination that there would be *no effect* on coastal California gnatcatcher.

Bald Eagle

The project would not result in any permanent impacts on individual bald eagles but would result in lateral expansion of the bridge crossing over the Santa Ana River, which contains suitable foraging habitat that could support this species. To build the extra eastbound lane, the footings and piers, which sit directly within the river itself, would be lengthened to the extent necessary to support one additional lane. Because this species is unlikely to nest in the BSA, there would be no impacts on bald eagle nesting habitat. Expansion of the bridge overpass would result in a permanent loss of foraging habitat at the location of the supports, but this area is miniscule. Bald eagles would not be hunted, pursued, caught, captured, or killed as a result of this project, and there would be no attempts to hunt, pursue, catch, capture, or kill any eagles.

California Least Tern

The project would not result in any direct permanent impacts on California least tern. Expansion of the bridge overpass would result in a very minor permanent loss of suitable California least tern foraging habitat. Because this species is not known to nest in this area of the Santa Ana River, there would be no direct or indirect impacts on California least tern nesting habitat. California least terns would not be hunted, pursued, caught, captured, or killed as a result of this project, and there would be no attempts to hunt, pursue, catch, capture, or kill any terns. It is Caltrans' determination that there would be *no effect* on California least terns.

Under CESA, CDFW authorizes take of endangered, threatened, or candidate species through Sections 2081 and 2080.1 of the California Fish and Game Code. Bald eagle and California least tern are both listed under CESA and currently known to inhabit the BSA, but based on the analysis provided in the NES and described above, the project would have *no effect* on either species.

No-Build Alternative

The No-Build Alternative would not include construction of any improvements or result in any permanent impacts on the five federally listed species (including two state-listed species) that are known to use the project site.

Temporary Impacts

Build Alternative (Preferred Alternative)

Ventura Marsh milk-vetch, Santa Ana sucker, Southern California steelhead, and least Bell's vireo are not expected to occur in the BSA because of the lack of suitable habitat. Therefore, no temporary impacts are expected. Furthermore, construction of the proposed project is not expected to impede movement of Southern California steelhead, as hydrologic connectivity would be constant during the wet season in the extremely unlikely event that steelhead were to pass through the project area. Therefore, there would be *no effect* on these species.

Coastal California Gnatcatcher

No temporary impacts on coastal sage scrub habitat are expected to occur. Thus, the project would have *no effect* on coastal California gnatcatcher.

Bald Eagle

Expansion of the bridge overpass would result in a temporary loss of foraging habitat in the surrounding area during construction. However, the impact would be minor and limited directly to the habitat in the river, No direct impacts, other than disturbance associated with construction activity including, but not limited to, noise, trash, and general human presence, on bald eagles that may occur in the BSA in the future would be expected. With implementation of standardized measure **PF BIO-3** and the avoidance and minimization measures below, the project would have *no impact* on bald eagles.

California Least Tern

Expansion of the bridge overpass would result in a temporary loss of habitat in the surrounding area during construction as well as temporary degradation of water quality and riverine habitat. However, this would have a miniscule impact on the foraging habitat that is available. With implementation of standardized measure **PF BIO-3** and the avoidance and minimization measures below, the project would have *no effect* on California least terns.

No-Build Alternative

The No-Build Alternative would not include construction of any improvements or result in any temporary impacts on the five federally listed species (including two state-listed species) that are known to use the project site.

2.3.5.4 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

This section addresses only avoidance, minimization, and/or mitigation for those listed species that could occur within the BSA (i.e., coastal California gnatcatcher, bald eagle, California least tern).

Coastal California Gnatcatcher

Because no impacts are expected on coastal California gnatcatcher, no avoidance and minimization measures or compensatory mitigation are proposed for this species. However, avoidance and minimization measures for impacts on coastal sage scrub habitat are described in Section 2.3.1, Natural Communities.

Bald Eagle

Avoidance and minimization measures **BIO-1, BIO-2**, **BIO-5**, **BIO-7**, **BIO-8**, and **BIO-11** through **BIO-13** would help to reduce any potential impacts on bald eagles or their foraging habitat within the BSA:

California Least Tern

Avoidance and minimization measures **BIO-1**, **BIO-2**, **BIO-5**, **BIO-7**, **BIO-8**, and **BIO-12**, as described above, are proposed to avoid or minimize impacts on California least terns that may be foraging within the BSA during construction.

Table 2.3.5-2. Potential to Occur for State- and/or Federally Listed Plant and Wildlife Species

Common/Scientific Name	Listing Status[a] Fed/State	Species Requirements	Specific Habitat[b] Present/Absent	Rationale
PLANTS				
Braunton's milk-vetch (*Astragalus brauntonii*)	E/-	Perennial herb found in recent burns or disturbed areas, typically on sandstone substrates with carbonate layers, within chaparral, coastal scrub, and valley and foothill grassland between 13 and 2,100 feet in elevation. Blooming period is from January to August.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.
Ventura Marsh milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus*)	E/E	Perennial herb found in coastal dunes, coastal scrub, and along the edges of coastal salt or brackish marshes and swamps below 115 feet in elevation. Blooming period is from June to October.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.
thread-leaved brodiaea (*Brodiaea filifolia*)	T/E	Perennial bulbiferous herb found in clay loamy sand or alkaline soils within open grasslands at edges or in vernal pools or floodplains between 82 and 3,675 feet in elevation. Blooming period is from March to June.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.
salt marsh bird's-beak (*Chloropyron maritimum* ssp. *maritimum*)	E/E	Annual herb found in higher zones of salt marsh habitat within coastal salt marsh, coastal dunes, and coastal wetlands between 0 and 90 feet in elevation. Blooming period is from May to October.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.
San Fernando Valley spineflower (*Chorizanthe parryi var. fernandina*)	PT/E	Annual herb found in sandy soils in coastal sage scrub and valley and foothill grassland between 492 and 4,003 feet in elevation. Blooming period is from April to July.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.
slender-horned spineflower (*Dodecahema leptoceras*)	E/E	Annual herb found in sandy soils within chaparral, cismontane woodland, and coastal scrub (alluvial fan) between 650 and 2,500 feet in elevation. Blooming period is from April to June.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.

Common/Scientific Name	Listing Status[a] Fed/State	Species Requirements	Specific Habitat[b] Present/Absent	Rationale
Laguna Beach dudleya (*Dudleya stolonifera*)	T/T	Perennial stoloniferous herb found on rocky substrates in chaparral. Cismontane woodland, coastal scrub, and valley and foothill needlegrass between 30 and 780 feet in elevation. Blooming period is from May to July.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.
Santa Ana River woollystar (*Eriastrum densifolium ssp. sanctorum*)	E/E	Perennial herb found in sandy soils of floodplains and terraced fluvial deposits of the Santa Ana River and larger tributaries between 299 and 2,001 feet in elevation. Blooming period is from April to September.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.
San Diego button-celery (*Eryngium aristulatum var. parishii*)	E/E	Annual/perennial herb found in mesic coastal scrub, vernal pools, and valley and foothill grassland between 60 and 2,000 feet in elevation. Blooming is from April to June.	HA	No suitable habitat is present within the BSA, and the project occurs below the species' known elevation range. This species is not expected to occur. No further constraint is present.
Gambel's water cress (*Nasturtium gambelii*)	E/T	Perennial rhizomatous herb found in freshwater and brackish marshes and swamps from 15 to 900 feet in elevation. Blooming period is from April to October.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.
California orcutt grass (*Orcuttia californica*)	E/E	Annual herb found in vernal pools between 49 and 2,165 feet in elevation. Blooming period is from April to August.	HA	No suitable habitat is present within the BSA. Appropriate soils and/or vegetation types are not present. This species is not expected to occur. No further constraint is present.
ANIMALS				
Invertebrates				
San Diego fairy shrimp (*Branchinecta sandiegonensis*)	E/-	Species found in deep vernal pools, road cuts, and depressions that retain water through the warm weather of late April and May. Distribution is limited to discrete localities from Los Angeles, Orange, Riverside, and San Diego Counties south to Baja California.	HA	No suitable habitat is present within the BSA. Vernal pools are not present. This species is not expected to occur. No further constraint is present.

Common/Scientific Name	Listing Status[a] Fed/State	Species Requirements	Specific Habitat[b] Present/Absent	Rationale
Riverside fairy shrimp (*Streptocephalus woottoni*)	E/-	Found in shallow depressions containing a clay hard pan soil layer. Discontinuously distributed along coastal Southern California and northern Baja California.	HA	No suitable habitat is present within the BSA. Vernal pools are not present. This species is not expected to occur. No further constraint is present.
Fish				
Santa Ana sucker (*Catostomus santaanae*)	T/-	As a freshwater fish, this species occurs in watersheds draining the San Gabriel and San Bernardino Mountains of Southern California. Most abundant in unpolluted, clear water that is less than 72°F but can tolerate warmer water temperatures and turbid water conditions. Prefer gravel and cobble with sand substrates and riffles, runs, and pools with riparian vegetation that provides shade and cover.	HA	No suitable habitat is present within the BSA. This species occurs farther upstream in the Santa Ana River where there are widespread gravel and cobble deposits. This species is not expected to occur. No further constraint is present.
steelhead – southern California DPS (*Oncorhynchus mykiss irideus*)	E/-	Spawns in water bodies with gravel substrates that are relatively free of silt. Young fish grow near spawning areas before swimming downstream to coastal/brackish lagoons to continue maturing while preparing to go to sea (smoltification). After spending 2 to 4 years at sea, fish return to freshwater as adults and spawn upstream again.	HA	No suitable habitat is present within the BSA. The Santa Ana River within the BSA is primarily soft-bottomed and lacks a predominantly gravel substrate for spawning. Areas upstream are cut off by Prado Dam only a few miles away and Seven Oaks Dam at the base of the San Bernardino Mountains. Areas upstream of Colton to Seven Oaks Dam are primarily dry, except for during seasonal rainfalls. Downstream of the BSA, the river is seasonally dry for typically 8 to 10 miles until the Harbor Boulevard overpass where a narrow low-flow channel is fed by an urban runoff tributary.

Common/Scientific Name	Listing Status[a] Fed/State	Species Requirements	Specific Habitat[b] Present/Absent	Rationale
Reptiles and Amphibians				
arroyo toad (*Anaxyrus californicus*)	E/-	Inhabits washes, arroyos, sandy river banks, riparian areas with willows, sycamores, oaks, and cottonwoods. Specialized habitat needs, including exposed sandy stream sides with stable terraces for burrowing with scattered vegetation for shelter, and areas of quiet water or pools free of predatory fish with sandy or gravel bottoms without silt for breeding. Adults typically breed in overflow pools adjacent to the inflow channel of third or greater-order predator-free streams. Adult estivation sites are typically in stream terraces or uplands with friable soils, usually near active use areas but potentially more than 1 kilometer away. Young toads require moderately vegetated sandbars.	HA	No suitable habitat is present within the BSA. The BSA does not contain any sandy wash habitat, gravel-or cobble-dominated substrates, or suitable vegetation for this species. This species is not expected to occur. No further constraint is present.
green sea turtle (*Chelonia mydas*)	-/T	Found in marine bays, particular areas like the San Gabriel River and Seal Beach National Wildlife Refuge, and upstream in water bodies as well.	HA	No suitable habitat is present within the BSA. This species' occurrences in local water bodies are well known and do not include the Santa Ana River or areas far upstream like the BSA. This species is not expected to occur. No further constraint is present.

Common/Scientific Name	Listing Status[a] Fed/State	Species Requirements	Specific Habitat[b] Present/Absent	Rationale
Birds				
tricolored blackbird (*Agelaius tricolor*)	-/T	Range is restricted to the Central Valley and surrounding foothills, throughout coastal and some inland localities in Southern California, and scattered sites in Oregon, western Nevada, central Washington, and western coastal Baja California. Breeds in dense colonies and may travel several kilometers to secure food for nestlings; males defend small territories within colonies and mate with one to four females. They are itinerant breeders, nesting more than once at different locations during the breeding season.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. The BSA does not contain freshwater marsh habitat, agricultural fields, or grasslands that would be suitable to support this species and its various ecological needs. This species is not expected to occur. No further constraint is present.
Swainson's hawk (*Buteo swainsoni*)	-/T	This slim relative of the common red-tailed hawk nests today primarily in low-intensity agricultural areas of the western United States, migrating through Central America to Argentina and Brazil each fall and spring.	Breeding: HA Migrants/Foraging: HA	This species does not breed in Orange County and is not expected to occur, except as a flyover during migration. Stopover habitat consisting of wide open agricultural fields or grasslands is not present within the BSA.
western snowy plover (*Charadrius alexandrinus nivosus*)	T/-	Breeds primarily above the high-tide line on coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries. In winter, found on beaches used for nesting and other beaches, in manmade salt ponds, and on estuarine sand and mud flats.	Breeding: HA Migrants/Foraging: HA	In Orange County, this species is restricted to the coast. It is extremely rare for this species to occur anywhere in the county away from the coast. This species is not expected to occur. No further constraint is present.

Common/Scientific Name	Listing Status[a] Fed/State	Species Requirements	Specific Habitat[b] Present/Absent	Rationale
western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	T/E	This neotropical migrant is a relative of the roadrunner and an inhabitant of extensive riparian forests. It formerly occurred from southwestern British Columbia south to the highlands of northern Mexico and the Yucatan Peninsula, wintering in South America. It has declined from a fairly common local breeder in much of California 60 years ago to virtual extirpation, with only a handful of tiny populations remaining in all of California today.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. The BSA does not contain the large, multi-acre swaths of riparian vegetation that this species requires for nesting. This species is not expected to occur. No further constraint is present.
southwestern willow flycatcher (*Empidonax traillii extimus*)	E/E	Restricted to riparian woodlands along streams and rivers with mature, dense stands of willows, cottonwoods, or smaller spring-fed or boggy areas with willows or alders.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. Suitable breeding habitat has been extirpated from the county and most of the entire Southern California region. This species is not expected to occur. No further constraint is present.
bald eagle (*Haliaeetus leucocephalus*)	D/E	It eats mainly fish and carrion; formerly nested locally along the coast of Southern California. It is now a very localized winter resident and rare migrant, with only very rare breeding efforts in coastal Southern California (e.g., Lake Skinner, Riverside County).	Breeding: HA Migrants/Foraging: P	There is no suitable nesting habitat within the BSA, but an adult of this species has wintered on the Santa Ana River in the vicinity of Lakeview Avenue since 2015. This species was observed within the BSA.
California black rail (*Laterallus jamaicensis coturniculus*)	-/T	Tidal salt marshes associated with heavy growth of tule and pickleweed; also occurs in brackish marshes or freshwater marshes at low elevations. Primarily restricted to the San Francisco Bay, with smaller numbers in wetlands from the Salton Sea area to Arizona. This species has essentially disappeared from coastal wetlands in coastal Southern California and central California, although small populations have recently been discovered about 100 miles south of the U.S. border in northwestern Baja California.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA, which is far outside of this species' geographic range. This species is not expected to occur. No further constraint is present.

Common/Scientific Name	Listing Status[a] Fed/State	Species Requirements	Specific Habitat[b] Present/Absent	Rationale
Belding's savannah sparrow (*Passerculus sandwichensis beldingi*)	-/E	Inhabits coastal salt marshes, from Santa Barbara south through San Diego County. Nests in *Salicornia* on and about margins of tidal flats.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA, which is outside of this subspecies' geographic range (coastal salt marshes). No further constraint is present.
coastal California gnatcatcher (*Polioptila californica californica*)	T/-	Obligate, permanent resident of coastal sage scrub below 2,500 feet in Southern California. Low coastal sage scrub in arid washes, on mesas, and on slopes. Not all areas classified as coastal sage scrub are occupied. Generally prefers open sage scrub with California sagebrush (*Artemisia californica*) as a dominant or co-dominant species. Nest placement typically in areas with less than a 40 percent slope gradient. Monogamous pairs tend to stay in the same locale. Both parents build nest, incubate, and care for young.	Breeding: HA Migrants/Foraging: HP	There are several small patches of planted/restored coastal sage scrub in the BSA, representing marginal habitat for this species. However, this species typically requires "stepping stone" habitat during dispersal to move between habitat patches, and there is no "stepping stone" habitat anywhere in the vicinity of these areas to connect it to naturally occurring sage scrub. Moreover, the on-site habitat is insufficient in size and resources to support nesting birds, although, in extremely rare circumstances (because of the isolation of the area), it could temporarily support a wayward juvenile during the dispersal period. This species is not expected to occur.
light-footed Ridgway's (= clapper) rail (*Rallus obsoletus (= longirostris) levipes*)	E/E	This subspecies of the large and widespread Ridgway's rail is restricted to the lower elevations of coastal marshes with active tidal flows and dense pickleweed and/or cordgrass thickets from Hueneme, Ventura County (formerly to Santa Barbara County), south to Bahia de San Quintin, Baja California, Mexico. No substantial seasonal movements occur, although rare individuals wander away from known breeding locales.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. The BSA does not contain any of the dynamic, tidally influenced marsh habitat that this species requires. In Orange County, this species is restricted to the immediate coast and very rarely occurs up to a couple miles away from the coastline in marsh habitat (San Joaquin Wildlife Sanctuary). This species is not expected to occur. No further constraint is present.
bank swallow (*Riparia riparia*)	-/T	This species historically bred interruptedly along the entire coast of California as well as in the Central Valley and Great Basin portions of the state.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Common/Scientific Name	Listing Status[a] Fed/State	Species Requirements	Specific Habitat[b] Present/Absent	Rationale
California least tern (*Sternula antillarum browni*)	E/E	Nests on sandy upper ocean beaches, open barren sites, and occasionally mudflats. Forages on adjacent surf line, estuaries, or the open ocean. Colonies are located near the ocean shoreline (within 0.5 mile [about 800 meters]), typically on nearly flat, loose sandy substrates with lightly scattered short vegetation and debris, although some colonies have been located on hard-packed surfaces, even unused asphalt. Colony sites must provide access to the shoreline for juveniles and must be relatively free of predators or the colony may abandon breeding efforts before completion.	Breeding: HA Migrants/Foraging: HPB	There is no suitable nesting habitat within the BSA, although there is active nesting habitat in the surrounding area. This species forages within the BSA.
least Bell's vireo (*Vireo bellii pusillus*)	E/E	Nesting elevation ranges from below sea level to at least 4,100 feet. The subspecies winters in southern Baja California. Least Bell's vireos select dense vegetation low in riparian zones for nesting.	Breeding: HA Migrants/Foraging: HA	No suitable habitat is present within the BSA. The BSA does not contain any riparian vegetation that would be suitable for this species to nest in. This species is not expected to occur. No further constraint is present.
Mammals				
Pacific pocket mouse (*Perognathus longimembris pacificus*)	E/-	Found in coastal scrub. Inhabits the narrow coastal plains from the Mexican border north to El Segundo, Los Angeles County. Seems to prefer soils of fine alluvial sands near the ocean.	HA	In Orange County, this species is known to occur only in the Dana Point Headlands area and not expected to occur in the BSA. No further constraint is present.

[a] Status Codes

Federal

E = Federally listed; Endangered
T = Federally listed; Threatened
PT = Proposed Threatened
D = Delisted

State

E = State listed; Endangered
T = State listed; Threatened

[b] Habitat Presence/Absence Codes

P = The species is present and was observed during survey efforts.
HP = Habitat is or may be present within project footprint. The species may be present. Focused survey is warranted.
HPB = Habitat is or may be present within 300 feet of the BSA. The species may \ be present. Focused survey is warranted.
HA = No habitat present and no further work needed.
Gray Highlight = No potential to occur in the BSA

2.3.5.5 REFERENCES

ICF. 2018. State Route 91 Improvement Project Between State Route 57 and State Route 55 Natural Environment Study, Including a Delineation of Federal and State Jurisdictional Water Resources. June.

ICF. 2019. State Route 91 Improvement Project Between State Route 57 and State Route 55 Natural Environment Study Amendment. August.

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2.3.6 Invasive Species

2.3.6.1 REGULATORY SETTING

On February 3, 1999, President William J. Clinton signed Executive Order (EO) 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as "any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." Federal Highway Administration (FHWA) guidance issued August 10, 1999 directs the use of the State's invasive species list, maintained by the California Invasive Species Council to define the invasive species that must be considered as part of the National Environmental Policy Act (NEPA) analysis for a proposed project.

2.3.6.2 AFFECTED ENVIRONMENT

The information in this section is based on the *Natural Environment Study* (NES) (ICF 2018) completed by ICF in June 2018 for the proposed project.

During the field surveys conducted for the project, all plant species observed were recorded, some of which are classified as "invasive" by the California Invasive Plant Council (Cal-IPC). These species invade natural communities throughout California and can replace native habitat or limit native colonization in disturbed habitat. For the purposes of the NES and this section, the term "invasive exotic plant" refers to all species that occur as High, Moderate, or Limited on the Cal-IPC Invasive Plant Inventory (ICF 2018).

Exotic plant species exist in nonnative plant communities, in patches of native plant communities, in landscaped areas, and in areas that have been disturbed by human uses throughout the Biological Study Area (BSA). Exotic species are typically more numerous adjacent to State Route (SR-) 91 and SR-57 and in disturbed areas. According to the Cal-IPC classification, of the 110 species of plants observed within the BSA, 35 are classified as invasive exotic plant species as listed below (Table 2.3.6-1). Invasive species that have severe ecological effects are given a high rating and identified as such in Table 2.3.6-1.

Invasive animal species recorded in the BSA are also included in Table 2.3.6-1. While these are not classified by any ranking system, they are all species that do not natively occur in the BSA, were introduced by man, and are firmly established in Orange County as a whole. Most of these species have displaced native species in the county and several pose realistic threats to the wellbeing of native bird populations due to aggressive competition for nest cavities.

Table 2.3.6-1. Invasive Species Occurring within the BSA

Plant Species Common Name	**Plant Species Scientific Name**	**Plant Species Cal-IPC Rating**
Hottentot fig	*Carpobrotus edulis*	High
Peruvian pepper tree	*Schinus molle*	Limited
Brazilian pepper tree	*Schinus terebinthifolius*	Limited
English ivy	*Hedera helix*	High
Tocalote	*Centaurea melitensis*	Moderate
bristly ox-tongue	*Helminthotheca echioides*	Limited
blessed milkthistle	*Silybum marianum*	Limited
black mustard	*Brassica nigra*	Moderate
shortpod mustard	*Hirschfeldia incana*	Moderate
radish	*Raphanus sativus*	Limited
prickly Russian thistle	*Salsola tragus*	Limited
California burclover	*Medicago polymorpha*	Limited
redstem filaree	*Erodium cicutarium*	Limited
horehound	*Marrubium vulgare*	Limited
edible fig	*Ficus carica*	Moderate
blue gum	*Eucalyptus globulus*	Limited
Bermuda buttercup	*Oxalis pes-caprae*	Moderate
Ngaio tree	*Myoporum laetum*	Moderate
tree of heaven	*Ailanthus altissima*	Moderate
tree tobacco	*Nicotiana glauca*	Moderate
puncturevine	*Tribulus terrestris*	Limited
Mexican fan palm	*Washingtonia robusta*	Moderate
giant reed	*Arundo donax*	High
slender wild oat	*Avena barbata*	Moderate
wild oat	*Avena fatua*	Moderate
ripgut brome	*Bromus diandrus*	Moderate
red brome	*Bromus madritensis* ssp. *rubens*	High
cheat grass	*Bromus tectorum*	High
Bermuda grass	*Cynodon dactylon*	Moderate
tall fescue	*Festuca arundinacea*	Moderate
wall barley	*Hordeum murinum*	Moderate
African fountain grass	*Pennisetum setaceum*	Moderate
rabbit foot beard grass	*Polypogon monspeliensis*	Limited
Mediterranean schismus	*Schismus barbatus*	Limited
smilo grass	*Stipa miliacea* var. *miliacea*	Limited
Animal Species Common Name	**Animal Species Scientific Name**	**Animal Species Cal-IPC Rating**
rock pigeon	*Columba livia*	--
Eurasian collared-dove	*Streptopelia decaocto*	--
Red-crowned parrot	*Amazona viridigenalis*	--
European starling	*Sturnus vulgaris*	--
house sparrow	*Passer domesticus*	--
scaly-breasted munia	*Lonchura punctulata*	--

2.3.6.3 ENVIRONMENTAL CONSEQUENCES

Permanent Impacts

Build Alternative (Preferred Alternative

The spread of invasive species is a realistic threat for any proposed project if invasive seeds or plant material can be transferred to areas where they are not currently present. However, under standardized measure **PF BIO-9**, all equipment and materials would be inspected for the presence of invasive species and cleaned if necessary. In areas of particular sensitivity, extra precautions would be taken if invasive species are found in or next to the construction areas. These include inspection and cleaning of construction equipment, with eradication strategies implemented should an invasion occur. Under avoidance and minimization measure **BIO-18**, in compliance with the executive order on invasive species (EO 13112), the requirements of the Orange County Transportation Authority's Measure M2 Natural Community Conservation Plan/Habitat Conservation Plan, and guidance from FHWA—landscaping, erosion control, construction, and revegetation included in the project would not include any species that have been listed as invasive (i.e., plant species listed in Cal-IPC's California Invasive Plant Inventory with a High or Moderate rating). Under avoidance and minimization measure **BIO-10**, the Wildlife Agencies would be required to approve the proposed plant mix or restoration plans prior to any revegetation efforts. With implementation of the aforementioned measures, permanent impacts related to invasive species would not be anticipated to result from construction of the Build Alternative (Preferred Alternative).

No-Build Alternative

The No-Build Alternative would not include construction or operation of any of the proposed project improvements. Therefore, the No-Build Alternative would not result in impacts related to invasive species.

Temporary Impacts

Build Alternative (Preferred Alternative)

Potential impacts from invasive species associated with construction and operation of transportation projects are considered permanent. Refer to the above Permanent Impacts section for the discussion regarding invasive species.

No-Build Alternative

The No-Build Alternative would not include construction of any of the proposed project improvements. As a result, as described under Permanent Impacts, the No-Build Alternative would not result in new impacts related to invasive species.

2.3.6.4 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

Avoidance and minimization measures **BIO-10** and **BIO-18** would reduce potential impacts related to invasive species within the BSA. These measures are consistent with the direction and intent of the Orange County Transportation Authority's Measure M2 Natural Community Conservation Plan/Habitat Conservation Plan with respect to invasive species.

2.3.6.5 REFERENCES

ICF. 2018. State Route 91 Improvement Project Between State Route 57 and State Route 55 Natural Environment Study, Including a Delineation of Federal and State Jurisdictional Water Resources. June.

2.4 Cumulative Impacts

2.4.1 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 on resources in the project area may result from residential, commercial, industrial, and highway development as well as agricultural development and the conversion to more intensive agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as the 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 the 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.

2.4.2 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), which was developed in conjunction with Federal Highway Administration (FHWA) and U.S. Environmental Protection Agency (U.S. EPA). 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 the direct and indirect impacts of the proposed project
- Identify other reasonably foreseeable actions that may affect each resource
- Assess potential cumulative impacts
- Report the results
- Assess the need for mitigation

2.4.3 Resources Excluded from Cumulative Impacts Analysis

As specified in the Caltrans guidance, if a proposed project would not result in a direct or indirect impact on a resource, it would not contribute to a cumulative impact on that resource or need to be evaluated with respect to potential cumulative impacts. The cumulative impact analysis focuses only on 1) resources that would be substantially affected by the proposed project and 2) resources that are currently in poor or declining health or at risk, even if project impacts would be relatively small. These resources are discussed briefly below.

- **Coastal Zones:** The proposed project is not located within or in the vicinity of the coastal zone. Therefore, the proposed project would not contribute to cumulative adverse impacts on coastal zones.
- **Wild and Scenic Rivers:** According to the Bureau of Land Management, there are no wild and scenic rivers in the project area. Therefore, the proposed project would not contribute to cumulative adverse impacts on wild and scenic rivers.
- **Farmlands or Timberlands:** No land within or adjacent to the project area is designated as a Timber Production Zone. According to the California Department of Conservation (DOC) Farmland Mapping and Monitoring Program (FMMP), there is no land designated as prime farmland, farmland of statewide importance, unique farmland, or grazing land within or immediately adjacent to the project area (DOC 2014). The project area and surrounding environment is largely urban and built-up land. The nearest determined important farmland is a 20-acre nursery classified as unique farmland in the city of Anaheim that is 0.25 mile east of the eastern terminus of the project area. The next nearest determined important farmland is a 10-acre parcel of vacant land (as of May 2018) classified as prime farmland, located 0.70 mile northeast of the northernmost part of the project area along North Tustin Avenue in the city of Anaheim. The proposed project would not contribute to cumulative adverse impacts on farmlands or timberlands.
- **Land Use:** The freeway improvements under the Build Alternative (Preferred Alternative) are consistent with local and regional goals to improve traffic operations and reduce congestion in the area. The project improvements would occur in an area that is already designated and used for transportation. Furthermore, the proposed project would be limited to a total of approximately 0.12 acre of partial fee acquisitions. Therefore, no adverse cumulative impacts related to land use are expected.
- **Parks and Recreation:** The Build Alternative (Preferred Alternative) would not permanently affect parks, recreational facilities, or Section 4(f) resources. During construction, the Santa Ana River Trail/Bicycle Path would be closed. However, a detour would be provided for trail users. Furthermore, no other projects that could affect the Santa Ana River Trail/Bicycle Path in the project area during construction have been identified. Therefore, the proposed project would not contribute to cumulative adverse impacts related to parks and recreation.
- **Growth:** The Build Alternative (Preferred Alternative) would improve existing and future traffic operations, reduce congestion, and accommodate existing and future planned growth. As discussed in Section 2.1.2 there is limited developable land within the project area. The proposed project would not induce growth or remove obstacles to growth in the area. Therefore, the proposed project would not contribute to cumulative adverse impacts related to growth.
- **Community Impacts:** The RSA does not exhibit a pronounced degree of community character and cohesion overall. The Build Alternative (Preferred Alternative) would not

divide an established community or substantially modify the character of the area. The project would be consistent with the circulation/mobility and land use elements of the general plans for the cities of Anaheim, Placentia, Fullerton, and Orange. Improvements would be made mostly within the right of way of the existing highway. No full acquisitions, residential displacements, or non-residential displacements are proposed under the Build Alternative (Preferred Alternative). Because the RSA is largely developed and the project would not change the fundamental nature of the community, the project's contribution to cumulative impacts would be minimal.

- **Visual/Aesthetics:** The Build Alternative (Preferred Alternative) would not substantially change existing views of or from State Route (SR) 91 or other transportation facilities associated with implementation of the proposed project. Measures **VIS-1** through **VIS-5** would be implemented to minimize light and glare impacts, screen direct views of industrial uses along the project corridor, landscape the project area consistent with existing vegetation and landscaping, and apply aesthetically pleasing architectural treatments. The Build Alternative (Preferred Alternative) would not substantially alter existing views or the visual characteristics of the project area. Therefore, the proposed project would not contribute to cumulative adverse effects on visual resources.
- **Utilities/Emergency Services:** With the exception of short-term effects during construction, the Build Alternative (Preferred Alternative) would not result in adverse effects on utilities and emergency services. The proposed project would include implementation of a Transportation Management Plan (measure **PF T-1** in Section 2.1.4), which is standard practice on all Caltrans projects and would ensure that substantial impacts on emergency service providers would not occur during construction. Because the proposed project would not result in substantial adverse impacts on utilities or emergency services, it would not contribute to cumulative adverse effects on utility facilities and emergency service providers.
- **Traffic and Transportation/Pedestrian and Bicycle Facilities:** The Build Alternative (Preferred Alternative) would reduce travel times and delay through the project corridor, improve local arterial intersection operation, and have no long-term effect on bicyclist and pedestrian travel. Operation of the Build Alternative (Preferred Alternative) would not result in cumulatively considerable adverse impacts. Construction of the Build Alternative (Preferred Alternative) could coincide with many of the related projects identified in Table 2.1.1-3. The impacts of those projects, in combination with the impacts of the Build Alternative (Preferred Alternative), could result in additional temporary delays that were not identified in the project-level analysis. However, the implementation of measure **PF T-1**, the contribution of the Build Alternative (Preferred Alternative) to a cumulative impact during the construction period would not be considerable.
- **Cultural Resources:** Caltrans, pursuant to Section 106 PA Stipulation IX.A, has determined that a finding of *no historic properties affected* is appropriate for this undertaking because there are no historic properties in the Area of Potential Effects (APE). As such, permanent impacts are not expected as a result of implementation of the Build Alternative (Preferred Alternative). Furthermore, a letter was received on August 30, 2018, from Julianne Polanco, the State Historic Preservation Officer, stating concurrence that the resources identified in Section 2.1.7 are not eligible for the National Register of Historic Places. For these reasons, cumulative impacts are not anticipated to occur under the Build Alternative(Preferred Alternative).
- **Hydrology and Floodplain:** The Build Alternative (Preferred Alternative) would not result in substantial encroachment in any floodplain within the project area, nor would it result it a substantial change in the water surface elevation. The largest increase in water surface

elevation would be a 0.03-foot change in one area of the Santa Ana River. The base flood would still be contained within the Carbon Canyon Diversion Channel and Santa Ana River. Therefore, the proposed project would not contribute to cumulative adverse effects related to hydrology and floodplains.

- **Water Quality and Stormwater Runoff:** When the proposed impervious surface (16 acres, changing the existing 223 acres to 239 acres under the Build Alternative [Preferred Alternative]) is compared with the total watershed area (more than 1,696,000 acres in the Santa Ana River watershed), the additional impervious surface would be less than 0.001 percent of the watershed area. Construction of the additional impervious surface under the proposed project could result in waste load allocations being exceeded with respect to approved Total Maximum Daily Loads (TMDLs) and impairments in the California Clean Water Act Section 303(d)-listed downstream water bodies. However, implementation of appropriate project features, such as design pollution prevention best management practices (BMPs) and treatment control BMPs, to treat targeted design constituents would adequately address the potential cumulative impacts of construction and long-term maintenance and operation of the proposed project. As such, the proposed project is not anticipated to contribute to cumulative impacts.
- **Geology/Soils/Seismic/Topography:** The potential impacts of the Build Alternative (Preferred Alternative) related to geologic conditions and soils would be avoided or minimized with implementation of geotechnical design features and soil BMPs. As a result, the Build Alternative (Preferred Alternative) would not contribute to cumulative adverse impacts related to geology and soils.
- **Hazardous Waste/Materials:** The RSA includes the area within 0.5 mile of each side of the project site. Based on information obtained from the Initial Site Assessment (ISA), occupied parcels 360-071-14, 360-071-28, and 360-071-24 were identified in the ISA as part of the Land Disposal Site, Leaking Underground Storage Tank, Spills Leaks Investigation and Cleanup, and EnviroStor databases both currently and historically. The aforementioned parcels were associated with a former landfill, which is currently a recycling facility and rail yard. Because of historic and current land uses, the aforementioned parcels were characterized as presenting a potential hazardous waste exposure risk with implementation of the project. A Phase II Site Investigation was initiated in January 2020, which found hazardous materials present within the soil. Soluble lead concentrations and polychlorinated biphenyl concentrations (PCBs) within the soil were in exceedance of the California hazardous waste levels. Concentrations of diesel-range and oil-range total petroleum hydrocarbons (TPHs), volatile organic compounds (VOCs), and dioxins/furans were also present in the landfill material. However, the levels of these contaminants were far below the levels for classification as hazardous waste. In accordance with measure **HAZ-1** in Section 2.2.5, the soil within the landfill material will be excavated during the construction phase and disposed of at a Class I landfill facility. While the soil within the upper four feet of the site was not classified as hazardous, it will not be reused due to the presence of PCBs, dioxins/furans, and debris. Therefore, this non-hazardous soil will be disposed of at a Class II or III landfill. The excavation of the SR-91 roadway area is assumed to have the same level of contamination as the SA Recycling property; in accordance with **HAZ-7**, the SR-91 roadway area adjacent to these parcels is recommended for further drilling and sampling during the design phase to verify whether contamination exists beneath SR-91.

  In addition, several other conditions—including the potential presence of aerially deposited lead (ADL), lead-based paint (LBP), asbestos-containing materials (ACMs), and lead chromate—were identified in the ISA as environmental concerns with some potential to affect the project during construction and demolition activities. Implementation of measures

HAZ-1 and **HAZ-2** would require that soils contaminated with ADL be handled, treated, and disposed of properly. Implementation of measures **PF HAZ-3**, **HAZ-4**, **HAZ-5**, and **PF HAZ-6** would address risks associated with LBP, ACMs, and lead chromate and would ensure that the surrounding environment would not be exposed to risks related to releases of hazardous materials during bridge demolition or modification. Moreover, implementation of measure **PF HAZ-6** would address potential exposure impacts associated with previously unidentified contamination by providing directives that would be followed should soil and/or groundwater contamination be encountered during construction. Moreover, development of related projects in contaminated areas would require remediation in compliance with state and federal environmental regulations, thereby improving overall environmental quality. Therefore, implementation of the project would not contribute considerably to cumulative impacts related to hazardous materials or hazardous waste in the region.

- **Air Quality:** Cumulative impacts related to air quality include impacts from local development as well as general growth in the project area. However, as with most development, the greatest source of emissions is vehicles, which can travel well out of the local area. Therefore, from an air quality standpoint, the cumulative analysis would extend beyond local projects and, when wind patterns are considered, cover a larger area. Accordingly, the cumulative analysis for the proposed project's air quality analysis is the South Coast Air Basin. The "plan" approach to determining cumulative impacts considers whether the proposed project would be consistent with local and regional planning efforts. As stated above, the proposed project consists of improvements along SR-91 and SR-57, including freeway mainline widening and modifications to various interchanges, ramps, and intersections. Because the project is listed in the Southern California Association of Governments 2016 financially constrained Regional Transportation Plan/Sustainable Communities Strategy (amendment #2) and 2019 Federal Transportation Improvement Program (amendment #11), both of which were found to be in conformity with the State Implementation Plan, impacts would not be cumulatively considerable. With implementation of avoidance and minimization measures **PF AQ-1** and **PF AQ-2**, as described in Section 2.2.6, *Air Quality*, to reduce and otherwise address particulate emissions, the contribution of the Build Alternative (Preferred Alternative) to a cumulative impact during construction and operation would not be considerable.
- **Noise:** The analysis of noise impacts provided in Section 2.2.7 of this Initial Study/ Environmental Assessment is a cumulative analysis in that it considers traffic noise generated by existing and future planned land uses as well as the effects of future planned transportation improvements on the noise environment. After implementation of noise abatement and minimization measure NOI-3 (refer to Section 2.2.7), the noise level increase attributable to the Build Alternative (Preferred Alternative) would be barely perceptible to the human ear in an outdoor environment; therefore, the proposed project would not contribute to cumulative adverse effects related to noise. Construction of the proposed project could overlap with some of the other projects within the RSA. Most of the projects are infill projects, and all of the transportation projects are along existing facilities. Caltrans provisions in Section 14-8.02, Noise Control, of the 2018 Standard Specifications and Special Provisions, as well as city and county municipal codes, would place restrictions and time limits on construction activities. With adherence to these codes, the cumulative impact associated with construction noise from the proposed project would be less than significant. In addition, because construction-related noise generated under the proposed project would be addressed with implementation of the noise control measures provided in **PF NOI-1** and **NOI-2** (refer to Section 2.2.7), the proposed project's construction-related impacts would not result in a cumulatively considerable impact.

- **Biological Environment:** The RSA used for assessing cumulative effects is based on the Biological Study Area (BSA), defined as the project footprint plus an additional 300-foot buffer and the surrounding quadrangles, including Anaheim, Orange, Whittier, La Habra, Yorba Linda, Prado Dam, El Toro, Tustin, Newport Beach, Seal Beach, and Los Alamitos. The RSA lies within the cities of cities of Anaheim, Fullerton, Orange, and Placentia. Most of the land is developed for urban and suburban uses. The Santa Ana River, which is found within the RSA, is the main regional wildlife corridor in the RSA.
- **Natural Communities**
  - *Mulefat Scrub:* Because there would be no impacts on mulefat scrub, there would be no cumulative impacts.
  - *Riverine Habitat:* The primary impact from the proposed project would be the permanent loss of riverine habitat due to expansion of the footings and piers underneath the west side of SR-91. The project would result in approximately 2.89 acres of temporary direct impacts on riverine habitat within the RSA. Temporary impacts would be avoided or reduced with implementation of prescribed measures **BIO-1, BIO-2, PF BIO-3, PF BIO-4, BIO-5** through **BIO-8, PF BIO-9, BIO-10,** and **BIO-18**, as listed in Section 2.3.1, and subsequent regulatory permits. In the context of the entire watershed as well as historic impacts on riverine habitat within the Santa Ana River, permanent project-related impacts would be minor (0.01 acre). Cumulative impacts on the Santa Ana River have been substantial over time because of the high level of manipulation that has occurred. The proposed project would represent a negligible change in existing ambient conditions and would not contribute substantially to cumulative effects on the habitat.
- **Plant Species:** Based on the literature search and field surveys, there is no suitable habitat anywhere in the BSA for supporting federally or state-listed or otherwise special-status plant species, including any of the three plant species that are covered under the Orange County Transportation Authority (OCTA) M2 Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP). Therefore, there would be no temporary or permanent impacts on listed, special-status, or covered plant species from the proposed project. Because there would be no impacts on listed and non-listed special-status plants, which are not expected to be present within the BSA, the project would not contribute to cumulative impacts on any listed or non-listed special-status plant species or any covered plant species.
- **Animal Species**
  - *Special-Status Raptors:* Foraging habitat is present within the BSA for Cooper's hawk, white-tailed kite, American peregrine falcon, and osprey; no nesting habitat is present for any of these species. Project construction would have a temporary effect (e.g., noise, human presence) on Cooper's hawk, white-tailed kite, American peregrine falcon, and osprey, if present. The Build Alternative (Preferred Alternative) would have a permanent effect on foraging habitat wherever highway expansion or other new construction is proposed over currently undeveloped areas (e.g., the Santa Ana River, open ground). However, whatever foraging habitat is present within the BSA for these species is highly degraded and already substantially affected; therefore, the loss of the small amount of additional habitat needed to construct the project would not result in a substantial negative impact on any of these species or their local populations. Measures **BIO-1** through **PF BIO-3, BIO-5, BIO-7** through **BIO-13**, and **BIO-18**, which are listed in Section 2.3.4, would be incorporated to avoid and minimize impacts on special-status raptors, none of which are expected to nest within the RSA. All of the special-status raptor species that could or do occur in the RSA have generally adapted to hunting in suitable habitat in

urban areas. These species are typically encountered in developed areas. Although past development has reduced nesting habitat for some or all of these species, resulting in a long-term cumulative impact on the nesting opportunities of these species, there is no longer any nesting habitat that could be affected within the RSA. Therefore, the project is not expected to contribute to cumulative impacts on raptors.

- *Special-Status Bats*: The Build Alternative (Preferred Alternative) would result in the eviction and exclusion of at least one potentially large breeding colony of bats, resulting in temporary displacement, avoidance, and potential injury or death of the resident bats. Measures **BIO-1, BIO-5, BIO-6,** and **BIO-14** through **BIO-17** would be incorporated to reduce these impacts to the maximum extent feasible. The combination of regional development, transportation improvement, and habitat loss with the relatively low reproductive rates of bats (i.e., approximately one pup/year/adult female) will most likely result in slow recovery from impacts, making it difficult to make ultimate conclusions about the severity of cumulative impacts. This project, because of its implementation of extensive avoidance, minimization, and mitigation measures aimed at preventing impacts on bat species, is considered not likely to contribute to regional cumulative impacts on or declines in bat species.
- *Special-Status Species (Non-Raptors, Non-Bats):* The analyzed birds use the Santa Ana River as foraging or roosting habitat; western pond turtle may use aquatic habitat in the BSA for foraging (although unlikely). The BSA and areas immediately upstream and downstream encompass foraging habitat on the river. Populations of birds are considered to be stable in this area and either robust (e.g., California gull, American white pelican) relative to other areas in Orange County or small but otherwise healthy (e.g., white-faced ibis) given the atypical location. The proposed project may result in minor temporary impacts on these bird species as a result of visual disturbance, trash, and noise. In addition, it would permanently remove a small amount of foraging habitat on the Santa Ana River. It would not affect known nesting or rearing habitat and would not affect the nesting behavior of any of the species. Project features and measures **BIO-1** through **BIO-3, BIO-5, BIO-7** through **BIO-13, BIO-17**, and **BIO-18**, which are listed in Section 2.3.4, would be incorporated to avoid and minimize impacts on special-status non-raptor bird species, none of which are expected to nest within the BSA. The only species that is known to nest in the vicinity is great blue heron, and its nesting habitat is well outside the project footprint and BSA. Therefore, it would not be affected. Western pond turtle is a covered species under the OCTA M2 NCCP/HCP, which requires focused turtle surveys whenever there is ground disturbance in or near aquatic habitat. However, the aquatic habitat that is present in the BSA is not suitable for supporting this species, and focused surveys have been determined to be not necessary.

  Past disturbance in this area has entailed general maintenance and management of the Santa Ana River, including construction of levees, weirs, and basins; construction of other bridges over the river; and expansion of SR-91 on the east side of the bridge. This portion of the river is in a high-traffic part of Orange County and experiencing constant high-level disturbance from humans in the surrounding upland areas. Historic development in the uplands surrounding the BSA, as well as current general usage of the area, has had and continues to have a cumulative impact on all of the aforementioned species. However, impacts from the proposed project would be very minor and would not be expected to meaningfully contribute to cumulative impacts in the area with incorporation of measures **BIO-1** through **PF BIO-3, BIO-5, BIO-7** through **BIO-13, BIO-17,** and **BIO-18,** which are listed in Section 2.3.4.

- *Nesting Birds and Other Bridge-, Crevice-, or Cavity-Dwelling Species*: Project impacts on nesting birds would not be adverse with implementation of project features, and avoidance and minimization measures **BIO-1** through **PF BIO-3, BIO-5, BIO-7** through **BIO-13, PF BIO-16,** and **BIO-17,** as listed in Section 2.3.4. These measures are generally standard for all projects, meaning that any given project is presumed to have no impact on general nesting bird populations because of nesting-season avoidance by the project and widespread implementation of nesting surveys and buffers to avoid impacts on nesting birds. Therefore, because the project would also conform to state and federal regulations regarding nest protection and nest avoidance, the project would not contribute to any cumulative impacts on nesting birds. The project would also not contribute to cumulative impacts on nesting birds that have occurred over time as a result of development in the region.

- **Threatened and Endangered Species**
  - *Coastal California Gnatcatcher:* The project is not expected to have any direct or indirect impacts on coastal California gnatcatcher and would not cumulatively contribute to a reduction in the number of California gnatcatchers in the region; therefore, the project would not contribute to cumulative impacts on coastal California gnatcatcher.
  - *Bald Eagle:* A bald eagle has been wintering on the Santa Ana River within the BSA for the last two winters, with other bald eagles sporadically occurring over the years as well (personal observation). The proposed project may result in minor temporary impacts on bald eagles as a result of visual disturbance, trash, and noise. In addition, it would permanently remove a small amount of foraging habitat on the Santa Ana River. However, historically, Orange County has not been within the range of bald eagles, which have been rare in the past (ICF 2018) and have only recently become a more regularly occurring species in the county. Therefore, development of the BSA has had little, if any, cumulative impact on this species because bald eagles expanded into this area after development had already occurred. Consequently, the project is not expected to contribute to cumulative impacts on bald eagle.
  - *California Least Tern:* California least terns use the Upper Santa Ana River in Orange County for foraging purposes. They began nesting approximately 2.8 miles downstream at Burris Basin in 2004 (ICF 2018) and were first found nesting at Anaheim Lake, approximately one mile north, in 2016. The BSA and areas immediately upstream and downstream encompass foraging habitat on the river. California least tern populations are considered stable in this area and potentially increasing in number in the surrounding area, given the expanded nesting efforts. The proposed project may result in minor temporary impacts on California least terns as a result of visual disturbance, trash, and noise. In addition, it would permanently remove a small amount of foraging habitat on the Santa Ana River. However, it would not affect known nesting or rearing habitat and would not affect nesting behaviors.

    Past disturbance in this area has entailed general maintenance and management of the Santa Ana River, including construction of levees, weirs, and basins; construction of other bridges over the river; and expansion of SR-91 on the east side of the bridge. This portion of the river is in a high-traffic part of Orange County and experiencing constant high-level disturbance from humans in the surrounding upland areas. Least terns began nesting downstream in 2004 (ICF 2018), long after the area was developed. Historically, they only occasionally foraged as far upstream as Anaheim; instead, they typically stayed within one mile or so of the coast (ICF 2018). Development of the area surrounding the BSA has had little, if any, cumulative impact on this species because it

expanded into the area after development had already occurred. Therefore, the project is not expected to contribute to any cumulative impacts on California least tern.

- **Invasive Species:** The spread of invasive species is a realistic threat for any proposed project if invasive seeds or plant material is transferred to areas where they are not currently present. However, under standardized measure **PF BIO-9** (refer to Section 2.3.6), all equipment and materials would be inspected for the presence of invasive species and cleaned if necessary. In areas of particular sensitivity, extra precautions would be taken if invasive species are found in or next to construction areas. These include inspection and cleaning of construction equipment, with eradication strategies implemented should an invasion occur. Under avoidance and minimization measure **BIO-10** (refer to Section 2.3.6), Wildlife Agencies would be required to review and approve restoration plans prior to any revegetation efforts. With implementation of the aforementioned measure, impacts related to invasive species would not be anticipated to result from construction of the Build Alternative (Preferred Alternative). Under avoidance and minimization measure **BIO-18** (refer to Section 2.3.1)—in compliance with the executive order on invasive species (EO 13112), the requirements of OCTA's Measure M2 NCCP/HCP, and guidance from FHWA—landscaping, erosion control, construction, and revegetation included in the project would not include any species that have been listed as invasive (i.e., plant species listed in the California Invasive Plant Council's [Cal-IPC's] California Invasive Plant Inventory with a High or Moderate rating). With implementation of measures **PF BIO-9**, **BIO-10,** and **BIO-18,** the proposed project would not make a cumulatively considerable contribution to the spread of invasive species in the RSA.

2.4.4 Resource 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 2.1.1-3 and shown in Figure 2.1.1-2. Most of the projects are infill projects; the transportation projects are all located along existing facilities. The following resources are evaluated in this section for cumulative impacts: community impacts, traffic and transportation/pedestrian and bicycle facilities, air quality, wetlands or other waters, and animal species.

2.4.4.1 PALEONTOLOGICAL RESOURCES

The RSA includes the area within 0.5 mile of each side of the project site. Construction activities may affect paleontological resources where excavations would disturb the Fernando Formation (at the surface and at depth) or Pleistocene-age alluvial deposits at depth (i.e., excavations that extend more than 10 feet below existing grades at locations that have been mapped as alluvial fan deposits or alluvial wash deposits). The Fernando Formation and Pleistocene-age alluvial deposits are assigned high paleontological potential.

The majority of excavation required for structures proposed under the Build Alternative (Preferred Alternative) is not anticipated to extend beyond 10 feet. However, drilled piles may extend beyond 50 feet; the depth is dependent on the site conditions encountered by the contractor and the recommendations of the geotechnical engineer. Excavation at the SR-91 westbound and SR-57 southbound connector is expected to reach a depth of 35 feet; the existing slope is non-native soil that was used as fill for the existing connector. The project components that are most likely to include earthwork that extends 10 feet deep or more involve the installation of bridge support columns or structures, box culverts, retaining walls,

and underground utilities. All other project components, as currently proposed, are not anticipated to adversely affect paleontological resources. The project would incorporate avoidance and minimization measures (e.g., measure **PAL-1**) to ensure that any impacts associated with construction activities would be minimized should paleontological resources be uncovered. Other development projects in the RSA could disturb nonrenewable paleontological resources. However, because these projects would be discretionary actions and subject to CEQA, they would be required to incorporate measures to reduce impacts on unknown and nonrenewable paleontological resources. Therefore, construction activities associated with the project, in conjunction with other projects, would not result in cumulative impacts related to unknown and nonrenewable paleontological resources.

Once the project and other projects are operational, they would not have the potential to affect unknown and nonrenewable paleontological resources. Therefore, operation of the project, in conjunction with other projects, would not result in significant cumulative impacts under CEQA related to unknown and nonrenewable paleontological resources.

Avoidance, Minimization, and/or Mitigation Measures

The project would incorporate avoidance and minimization measures (e.g., measure **PAL-1**) to ensure that any impacts associated with construction activities would be minimized should paleontological resources be uncovered.

2.4.4.2 NATURAL COMMUNITIES

Coastal Sage Scrub

The project would result in the permanent loss of up to 1.69 acres of coastal sage scrub. Coastal sage scrub has been lost throughout Southern California for a variety of reasons (e.g., development, habitat conversion). It is likely that coastal sage scrub was lost within the BSA, as well as within the area in and surrounding the area, before development occurred. The area to be affected, which is southeast of the Kraemer/Glassell overpass at SR-91, would be completely and permanently lost as a result of development. However, because this patch of sage scrub is completely isolated from others by urban development, it has little value for wildlife movement. Its loss would not result in any notable habitat fragmentation because there is no surrounding habitat.

The proposed project is one of a series of projects covered under the OCTA M2 NCCP/HCP. The OCTA M2 NCCP/HCP was created to streamline permitting for take authorization regarding covered species that are regulated by the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife (CDFW) and facilitate construction along 13 covered freeway segments that are proposed for improvements. A portion of the M2 funding was set aside to provide mitigation under the OCTA M2 NCCP/HCP. OCTA acquired five preserves, with nearly 900 acres of natural habitat, in which 11 habitat restoration projects are planned; at least one more preserve, with a minimum of 250 acres, is planned for future acquisition. Under the OCTA M2 NCCP/HCP, any permanent impacts on coastal sage scrub habitat would be mitigated off-site through pre-approved mitigation at pre-designated restoration sites throughout the county.

Avoidance, Minimization, and/or Mitigation Measures

The proposed project includes project features and avoidance and minimization measures **BIO-1, BIO-5, BIO-6, PF BIO-9, BIO-10**, and **BIO-18** (refer to Section 2.3.1), which are proposed to reduce impacts on coastal sage scrub habitat. No additional mitigation would be required for impacts on or the loss of coastal sage scrub. Although the loss of coastal sage scrub throughout the region has been substantial, the proposed project would not result in a substantial cumulative contribution to that loss.

2.4.4.3 WETLANDS AND OTHER WATERS

The project would result in permanent impacts on approximately 0.03 acre of non-wetland and less than 0.01 acre of wetland U.S. Army Corps of Engineers (USACE)/RWQCB features and 0.01 acre of streambed and 0.01 acre of riparian CDFW resources. The primary impacts from the proposed project would be the permanent loss of jurisdictional waters due to the expansion of the piers underneath the west side of SR-91 as well as the permanent loss of jurisdictional waters that would be culverted. However, most of the drainages were constructed in uplands to convey upland flows. Permanent impacts would be mitigated through the OCTA M2 NCCP/HCP. As part of the M2 NCCP/HCP, permanent impacts on waters and particular habitat types have already been mitigated at pre-approved locations.

The Build Alternative (Preferred Alternative) would temporarily affect approximately 2.70 acres of non-wetland and 0.49 acre of wetland USACE/RWQCB features and 2.64 acres of streambed and 0.83 acre of riparian CDFW resources. Temporary impacts would generally be the result of equipment staging or site preparation within or adjacent to features, fugitive dust, the spread of non-native vegetation, and fluid spills. Temporary impacts may also result from relocation and/or modification of concrete channels. Temporary impacts would be avoided or reduced with implementation of measures **BIO-1** through **BIO-10**, and **BIO-18** in Section 2.3.2 and subsequent regulatory permits. In the context of the entire watershed, as well as historic impacts on the Santa Ana River and its surrounding tributaries, project-related impacts are considered minor, representing only a minor additional impact relative to what occurred when the waterways were initially channelized. Cumulative impacts on waters in the area have been substantial over time because of the high levels of manipulation that occurred; the proposed project would represent only a minor change in existing ambient conditions and would not substantially contribute to cumulative effects.

Given the amount of impact proposed, the Build Alternative (Preferred Alternative) could result in a cumulatively considerable contribution to a regional decline in jurisdictional resources. However, all direct impacts would be fully addressed with implementation of the proposed measures (refer to Section 2.3.2) and the project's participation in the M2 NCCP/HCP. The incremental increase in operational effects (if any) on jurisdictional waters and wetlands would not result in a cumulatively considerable contribution to the regional decline in jurisdictional waters and wetlands.

Avoidance, Minimization, and/or Mitigation Measures

Avoidance and minimization measures **BIO-1** through **BIO-10**, and **BIO-18,** as described in Section 2.3.2, *Wetlands and Other Waters,* would reduce the extent of temporary and permanent impacts on jurisdictional features resulting from construction. In addition, impacts on waters of the U.S., including wetlands and non-wetland waters, would be permitted under Clean Water Act (CWA) Section 404 with a Letter of Permission through the Measure M2 Freeway Program's Standard Individual Permit and under CWA Section 401 with water quality certification through the State Water Resources Control Board. Under the preapproved mitigation program in the OCTA

M2 NCCP/HCP, permanent project-related impacts on waters of the U.S. and waters of the state would be mitigated through restoration and monitoring in Aliso Creek. Under the terms of the agreement, the mitigation sites would need to be prepared and planted and restoration monitoring would need to commence before any fill material could be discharged into waters of the U.S.

Impacts on CDFW jurisdiction protected pursuant to California Fish and Game Code Section 1602, which requires a Streambed Alteration Agreement for impacts on the bed, bank, or channel, would be compensated for according to the OCTA M2 NCCP/HCP's Streambed Program, which provides guidance for compensating for streambed areas and riparian habitats under the jurisdiction of CDFW and approved by CDFW. Under this program, areas of CDFW jurisdiction that would be temporarily affected would be restored to pre-project condition, and areas that would be permanently and unavoidably affected would be compensated for at a pre-approved mitigation site under the OCTA M2 NCCP/HCP.

2.4.4.4 ANIMAL SPECIES

Special-Status Bats and Other Bridge-, Crevice-, and Cavity-Dwelling Species

The proposed project would result in eviction and exclusion of at least one potentially large breeding colony of bats in the SR-91 bridge over the Santa Ana River, resulting in temporary displacement, avoidance, and potential injury or death of the resident bats. With implementation of the avoidance and minimization measures described below, these impacts would be reduced to the maximum extent feasible. The combination of regional development, transportation improvements, and habitat loss with the relatively low reproductive rates of bats (i.e., approximately one pup/year/adult female) will most likely result in slow recovery from impacts. This project, because of its extensive measures to prevent impacts, is not expected to contribute to regional cumulative impacts on bat species or declines in their numbers.

Avoidance, Minimization, and/or Mitigation Measures

Measures **BIO-1, BIO-5, BIO-6, BIO-15,** and **PF BIO-16** in Section 2.3.4 would be incorporated to avoid and minimize impacts on special-status bats and other species that may use crevices or cavities within the RSA, including on bridges. With implementation of avoidance and minimization measures, the contribution of the Build Alternative (Preferred Alternative) to a significant cumulative impact during the construction period would not be considerable.

Chapter 3 California Environmental Quality Act (CEQA) Evaluation

3.1 Determining Significance under CEQA

The proposed project is a joint project by the California Department of Transportation (Department) and the Federal Highway Administration (FHWA) and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). FHWA's responsibility for environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 United States Code Section 327 (23 USC 327) and the Memorandum of Understanding dated December 23, 2016, and executed by FHWA and Caltrans. The Department is the lead agency under CEQA and NEPA.

One of the primary differences between NEPA and CEQA is the way significance is determined. Under NEPA, significance is used to determine whether an EIS, or a lower level of documentation, will be required. NEPA requires that an EIS be prepared when the proposed federal action (project) *as a whole* has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision is made regarding the need for an EIS, it is the magnitude of the impact that is evaluated and no judgment of its individual significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents.

CEQA, on the other hand, does require the Department to identify each "significant effect on the environment" resulting from the project and ways to mitigate each significant effect. If the project may have a significant effect on any environmental resource, then an EIR must be prepared. Each and every significant effect on the environment must be disclosed in the EIR and mitigated if feasible. In addition, the CEQA Guidelines list a number of "mandatory findings of significance," which also require the preparation of an EIR. There are no types of actions under NEPA that parallel the findings of mandatory significance of CEQA. This chapter discusses the effects of this project and CEQA significance.

3.2 CEQA Environmental Checklist

This checklist identifies physical, biological, social, and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the projects will indicate that there are no impacts to a particular resource. A NO IMPACT answer in the last column reflects this determination. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

Project features, which can include both design elements of the project, and standardized measures that are applied to all or most Caltrans projects such as Best Management Practices

(BMPs) and measures included in the Standard Plans and Specifications or as Standard Special Provisions, are considered to be an integral part of the project and have been considered prior to any significance determinations documented below; see Chapters 1 and 2 for a detailed discussion of these features. The annotations to this checklist are summaries of information contained in Chapter 2 in order to provide the reader with the rationale for significance determinations; for a more detailed discussion of the nature and extent of impacts, please see Chapter 2. This checklist incorporates by reference the information contained in Chapters 1 and 2.

The Draft Initial Study/Environmental Assessment anticipated a Negative Declaration (ND) under CEQA. Following public circulation in November of 2018 and Caltrans Quality Control review, paleontological minimization measure PAL-1 was raised to a mitigation measure, for consistency purposes.

3.2.1 Aesthetics

Would the project:	Significant and Unavoidable Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

CEQA SIGNIFICANCE DETERMINATIONS FOR AESTHETICS

The potential for the Build Alternative (Preferred Alternative) to result in impacts related to aesthetics was assessed in the *Visual Impact Assessment for State Route 91 Improvement Project between State Route 57 and State Route 55* (VIA) (May 2018) and Section 2.1.6, Visual/Aesthetics. The following discussion is based on those analyses.

a) No Impact

According to the VIA, the project area does not include scenic vistas. Thus, project implementation would not impact scenic vistas.

b) Less than Significant

As discussed in the Section 2.1.6, Visual/Aesthetics, State Route (SR-) 91 is an officially designated State Scenic Highway from SR-55 to the project's eastern extent (Caltrans n.d.). According to the State Scenic Highway Mapping System, a total of approximately 4.5 miles of SR-91 is officially designated as a State Scenic Highway from SR-55 to the Weir Canyon Road interchange. This segment of SR-91 runs along the banks of the Santa Ana River and offers views to mountain ridgelines, canyons, rolling hills, intermittent riparian and chaparral vegetation, and residential and commercial development. The predominant view is of groves of cottonwood and oak trees along the banks of the Santa Ana River with distant views of chaparral covered hillsides. Based on the project's location within an officially designated State Scenic Highway, long-term visual impacts could be potentially significant.

Key View 3 is located along the eastern portion of VAU2 within the officially designated State Scenic Highway portion of SR-91 and was selected to depict the visual change that would occur with project implementation. Key View 3 represents a typical view for eastbound SR-91 motorists; refer to Figure 2.1.9-5a, Key View 3 – Existing Condition. Currently, Key View 3 offers distant views of the Chino Hills to the north. With project implementation, views of the project's

proposed SR-91/Lakeview Avenue Street interchange improvements, and the new Lakeview Avenue overcrossing bridge structure (approximately 2 feet higher than existing conditions) would be afforded from this Key View; refer to Figure 2.1.9-5b, Key View 3 – Proposed Condition. Views of a new drop-down ramp to southbound SR-55 from Lakeview Avenue and associated retaining wall would also be afforded from this Key View.

Although trees and vegetation would be removed to accommodate the new Lakeview Avenue overcrossing bridge structure, several existing mature trees as well as distant views to the Chino Hills would largely remain intact for eastbound SR-91 motorists. Project implementation would not involve the removal of cottonwood and oak trees along the banks of the Santa Ana River, which are identified by the State Scenic Highway Mapping System as the predominate view of this scenic highway. To reduce visual impacts at this Key View, the project would be required to comply with avoidance and minimization measures **VIS-3** through **VIS-5**. Measure **VIS-3** would ensure landscaping is installed along SR-91 where feasible to reduce the increased hardscape appearance of the proposed improvements. Measure **VIS-4** would ensure architectural treatments are incorporated to the walls (particularly along the designated State Scenic Highway portion of SR-91), and form an Aesthetic Design Review Team (ADRT) which is led by the Orange County Transportation Authority (OCTA) and includes local agency representatives to ensure the project landscape and structural elements are in compliance with the Master Plan of Freeway and Transit Corridor Enhancements: Creating a Quality Environment Along Orange County's Transportation Network. Measure **VIS-5** would ensure that the existing SR-91 eastbound retaining wall would be replaced in-kind with architectural treatments similar to existing conditions in cooperation with the Caltrans District Architect. Construction and operation of the proposed project would result in less-than-significant impacts related to scenic resources within a state scenic highway; therefore, no mitigation is required.

Following implementation of measures **VIS-3** through **VIS-5**, the proposed project would result in less-than-significant impacts on scenic resources within a state scenic highway.

c) Less than Significant

Changes in visual character can be identified by how visually compatible a proposed project will be with the existing condition by using visual character attributes as an indicator. As previously discussed in Section 2.1.6, Visual/Aesthetics, the project corridor is characterized with visual resources such as views to the Santa Ana River, Anaheim Hills, and Chino Hills. Although VAU1 would result in the removal of mature trees and landscaping, improvements occurring within VAU1 would appear consistent with existing freeway infrastructure and highly developed surrounding uses. Improvements occurring within VAU2 would also require the removal of mature trees and landscaping; however, improvements would appear consistent with existing freeway infrastructure. As such, the overall visual impacts from Key Views 1 through 4 would be moderate, moderate, moderate-high, and moderate, respectively. Avoidance and minimization measure **VIS-2** requires installation of either an opaque wall (similar to the existing cinderblock wall) or appropriate landscaping (i.e., landscaped berm or trees) sufficient to screen direct views for SR-91 motorists from industrial uses along the project corridor. Measure **VIS-3** would also ensure landscaping is installed along SR-91 where feasible to reduce the increased hardscape appearance of the proposed improvements. To minimize visual quality loss and minimize the visual disruption from highway construction, measure **VIS-4** would ensure architectural treatments are incorporated to the walls, particularly along the designated State Scenic Highway portion of SR-91. Measure **VIS-4** would also form an ADRT, which is led by the OCTA and includes local agency representatives, to ensure the project landscape and structural elements are in compliance with the Master Plan of Freeway and Transit Corridor Enhancements:

Creating a Quality Environment along Orange County's Transportation Network. Construction and operation of the proposed project would result in less-than-significant impacts related to the visual character of the site and its surroundings; therefore, no mitigation is required.

d) Less than Significant

As discussed in Section 2.1.6, Visual/Aesthetics, the proposed project would require nighttime construction activities. Nighttime construction lighting could potentially result in light impacts on nearby residents and motorists traveling along the project site. These activities may be required to take place for several months. However, the project area contains existing sources of light (i.e., vehicle headlights, street lights, park lighting, residential and non-residential lights, etc.). In accordance with Caltrans regulations, nighttime construction will be limited to the hours of 10:00 p.m. to 6:00 a.m. Necessary lighting for safety and construction purposes will be directed away from land uses outside the project area, and contained and directed toward the specific area of construction. With implementation of avoidance and minimization measure **VIS-1**, described in Section 2.1.6, Visual/Aesthetics, construction lighting types, plans, and placement will be reviewed at the discretion of the District Landscape Architect. Implementation of measure **VIS-1** would ensure there would be little to no visual intrusion as a result of temporary construction nighttime lighting. Temporary impacts would be considered less than significant in this regard.

Project implementation may introduce additional safety lighting sources to the project area along the proposed freeway overcrossing and interchanges. The project may also require the relocation of two existing high mast stadium lights (HMSL) within Caltrans right-of-way (ROW) (approximately 10 to 20 feet to the east or west) to allow for the proposed SR-91/SR-57 interchange improvements. Motorists traveling along SR-91 and SR-57 would experience nominal lighting impacts due to high travel speeds and short duration of exposure. In addition, relocation of the two HMSLs 10 to 20 feet closer to the center of the interchange is not anticipated to affect any nearby residential uses. Further, the project site is located within an urbanized area and existing lighting features already exist in the project area. Implementation of measure **VIS-1** would minimize light and glare impacts on surrounding sensitive uses, resulting in less-than-significant impacts on the surrounding area.

In addition, the new wall features could result in additional sources of glare. Motorists traveling along these segments would be nominally impacted by potential glare due to high travel speeds and short duration of exposure. The residential uses in the project vicinity would be subject to generally similar sources of light and glare, as compared to existing conditions. To reduce potential light reflectivity and glare impacts from the wall features, measure **VIS-3** would require landscape treatment along walls to soften the hardscape features and glare and radiant heat from the walls, as feasible. Construction and operation of the proposed project would result in less-than-significant impacts related to light and glare; therefore, no mitigation is required.

3.2.2 Agriculture and Forest Resources

In determining whether impacts on agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts on forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

Would the project:	Significant and Unavoidable Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

CEQA SIGNIFICANCE DETERMINATIONS FOR AGRICULTURE AND FOREST RESOURCES

a) No Impact

As discussed in the introduction of Chapter 2, Affected Environment, Environmental Consequences, and Avoidance, Minimization, and Mitigation Measures, there is no land designated as prime farmland, farmland of statewide importance, unique farmland, or grazing land within or immediately adjacent to the project area (DOC 2014, FMMP 2016). The project area and surrounding environment is largely urban and built-up land. The nearest determined important farmland is a 20-acre nursery classified as unique farmland in the city of Anaheim that is 0.25 mile east of the eastern terminus of the project area. The project will not convert Prime Farmland, Unique Farmland, or Farmland of Statewide

Importance. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required.

b) No Impact

There are no Williamson Act contracts applicable within the project study area (DOC 2004); therefore, the project does not conflict with existing zoning for agricultural use or a Williamson Act contract. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required.

c), d), e) No Impact

The project area is largely built out with urban development, and no forest land or designated Timber Production Zones (TPZs) are located within or adjacent to the project area. Thus, the Build Alternative (Preferred Alternative) would not conflict with existing zoning for, or cause rezoning of, forest land or timberland. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required.

3.2.3 Air Quality

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.				
Would the project:	Significant and Unavoidable Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

CEQA SIGNIFICANCE DETERMINATIONS FOR AIR QUALITY

The potential for the proposed project to impact air quality was assessed in Section 2.2.6. The following discussion is based on that analysis.

a) No Impact

The proposed project is included in the 2016/2040 financially constrained RTP/SCS and the 2019 FTIP and would not conflict with or obstruct the implementation of any applicable AQMP. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required.

b) Less than Significant

The proposed project is located is in an attainment/maintenance area for carbon monoxide (CO). Using the Caltrans Transportation Project-Level Carbon Monoxide Protocol, the analysis concluded that implementation of the proposed project would reduce congestion and overall travel time due to overall improvements in vehicle hours traveled during build conditions. Additionally, the proposed project does not involve parking lots, and therefore would not increase the number of vehicles operating in cold start mode. As a result, the proposed project has sufficiently addressed the carbon monoxide impact and no quantitative analysis is needed. The proposed project would not result in CO concentrations that would exceed the 1-hour or 8-hour CO standards. Impacts are considered less than significant; therefore, no mitigation is required.

The proposed project is located within a maintenance area for federal PM_{10} standards and a nonattainment area for federal $PM_{2.5}$ standards. Based on a PM conformity analysis, it is not expected that changes to PM_{10} or $PM_{2.5}$ emissions levels associated with the proposed project would result in new violations of the federal ambient air quality standards. The analysis concluded that implementation of the proposed project would reduce congestion and overall travel time due to overall improvements in vehicle hours traveled (VHT) during build conditions. The proposed improvements would accommodate future growth and would not induce additional growth in the area. The proposed project would not cause traffic volumes to increase substantially. Additionally, the proposed project does not involve parking lots, and therefore would not increase the number of vehicles operating in cold start mode. As a result, the proposed project has sufficiently addressed the CO impact and demonstrated that the proposed project is not anticipated to cause or contribute to any new violations of the federal CO standard. No further quantitative qualitative analysis is needed. Impacts are considered less than significant; therefore, no mitigation is required.

A quantitative Mobile Source Air Toxic (MSAT) analysis determined that the proposed project would increase diesel particulate matter and MSAT emissions by less than 1 percent from No-Build conditions. However, with the proposed project, MSAT scenario emissions would improve (decrease) by an average of 67 percent when compared to existing conditions. Impacts are considered less than significant; therefore, no mitigation is required.

c) Less than Significant

The proposed project would not result in concentrations that exceed the 1-hour or 8-hour CO standards and would not delay the attainment of the $PM_{2.5}$ or PM_{10} ambient air quality standards in the Basin. Impacts are considered less than significant; therefore, no mitigation is required.

d) Less than Significant

As shown in Table 2.2.6-2 in Section 2.2.6, the sensitive land uses in the vicinity of the proposed project include four schools/playgrounds, one medical center/health care facility, one child care facility, and one park. The proposed project may result in temporary, short-term construction-related increases in pollutant concentrations associated with demolition, grading/trenching, new pavement construction, and the restriping phase. Additional sources of construction-related emissions include exhaust emissions from construction equipment, material transport vehicles, and construction crew's motor vehicles. However, implementation of Caltrans SSP 14-9.02 (measure **PF AQ-2**) and SSP Section 10-5 (measures **PF AQ-1** and **PF AQ-2**) would minimize those potential short-term air quality impacts on sensitive land uses. Operation of the proposed project would result in less-than-significant impacts related to CO, $PM_{2.5}$, or PM_{10}; therefore, no mitigation is required.

e) Less than Significant

According to the ARB and SCAQMD's *CEQA Air Quality Handbook*, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting areas, refineries, landfills, dairies, and fiberglass molding facilities. The project would not be implemented near any of these types of uses. Paving during the construction period could introduce short-term odors that would not affect a substantial number of people. Therefore, a less-than-significant impact would occur, and no mitigation is required.

3.2.4 Biological Resources

Would the project:	Significant and Unavoidable Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☒	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

CEQA SIGNIFICANCE DETERMINATIONS FOR BIOLOGICAL RESOURCES

The potential for the proposed project to impact biological resources was assessed in Sections 2.3.1 through 2.3.6. The following discussion is based on these analyses.

a) <u>Less than Significant</u>

The proposed project could result in temporary impacts on special-status bat species such as pallid bat (*Antrozous pallidus*), western mastiff bat (*Eumops perotis californicus*), and Yuma myotis (*Myotis yumanensis*) as a result of the temporary removal of bat roosting habitat on the SR-91 bridge over the Santa Ana River. Standard avoidance and minimization measures **BIO-1**, **BIO-5**, **BIO-6**, **BIO-14**, **BIO-15**, **BIO-16**, and **BIO-17** would be incorporated to ensure that effects on bats remain less than significant. No compensatory mitigation would be required.

In addition, bat roosting panels would be installed in appropriate locations in order to create bat habitat. The number and arrangement of bat panels is unknown at this time but would be determined based on the results of focused bat surveys and in coordination with CDFW.

While other special-status species may be in the BSA at the time of construction, primarily birds, based on the habitat that is present, it is not expected that the proposed project would actually affect nesting habitat for any of these species because, in general, there is no suitable nesting habitat for them. There may be very small losses to foraging habitat, but not at a level that would be considered significant.

b) Less than Significant

The proposed project would affect riverine habitat in the Santa Ana River, defined as generally open perennial water associated with the river that, due to management, does not contain any substantial riparian vegetation anymore. Approximately 2.89 acres of riverine habitat would be temporarily affected and 0.01 acre of riverine habitat would be permanently affected as a result of adding another lane to SR-91. Standardized project features and avoidance and minimization measures **BIO-1** through **BIO-10**, **BIO-13**, and **BIO-18** would be incorporated during the project to ensure that effects on riverine habitat remain less than significant. No additional compensatory mitigation would be required for effects on riverine habitat, but compensatory mitigation will be necessary from a jurisdictional standpoint (see the Wetlands discussion under item c, below).

In addition, the proposed project would result in the permanent loss of up to 1.69 acres of coastal sage scrub habitat, all of which is isolated and generally of low quality. No temporary impacts are expected on this community. The proposed project is one of a series of projects that fall under OCTA's Measure M2 Natural Community Conservation Plan/Habitat Conservation Plan (M2 NCCP/HCP), and project impacts on coastal sage scrub are considered fully addressed under the M2 NCCP/HCP. In addition, implementation of standardized project feature **PF BIO-9** and avoidance and minimization measures **BIO-1**, **BIO-5**, **BIO-6**, **BIO-10**, and **BIO-18** would help to reduce the ultimate acreage of impacts on this sensitive vegetation community. Impacts on coastal sage scrub habitat would be less than significant.

c) Less than Significant

As detailed in the Wetlands and Other Waters section in Chapter 2, the proposed project would result in approximately 0.49 acre of temporary impacts and less than 0.01 acre of permanent impacts on jurisdictional wetlands. Temporary impacts would generally be the result of equipment staging or site preparation within or adjacent to features, fugitive dust, spread of non-native vegetation, and fluid spills. Permanent impacts would generally be the result of the additional permanent piers being installed in the Santa Ana River to support the widened SR-91 bridge. Temporary impacts would generally be reduced through the implementation of standardized project features and avoidance and minimization measures **BIO-1** through **BIO-10,** and **BIO-18**.

The proposed project is one of a series of projects that fall under OCTA's Measure M2 NCCP/HCP. Impacts on waters are considered fully addressed under the M2 NCCP/HCP. As part of the project, avoidance measures **BIO-1** through **BIO-10,** and **BIO-18** shall be implemented; impacts on wetlands would be less than significant.

d) Less than Significant

The project will have a less-than-significant impact on wildlife corridors and the movement of native wildlife species. A fish passage assessment was completed in August 2019 pursuant to Senate Bill 857 and is provided in Appendix K. The assessment concluded that the minor extensions of the bridge piers within the Santa Ana River would not present any fish passage barrier, as the piers would be extended parallel to river. Large mammals may be deterred from using the Santa Ana River for movement while construction is ongoing, but this would only be a temporary impediment during work hours, and is not considered significant. In addition, the project could have effects on native wildlife nursery sites if nesting birds are nearby construction areas. Caltrans SSP 14-6.03B (measure **BIO-17)** would be incorporated to ensure that effects on nesting birds would be less than significant. No compensatory mitigation would be required.

e) No Impact

This project would not conflict with any local policies or ordinances protecting biological resources. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required.

f) No Impact

This project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required.

3.2.5 Cultural Resources

Would the project:	Significant and Unavoidable Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☒	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☐	☒

CEQA SIGNIFICANCE DETERMINATIONS FOR CULTURAL RESOURCES

The potential for the proposed project to impact tribal cultural resources was assessed in Section 2.1.7 of this IS/EA. The following discussion is based on that analysis.

a) No Impact

As detailed in the Cultural Resources section in Chapter 2, the proposed project has determined that a finding of no historic properties affected is appropriate for this undertaking because there are no historic properties in the APE, and, thus, there can be no impact on historical resources, as there are none located within the project footprint.

b) Less than Significant

The results of the records searches indicate that no archaeological resources exist within the project's APE. The APE was found to be entirely developed, with visibility ranging from 0% in the paved portions of the APE to 100% near the Santa Ana River. The NAHC stated that a search of its Sacred Lands File did not yield any sacred lands or traditional cultural properties within the project area.

As described in Section 2.1.7, permanent subsurface shoring would need to be installed along the eastbound side of SR-91, east of Glassell Street, between the freeway and a 15-inch sewer line at a depth of up to 35 feet. An additional cultural resources survey of the APE was conducted by an archaeologist on October 25, 2018 in the area where the subsurface shoring is proposed, as documented in the Supplemental HPSR. The location of the proposed shoring was identified as being within the previous Canal Street Landfill, which was operated by the County of Orange from 1946 to 1958 before being capped. Because of its age, the Canal Street Landfill was identified as an archaeological site, but it was not found to be eligible for listing in the National Register of Historic Places or the California Register of Historical Resources.

There are no mitigation measures required for cultural resources; however, with implementation of avoidance and minimization measures **PF CR-1** and **PF CR-2**, which are

standard design elements on all Caltrans projects, the project would have very low potential to substantially adversely affect an archaeological resource. Therefore, with implementation of avoidance and minimization measures **PF CR-1** and **PF CR-2**, impacts on archaeological resources would be considered less than significant.

c) Less than Significant with Mitigation Incorporated

As detailed in Chapter 2, Section 2.2.4, construction of the Build Alternative (Preferred Alternative) may impact paleontological resources where excavations will disturb the Fernando Formation (at the surface and at depth) or Pleistocene-age alluvial deposits at depth (i.e., excavations that will extend greater than 10 feet below existing grades at locations mapped as alluvial fan deposits or alluvial wash deposits). The project components most likely to include earthwork that will extend 10 feet deep or more include installation of permanent subsurface shoring, bridge support columns or structures, box culverts, retaining walls, and underground utilities. Additionally, widening of the southern portion of the eastbound SR-91 to SR-55 connector may require excavations into the Fernando Formation at the surface. All other project components, as currently proposed, are not anticipated to adversely impact paleontological resources.

Development and implementation of a Paleontological Mitigation Plan is necessary for the Build Alternative (Preferred Alternative), as outlined in measure **PAL-1**, if any should be encountered during construction. Therefore, the impact would be less than significant with the incorporation of mitigation measure **PAL-1**.

d) No Impact

No human remains have been previously identified in the project APE either through the records search or through the pedestrian archaeological survey conducted for the project. In addition, standard Caltrans design features **PF CR-1** and **PF CR-2** would be included in the project in the event that any inadvertent discoveries are encountered and would thus avoid or minimize any potential impacts on inadvertent discoveries.

3.2.6 Geology and Soils

Would the project:	Significant and Unavoidable Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

CEQA SIGNIFICANCE DETERMINATIONS FOR GEOLOGY AND SOILS

The potential for the proposed project to impact geology and soils was assessed in Section 2.2.3, Geology/Soils/Seismic/Topography, of this IS/EA. The following discussion is based on that analysis.

a. i) No Impact

The project segment of SR-91 is not in an Alquist-Priolo Earthquake Fault Zone, and there are no known active or potentially active faults mapped as crossing or in the immediate vicinity of SR-91. Because the project segment of SR-91 is not crossed by a known fault and is not in an Alquist-Priolo Earthquake Fault Zone, the improvements in the Build Alternative (Preferred Alternative) are not expected to be exposed to effects associated with fault displacement and

ground rupture. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required.

a. ii) and iii) Less than Significant

The principal seismic hazard in this area is ground shaking resulting from local and distant earthquakes occurring along one of several major active or potentially active faults in southern California that could damage the transit facilities and structures. The distance of these faults from the project area is summarized in Table 2.2.3-1, Fault Data. Moderate to severe seismic shaking is likely to occur in the project area during the life of the improvements provided by the Build Alternative (Preferred Alternative). As a result, the Build Alternative (Preferred Alternative) would be subject to effects associated with seismic shaking that could damage bridges, ramps, other structures, or road surfaces. Design and construction of the Build Alternative (Preferred Alternative) consistent with Caltrans' *Highway Design Manual* (HDM), other required standards, and recommendations from the *Final Geotechnical Design Report*, as required in measure **GEO-1** provided in Section 2.2.3, would avoid and/or minimize the potential for seismic damage to the project facilities. Impacts would be considered less than significant.

a. iv) No Impact

Because there are no mapped landslides within or in the vicinity of the project segment of SR-91, no permanent effects on the Build Alternative (Preferred Alternative) related to landslides are expected. Fill used in the construction of the Build Alternative (Preferred Alternative) would be constructed to appropriate standards for fill in highway facilities, which would reduce the potential for slumping or failure of those areas. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required.

b) Less than Significant

Construction of the Build Alternative (Preferred Alternative) may temporarily disturb soil outside the footprint of the road and structures but within the freeway ROWs, primarily in the trample zone around work areas, heavy equipment traffic areas, and material laydown areas. Construction activities in temporary construction easements (TCEs) and staging areas outside the freeway ROW would temporarily disturb soils in those areas. Excavated soil in construction areas would be exposed, resulting in increased potential for soil erosion during construction compared to existing conditions. During a storm event, soil erosion could occur at an accelerated rate. The anticipated total area disturbed during construction would be 49.2 acres. In addition, the surficial and mostly sandy soils within the project limits are susceptible to gullying, piping, and accelerated erosion on steep slopes. The embankment side slopes within the project limits were graded at an inclination of 2H:1V and covered with sparse to moderate vegetation. Erosion of the existing slope faces was observed to be minimal. As part of GEO-1, prompt revegetation of graded slopes within the project footprint would be performed to minimize erosion, and runoff would be diverted from the slope face using earthen berms and/or concrete swales at the top of slope.

During all project construction activities, the construction contractor would be required to adhere to the requirements of the General Construction Permit and to implement erosion and sediment control best management practices (BMPs) specifically identified in the project Storm Water Pollution Prevention Plan to keep sediment from moving off site into receiving waters and impacting water quality in those waters. Erosion impacts related to water quality are specifically evaluated in Section 2.2.2, Water Quality and Storm Water Runoff, in this IS/EA.

Implementation of Caltrans SSPs 13-1.01D(2) and SSP 13-1.01, also described in Section 2.2.2 as measures **PF WQ-1, PF WQ-2,** and **PF WQ-2**, would minimize impacts during construction and operation of the Build Alternative (Preferred Alternative) related to erosion. Impacts would be considered less than significant.

c) Less than Significant

The project area along the Santa Ana River has the potential for liquefaction. The Santa Ana River Bridge structure would be revised as part of the proposed project. Liquefaction could potentially occur at the western abutment of this bridge. Although geotechnical analysis shows the presence of potentially liquefiable soil pockets, they are localized and not continuous across the project site. The maximum liquefaction-induced (seismic) settlement would be less than 3 inches. The magnitude of seismic settlement would induce downdrag forces on the piles. The seismic stability of the abutment end slopes would not be considered to be a design issue. Furthermore, design and construction of the project improvements would be consistent with the Caltrans HDM and other required standards and recommendations from the *Final Geotechnical Design Repor*t (such as the use of piles, and removal and recompaction of low-density, near-surface soils as required in avoidance and minimization measure **GEO-1**). This would substantially reduce the potential effects of liquefaction, lateral spreading, and seismic settlement on the Santa Ana River Bridge as a result of the Build Alternative (Preferred Alternative). Impacts would be considered less than significant.

d) Less than Significant

Some soils in the project limits may be compressible and/or expansive. Removal and treatment of those types of soils would be recommended in the *Final Geotechnical Design Repor*t (required in avoidance and minimization measure **GEO-1**) and would substantially reduce this impacts to a less-than-significant level.

e) No Impact

The Build Alternative (Preferred Alternative) would not use septic tanks or alternative methods for disposal of wastewater into subsurface soils, and would not connect to existing public wastewater infrastructure. Therefore, the Build Alternative (Preferred Alternative) would not result in impacts related to septic tanks or alternative wastewater disposal methods. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required.

3.2.7 Greenhouse Gas Emissions

Would the project:	Significant and Unavoidable Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Caltrans has used the best available information based to the extent possible on scientific and factual information, to describe, calculate, or estimate the amount of greenhouse gas (GHG) emissions that may occur related to this project. The analysis included in the climate change section of this document (see Section 3.3 below) provides the public and decision-makers as much information about the project as possible. It is Caltrans' determination that in the absence of statewide-adopted thresholds or GHG emissions limits, it is too speculative to make a significance determination regarding an individual project's direct and indirect impacts with respect to global climate change. Caltrans remains committed to implementing measures to reduce the potential effects of the project. These measures are outlined in the climate change section that follows the CEQA checklist and related discussions.			
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				

3.2.8 Hazards and Hazardous Materials

Would the project:	Significant and Unavoidable Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

CEQA Significance Determinations for Hazards and Hazardous Materials

The potential for the proposed project to hazards and hazardous materials was assessed in Section 2.2.5, Hazardous Waste/Materials, of this IS/EA. The following discussion is based on that analysis.

a) Less than Significant

Construction of the proposed project would involve routine handling of hazardous materials such as fuel, solvents, paints, oils, and grease. However, such handling must be compliant with applicable federal and State regulations and Caltrans policies regarding the use, storage, handling, disposal, and transport of those materials. Although small amounts of solvents, paints, oils, grease, and grease would be transported, used, and disposed of during the construction phase, these materials are typically used in construction projects and would not represent the transport, use, and disposal of acutely hazardous materials. Furthermore, no hazardous materials would be used or stored on site during normal project operations. Impacts would be less than significant.

b) Less than Significant

One former landfill facility: A permanent easement and a TCE would be required at DBW Metals Recycling; SA Recycling (formerly Canal Street Landfill, Orange County Steel Salvage, Remedy Environmental Services, LLC., Adams Steel and Adams International Metals) at 3200/3400 East Frontera Street, which was identified in the ISA as having the potential to affect soil and/or groundwater in one larger parcel (APNs 360-071-14, 360-071-28 and 360-071-24). Due to historic and current uses of the aforementioned parcels, there is a potential risk of hazardous waste exposure during construction activities. A Phase II Site Investigation was initiated in January 2020 to assess the presence of contaminants in soil and groundwater prior to construction activities. No groundwater was encountered; therefore, groundwater monitoring was not conducted. Landfill materials were observed between 4.5 and 15.5 feet below ground surface in four of the five borings. Soil analytical results found that soluble lead concentrations that exceed California hazardous waste levels were present in the landfill material. Concentrations of diesel-range and oil-range total petroleum hydrocarbons, volatile organic compounds, and dioxins/furans were also present in the landfill material. However, the levels of these contaminants were far below the level for classification as hazardous waste. A sample from one boring also found polychlorinated biphenyl (PCB) concentrations that exceeded California hazardous waste levels. In accordance with measure **HAZ-1**, the soil within the landfill material would be excavated during the construction phase and disposed of at a Class I landfill facility. While the soil within the upper four feet of the site was not classified as hazardous, it will not be reused due to the presence of PCBs, dioxins/furans, and debris. Therefore, this non-hazardous soil will be disposed of at a Class II or III landfill. Additionally, as required by **HAZ-7**, the SR-91 roadway area adjacent to these parcels is recommended for further drilling and sampling during the design phase for verification. With implementation of measures **HAZ-1**, **HAZ-2**, and **HAZ-7** impacts would be less than significant.

Due to the age of the SR-91, SR-57, and the SR-91/SR-55 interchange, there is a potential for ADL to exist within these areas. Soil sampling for the presence of ADL should be performed in unpaved locations that were not already tested in the Phase II Site Investigation (3200/3400 East Frontera Street [APNs 360-071-14, 360-071-28, and 360-071-24]) prior to construction activities. Implementation of avoidance and minimization measures **HAZ-1** and **HAZ-2** would require that soils contaminated with ADL be handled, treated, and disposed of properly. As a result, the proposed project would not result in significant impacts related to ADL exposure to construction personnel and the surrounding environment. Impacts relating to ADL soils would be less than significant with implementation of measures **HAZ-1** and **HAZ-2**.

Yellow traffic striping and pavement-marking materials (paint, thermoplastic, permanent tape, and temporary tape) removed during construction could impact construction workers and the surrounding environment as these materials may potentially contain hazardous levels of lead

chromate. Avoidance and minimization measure **PF HAZ-3** specifically requires the construction contractor to test, remove, and properly dispose of yellow traffic striping and pavement marking materials in accordance with Caltrans' *Construction Manual*, Chapter 7, Section 7-106, Environmental Hazards and Safety Procedures. Implementation of measure **PF HAZ-3** would reduce potential impacts to a less-than-significant level.

Based on the construction dates of bridges within the proposed project footprint, ACMs and LBP may be present in bridge structures proposed to be demolished or modified as part of the project implementation. ACMs represent a concern when they are subject to damage that results in the release of fibers. Avoidance and minimization measures **HAZ-4** and **HAZ-5** specifically requires proper testing, removal, and disposal of ACMs and LBP. Implementation of these avoidance and minimization measures would reduce potential impacts to a less-than-significant level.

Although not anticipated in areas other than what is described above, should affected soil (as evidenced by staining and/or odors) be encountered during construction activities, implementation of measure **PF HAZ-6** would be required.

c) Less than Significant

Implementation of the proposed project would not create any impacts associated with hazardous emissions or handling of acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school. As the project site covers a distance of approximately 5.6 miles and travels through the cities of Anaheim, Fullerton, Orange, and Placentia, it is expected that multiple schools would be located 0.25 mile from the project footprint. However, as described in threshold a), materials used in construction do not include acutely hazardous materials. Additionally, implementation of avoidance and minimization measures **HAZ-1** through **PF HAZ-8** would reduce potential impacts related to handling of hazardous materials mentioned under threshold b). Impacts would be considered less than significant.

d) Less than Significant

As mentioned under threshold b), a larger parcel made up of APNs 360-071-14, 360-071-28 and 360-071-24 are to be used by the project as a permanent easement/TCE and are located within a former landfill site. Due to historic and current land uses associated with these parcels, there is a potential risk of exposure to contaminated media during construction activities. A Phase II Site Investigation was initiated in January 2020, during the Project Approval and Environmental Document (PA&ED) phase. As described under threshold b), materials exceeding California hazardous waste thresholds were discovered at the former landfill site. The soil within the landfill material would be excavated during the construction phase and disposed of at a Class I landfill facility. In accordance with measure **HAZ-1**, the contaminated landfill material will be excavated during the construction phase and disposed of at a Class I landfill facility. While the soil within the upper four feet of the site was not classified as hazardous, it will not be reused due to the presence of PCBs, dioxins/furans, and debris. Therefore, this non-hazardous soil will be disposed of at a Class II or III landfill. Per measure **HAZ-2**, the RWQCB and Orange County Lead Enforcement Agency (LEA) shall be notified prior to beginning work within the area associated with the former landfill (APNs 360-071-14, 360-071-28, and 360-071-24). Impacts would be less than significant with the implementation of measures **HAZ-1** and **HAZ-2**.

e) and f) No impact

There are no public or private airports within 2 miles or within the vicinity of the project. The closest airport is the Fullerton Municipal Airport, located approximately 4.75 miles to the northwest of the project site. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required.

g) Less than Significant

The project does not include any characteristics (e.g., permanent road closures, long-term blocking of road access) that would physically impair or otherwise interfere with emergency response or evacuation in the project vicinity. All large construction vehicles entering and exiting the site would be guided by the use of personnel using signs and flags to direct traffic.

As discussed below in Section 3.2.16, Transportation/Traffic, during construction, temporary reductions in capacity could increase response times of emergency responders. However, with the implementation of avoidance and minimization measure **PF T-1**, which would require advance communication about incident management and public information, impacts related to emergency access would be less than significant. Following construction, long-term operations would improve roadway operations, and the reduced travel time is expected to improve emergency response time in the study area. Impacts would be considered less than significant; therefore, no avoidance, minimization, or mitigation measures are required.

h) No impact

There are no wildlands adjacent to or intermixed with the project. The project exists within fully developed portions of Anaheim, Fullerton, Orange, and Placentia. Furthermore, the project is not located within a CAL FIRE Fire Hazard Severity Zone (CAL FIRE 2011). No impact would occur; therefore, no avoidance, minimization, or mitigation measures are required.

3.2.9 Hydrology and Water Quality

Would the project:	Significant and Unavoidable Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f) Otherwise substantially degrade water quality?	☐	☐	☒	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☒	☐
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j) Inundation by seiche, tsunami, or mudflow	☐	☐	☐	☒

CEQA Significance Determinations for Hydrology and Water Quality

The potential for the proposed project to impact hydrology and water quality was assessed in Section 2.2.1, Hydrology and Floodplains, and Section 2.2.2, Water Quality and Stormwater Runoff, of this IS/EA. The following discussion is based on that analysis.

a) Less than Significant

The total disturbed area under the proposed project would be 49.2 acres. During construction activities sediment, metals, trash, petroleum products, concrete waste (dry and wet), sanitary waste, and chemicals may be spilled or leaked with potential for those pollutants of concern to be transported via storm runoff into receiving waters. The proposed project would implement temporary construction site BMPs to address the potential effects of sediment runoff while constructing the project, consistent with Caltrans' *Construction Manual* (2017). These BMPs would be documented in the SWPPP in compliance with the Construction General Permit. At a minimum, they would include soil stabilization, sediment control, wind erosion control, stormwater and non-stormwater treatment BMPs, and waste management and materials pollution controls. In addition, Caltrans SSP 13-1.01D(2) (measure **PF WQ-1)** requires the proposed project to comply with the provisions of the NPDES Construction General Permit. Furthermore, SSP 13-1.01 (measure **PF WQ-2)** requires the design, implementation, and maintenance of construction BMPs that would address the potential effects of soil erosion and pollutants of concern on receiving waters. With inclusion of SSPs 13-1.01D(2) and 13-1.01 (avoidance and minimization measures **PF WQ-1** and **PF WQ-2**, respectively), no short-term water quality impacts are anticipated during construction of the proposed project.

The proposed project would result in permanent increase in impervious surface area by approximately 16.2 acres compared to the existing freeway facility. This would increase the amount of runoff from SR-91 within the proposed project limits, which would more effectively transport pollutants to receiving waters. Pollutants in runoff from the widened roadway would include sediment, oils and grease, and metals, similar to the contaminants from the existing SR-91 operation. The introduction of substantial amounts of additional pollutants in stormwater runoff could contribute to a violation of water quality standards. However, the proposed project would include design pollution prevention BMPs as part of the project features to be consistent with Caltrans' *Project Planning and Design Guide* (2016). These would include preservation of existing vegetation and slope/surface protection systems—such as benching/terracing, slope rounding, and reducing gradients of slopes. The proposed project would also include treatment controls BMPs to remove pollutants from runoff prior to discharging off site. Based on compliance with these Caltrans requirements, as shown in the project features and standardized measures **PF WQ-3** (SSP 13-3.01A) and **PF WQ-4**, no adverse water quality impacts are anticipated during operation of the proposed project.

b) Less than Significant

Dewatering is not anticipated during construction of the proposed project because excavations are not expected to exceed 35 feet in depth. In the event that groundwater and any other non-stormwater dewatering activities are necessary, these activities are subject to the requirements of the Regional Board Dewatering Permit (Order No. R8-2015-0004 [NPDES No. CAG998001]). A separate permit would be required if dewatering is necessary. Therefore, it is not anticipated that surface water would be impacted during construction

activities as a result of site dewatering, as long as any potential groundwater discharged meets the RWQCB dewatering permit. Impacts are considered less than significant, and no mitigation is required.

c) and d) Less than Significant

The proposed project would not change the existing drainage patterns. The primary concentration of flow would remain in the local storm drain and outlet into Carbon Creek Channel, Carbon Canyon Diversion Channel, or Santa Ana River Reach 2 during and after construction. A small increase in flow rates and discharge volumes when compared to the existing condition is anticipated. The addition of new impervious area (16 acres, or 0.03 square miles) is anticipated to increase runoff marginally at the individual onsite storm drains. Regionally, the Santa Ana River Hydrology assumed a fully developed condition and therefore already accounts for these improvements in the channel design (Caltrans 2017). Furthermore, erosion during project construction and operation would be addressed through compliance with the applicable NPDES permit and SSPs 13-1.01D(2) and 13-3.01A (avoidance and minimization measures **PF WQ-1** and **PF WQ-5**, respectively). Therefore, the proposed project would not include drainage modifications that would result in substantial erosion, siltation, or flooding on or off the project site. Impacts are considered less than significant with implementation of measures **PF WQ-1** and **PF WQ-5**.

e) Less than Significant

The proposed project would modify an existing transportation facility and would increase the total impervious surface area by 16.2 acres, as noted above under threshold a). This would increase peak storm flows such that they could impact downstream drainage facilities. However, through compliance with the requirements of the Caltrans NPDES permit, as ensured by SSP 13-3.01A (measure **PF WQ-5**), the proposed project would minimize any incremental pollutant loading associated with the increased impervious surface areas. Impacts would be considered less than significant with implementation of measure **PF WQ-5**.

f) Less than Significant

As discussed above, runoff associated with the proposed project would be treated to remove pollutants of concern as required in measure **PF WQ-5** in Section 2.2.2 in the IS/EA. In addition, refer to thresholds a) and e) above. No substantial degradation to water quality would occur as a result of the proposed project. Impacts would be considered less than significant with implementation of measure **PF WQ-5**.

g) No Impact

According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) (Nos. 06059C0132J, 06059C0151J, and 06059C0152J), the three floodplains in the project area are the Santa Ana River, the Santa Ana River Groundwater Recharge Basins, and the Carbon Canyon Diversion Channel. The Build Alternative (Preferred Alternative) does not propose the construction of housing in a 100-year flood hazard area. Therefore, the Build Alternative (Preferred Alternative) would not result in any impacts related to the placement of housing in the 100-year floodplain.

h) Less than Significant

The Build Alternative (Preferred Alternative) would result in a 0.03-foot change in the water surface elevation and base flood elevation for the Santa Ana River, resulting in minimal change to base flood flow volumes and rates. There would be no change in water surface elevation and base flood elevation for the Carbon Canyon Diversion Channel. The floodplains for the channel and river would remain within the lining with operation of the proposed project. The proposed improvements were classified as minimal risk and would not have an adverse impact on the Santa Ana River or Carbon Canyon Diversion Channel or increase the potential for road flooding at these locations. Therefore, the proposed project would not expose people or structures to a significant risk of loss, injury, or death involving flooding. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required.

i) Less than Significant

The Santa Ana River is an extensive system of dams, levees, and other components, which provides flood protection to Orange County along the length of the Santa Ana River. Seven Oaks Dam and Prado Dam ultimately discharge to the Santa Ana River. In the event one or both of those dams failed, the water in the reservoirs behind those dams would be released to the Santa Ana River. The release of that large a volume of water could result in flooding in low-lying areas in central and coastal Orange County. The proposed project would not result in adverse impacts on the floodplains crossed by the Build Alternative (Preferred Alternative) or significantly reduce available freeboard capacity. As a result, the proposed project would not expose people or structures to a significant risk of loss, injury, or death as a result of flooding. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required.

j) No Impact

The proposed project would not be located in an area at risk for tsunami inundation (Department of Conservation 2017). The nearest enclosed body of water to the project segment are the OCWD recharge facilities 0.10 mile to the northeast. However, any overflow would discharge into the Santa Ana River or away from the project site. Furthermore, these basins and the Santa Ana River are interconnected via transfer tubes, so that excess water collected in one basin can be transferred into another and eventually into the Santa Ana River. Therefore, there is no anticipated risk of inundation from a seiche under the Build Alternative (Preferred Alternative).

Mudflows occur when soil is saturated and flows downhill. There are no hills adjacent to or in the vicinity of the proposed project. As a result, there is no anticipated risk to the Build Alternative (Preferred Alternative) as a result of a mudflow. No impacts are anticipated.

3.2.10 Land Use and Planning

Would the project:	Significant and Unavoidable Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☒	☐
b)Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☒	☐

CEQA SIGNIFICANCE DETERMINATIONS FOR LAND USE AND PLANNING

The potential for the proposed project to affect land use and planning was assessed in Section 2.1.1, Land Use, of this IS/EA. The following discussion is based on that analysis.

a) Less than Significant

As detailed in Chapter 2, Sections 2.1.1 and 2.1.3, the proposed project would not divide an established community. The Build Alternative (Preferred Alternative) would not directly or indirectly introduce any permanent adverse effects on community cohesion because improvements would be made to an existing transportation facility and would not result directly in the construction of any new housing or business facilities and would not introduce any new facilities that would divide existing communities.

The Build Alternative (Preferred Alternative) would mostly be constructed within existing Caltrans ROW; however, partial permanent acquisitions and permanent easements would be required at six larger parcels, made up of nine APNs along the project corridor, totaling approximately 0.48 acre. These would be partial fee acquisitions and permanent easements on six larger parcels, including two industrial parcels, two vacant parcels, one commercial parcel, and undeveloped land from a single-family residential parcel, all of which are adjacent to the existing Caltrans ROW limits. The Build Alternative (Preferred Alternative) would result in the conversion of a very small percentage of the existing land use within the study area and would not result in indirect impacts on land use patterns. Some existing landscaping and one parking space would be converted.

Construction activities associated with the Build Alternative (Preferred Alternative) would result in temporary, short-term effects on community character. Road detours, ramp closures, and access restrictions due to construction activities could result in traffic delays and inconveniences to drivers, bicyclists, or pedestrians who live in, commute through, or access the study area. Long-term ramp closures are not anticipated, and, when possible, ramp closures would occur at night

and re-open to commuter traffic in the morning. Weekend closures would most likely be the longest full ramp closures. Implementation of measure **CI-1** would prevent two consecutive/adjacent off-ramps or two consecutive/adjacent on-ramps in the same direction from being closed concurrently.

Potential construction period impacts would include increased emissions, noise, and vibration as well as visual changes and utility interruptions over a period of 3.5 years. Because of the temporary and intermittent nature of these impacts, it is not expected that construction would result in major hardships to local businesses or residents such that there would be long-term impacts on community character or a sense of belonging. Changes to parking accessibility would occur at the commercial lot adjacent to the Tustin Avenue on-ramp for eastbound SR-91. However, vehicle access would not be restricted, and vehicles of all sizes (including semi-trucks) would still be able to maneuver into, within, and out of the commercial lot.

Avoidance and minimization measures **LU-1** and **LU-2** would be implemented to address the proposed project's temporary construction impacts related to land use conflicts. Avoidance and minimization measure **CI-1** and **PF T-1** would be implemented to minimize temporary traffic impacts and reduce impacts related to temporary ramp closures. SSP 7-1.03 (**CI-2**) would also be implemented to ensure access to businesses is maintained. Implementation of SSP 14-9.02 (measure **PF AQ-2**) and SSP Section 10-5 (measures **PF AQ-1** and **PF AQ-2**)**,** which are standard measures on Caltrans projects, would minimize temporary air quality impacts. Furthermore, implementation of Caltrans' SSP 14-8.02 (measure **PF NOI-1**) would address temporary noise impacts during construction. With implementation of these avoidance and minimization measures, temporary construction impacts would be considered less than significant.

b) No Impact

The proposed project is generally consistent with local plans, as long as efforts to minimize effects are included in the project plans. The Build Alternative (Preferred Alternative) would improve capacity and reduce congestion along this segment of SR-91 and would serve as a benefit to the surrounding communities and future land use goals.

The design concept and scope of the proposed project are consistent with the 2016–2040 RTP/SCS and 2019 FTIP and are intended to meet the traffic needs in the area based on local land use plans. The proposed project would be designed in compliance with the requirements of the M2 Ordinance and is consistent with OCTA's 2014 LRTP and M2020 Plan. Thus, the Build Alternative (Preferred Alternative) is consistent with the regional and federal transportation plans.

In addition, the Build Alternative (Preferred Alternative) would be consistent with the applicable goals, policies, and objectives contained in the General Plans of the cities of Anaheim, Orange, Fullerton, and Placentia. Therefore, there is no impact because the project does not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project.

c) Less than Significant

Orange County's Natural Community Conservation Plan (NCCP)/Habitat Conservation Plan (HCP) is a comprehensive, multi-jurisdictional habitat conservation plan focusing on conservation of species and their associated habitats in Orange County. The proposed project is partially located within the NCCP/HCP's Central Subregion, but is not within the reserve

system, within any special linkages, within designated open space, or within any conservation areas. Furthermore, it would not impact any of the three target species, CSS, or the other four covered habitat types. As such, the project is expected to be in full compliance with the NCCP/HCP, and thus will not be discussed further in this report.

The M2 NCCP/HCP was created to streamline the permitting for take authorization of covered species that are regulated by the USFWS and CDFW for the construction of 13 covered freeway segments that are proposed for improvements. A portion of the M2 funding was set aside to provide mitigation under the M2 NCCP/HCP. OCTA acquired five preserves totaling nearly 900 acres of natural habitat, in which it has 11 habitat restoration projects planned, with at least one more preserve totaling a minimum of 250 acres planned for future acquisition. The project is a covered project under the M2 NCCP/HCP. It is Segment 2 of Project I. Therefore, the project must abide by the conditions of the M2 NCCP/HCP where applicable to environmental impacts.

Under the M2 NCCP/HCP any permanent impacts on coastal sage scrub habitat would be mitigated off-site through preapproved mitigation at the predesignated restoration sites throughout the county, and temporarily affected areas, under avoidance and minimization measure **BIO-10,** would be revegetated with native sage scrub vegetation.

Western pond turtle is a covered species under the M2 NCCP/HCP, and the NCCP/HCP requires focused turtle surveys whenever there is ground disturbance in or near aquatic habitat. However, the aquatic habitat that is present in the BSA is not suitable to support this species, and focused surveys were determined to not be necessary.

There would be a less-than-significant impact because the project would not conflict with these habitat conservation plans and measure **BIO-10** would avoid or minimize any potential conflicts with M2 NCCP/HCP in regards to preapproved mitigation sites.

3.2.11 Mineral Resources

Would the project:	Significant and Unavoidable Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

CEQA Significance Determinations for Mineral Resources

The potential for the proposed project to impact mineral resources was assessed in Section 2.2.3, Geology, of this IS/EA. The following discussion is based on that analysis.

a and b) No Impact

The proposed project would be located in predominantly developed land. Within the project area, no mineral extraction activities occur. In accordance with the California Surface and Mining Reclamation Act of 1975, the California Department of Conservation, State Mining and Geology Board has identified the project area as being located in a Mineral Resource Zone 2 (MRZ-2) generally north of the SR-91/SR-55 interchange and a Mineral Resource Zone 3 (MRZ-3) generally south of the interchange. Land designated as MRZ-2 is defined as having adequate information that indicates significant mineral deposits are present or a high likelihood exists for their presence. Land designated as MRZ-3 is defined as containing mineral deposits the significance of which cannot be evaluated from available data. Within the City of Anaheim, the City's General Plan identifies three subareas within its MRZ-2 land as "sectors," each of which are identified as containing mineral resources of regional significance. Of these sectors, Sector F is located within the project area, specifically adjacent to north of where Tustin Avenue overpasses SR-91. Sector F includes aggregate sand and gravel deposits in the Warner Basin located near the intersection of La Palma Avenue and Tustin Avenue. However, the Sector F site is developed with commercial and office uses, and its practical value to provide mineral resources is somewhat limited. Therefore, implementation of the proposed project would not significantly impact mineral resources in the MRZ-2 area or the Sector F site designated as regionally significant. No impacts are anticipated; therefore, no mitigation is required.

3.2.12 Noise

Would the project result in:	Significant and Unavoidable Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

CEQA Significance Determinations for Noise

The potential for the proposed project to affect noise was assessed in Section 2.2.7 of this IS/EA. The discussion below is based on that analysis.

a) Less than Significant

Residential Locations

As discussed in Chapter 2, Section 2.2.7, *Noise*, the noise level at residential sites (Activity Category B) under existing conditions ranges from 52.0 to 74.2 A-weighted decibels, equivalent sound level (dBA L_{eq}). Noise levels under design-year build conditions would range from 52.5 to 82.8 dBA L_{eq}. The change under the design-year build condition relative to existing conditions would range from a 3.0-decibel (dB) decrease to a 15.3-dB increase. Nineteen modeled locations would experience a 12.0-dB or greater increase under the design-year build condition relative to existing conditions. These increases would be associated with demolition of existing soundwalls, which would be replaced by noise barriers S-103 and S-403, and abatement under the requirements of 23 Code of Federal Regulations (CFR) 772, which is discussed in Section 2.2.7. Two other walls (S-223 and S-520) would be demolished as part of the project and have been remodeled for inclusion as part of the project; however, the demolition of these walls would not result in noise levels at any modeled receivers increasing by more than 10.3 dB.

Caltrans generally considers an increase in noise levels of 12.0 dB, between future build conditions and existing conditions, to be significant under CEQA. However, according to the Caltrans Traffic Noise Analysis Protocol, there is no single numerical threshold that can be used on all projects. Therefore, the significance of noise impacts is determined by the Project Development Team (PDT). The PDT found that the relative increases identified in the noise study report (NSR) that exceeded 12.0 dB would not be considered substantial because noise barriers would be demolished and replaced, which would reduce the relative increases.

With feasible and reasonable noise barriers constructed (under NEPA, 23 CFR 772, requirements), the future design-year build noise-level increase relative to existing conditions at the 19 modeled receivers would be less than 1 dB. Therefore, the project would not cause impacts at any residential locations along the project corridor that would be considered significant under CEQA.

Recreational Locations

The existing noise levels at recreational/school sites (Activity Category C) range from 62.3 to 82.5 dBA L_{eq}. The predicted noise levels under design-year build conditions would range from 62.6 to 82.6 dBA L_{eq}. This 0.1-dB decrease to 1.4-dB increase between existing noise levels and the design-year build condition would be barely perceptible to the human ear. Therefore, under CEQA, no significant noise impact would occur as a result of the project, and no mitigation is required.

Outdoor Commercial Locations

The existing noise levels at outdoor commercial sites range from 65.7 to 72.4 dBA L_{eq}. The predicted noise levels under design-year build conditions would range from 65.6 to 72.8 dBA L_{eq}. The 0.1-dB decrease to a 0.4-dB increase between existing noise levels and the design-year build condition would be barely perceptible to the human ear. Therefore, under CEQA, no significant noise impact would occur as a result of the project, and no mitigation is required.

All Other Locations

Existing noise levels at all other modeled locations along the project alignment range from 53.5 to 79.2 dBA L_{eq}. Noise levels under design-year build conditions would range from 53.6 to 79.3 dBA L_{eq}. The changes under the design-year build condition relative to the existing conditions would range from a 0.7-dB decrease to a 15.2-dB increase. As discussed above, the PDT found that the relative increases identified in the NSR that exceeded 12.0 dB would not be considered substantial because noise barriers would be demolished and replaced, which would reduce the relative increases to levels below 12.0 dB. Therefore, the project would not cause significant impacts under CEQA at any other locations along the project corridor.

b) <u>Less than Significant</u>

Any groundborne noise or vibration would be limited to the construction period and short in duration. The project is anticipated to include pile driving along the alignment at some of the bridges, specifically, the bridge over the Santa Ana River, the Lakeview overcrossing, and the new connector from SR-91 to SR-57, and at several of the retaining wall locations. According to the Federal Transit Administration's *Noise and Vibration Manual*, the typical vibration level for an impact pile driver is a peak particle velocity (PPV) of 0.644 at a reference distance of 25 feet (Federal Transit Administration 2006).

Vibration dissipates at a rate of $PPV_{ref} \times (25/D)^{1.5}$, where PPV_{ref} is the reference vibration level at a distance of 25 feet (in this case 0.644 PPV) and D is the distance from the source to receiver. Based on guidance included in Caltrans' *Transportation and Construction Vibration Guidance Manual* (Caltrans 2013), the damage potential for extremely fragile buildings from transient sources is 0.12 PPV, and the threshold of perception is 0.04 PPV (for transient sources). Therefore, vibration levels from pile driving would likely be perceptible outside distances of 100 and 150 feet, respectively. It is possible that pile driving would occur within 150 feet of vibration-sensitive receivers; however, implementation of minimization measure **NOI-2** would ensure that impacts associated with construction-related vibration would not occur.

The proposed project does not involve changes that would result in noticeable increases in groundborne vibration or groundborne noise levels from use or maintenance of the roadway compared with the No-Build Alternative. Once the project is complete, impacts associated with long-term increases in groundborne noise levels from use or maintenance of the roadway would be less than significant.

c) Less than Significant

As discussed in Item (a), the change in noise levels under the design-year build condition relative to existing conditions would range from a 3.0-dB decrease to a 15.3-dB increase at noise-sensitive receptors. Caltrans generally considers an increase in noise levels of 12.0 dB, between future build and existing conditions, to be a substantial noise increase. However, according to the Caltrans *Traffic Noise Analysis Protocol*, there is no single numerical threshold that can be used on all projects. Therefore, the significance of noise impacts is determined by the PDT. The PDT found that the relative increases identified in the NSR would not be considered substantial because noise barriers would be demolished and replaced, which would reduce the relative increases.

With feasible and reasonable noise barriers constructed (under NEPA, 23 CFR 772, requirements), the future design-year build noise-level increases relative to existing conditions at the 19 modeled receivers would be less than 1 dB. The less than 1-dB increase between existing noise levels and the design-year build condition would be barely perceptible to the human ear. Therefore, under CEQA, no significant noise impact would occur as a result of the project and no mitigation is required.

d) Less than Significant

Construction of the proposed project could result in a temporary increase in ambient noise levels in the project vicinity. For the grading phase, noise associated with the use of typical construction equipment is estimated to be between 79 and 89 dBA, maximum sound level (L_{max}), at a distance of 50 feet from the active construction area. Impact pile driving is estimated to be 101 dBA L_{max}. Each piece of construction equipment operates as an individual point source, with the noise level decreasing at a rate of 6 dB per doubling of distance. To ensure that noise effects would be minimized during the construction period, construction activities would be conducted in accordance with applicable local noise standards and Caltrans provisions found in Section 14-8.02, Noise Control, of the 2018 Standard Specifications and Special Provisions (measure **PF NOI-1**). Implementation of measure **NOI-2** would also minimize noise impacts by using the new quieter longitudinally tined Groove and Grind deck specification, instead of a transversely tined texture for construction of the deck texture on the bridges and overhead ramps. Temporary ambient noise increases due to construction would be considered less than significant.

e) No Impact

The proposed project is not within two miles of any airport. In addition, no habitable structures are proposed as part of the proposed project. Therefore, no noise impacts related to air traffic would occur.

f) No Impact

The proposed project is not within the vicinity of a private airstrip. In addition, no habitable structures are proposed as part of the proposed project. Therefore, no noise impacts related to air traffic would occur.

3.2.13 Population and Housing

Would the project:	Significant and Unavoidable Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☒	☐
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☒	☐

CEQA Significance Determinations for Population and Housing

The potential for the Build Alternative (Preferred Alternative) to result in adverse impacts related to population and housing was assessed in Section 2.1.2, Growth. The potential for the Build Alternative (Preferred Alternative) to result in adverse impacts related to displacements was assessed in Section 2.1.3, *Community Impacts*. The following discussion is based on those analyses.

a) No Impact

The Build Alternative (Preferred Alternative) is not be expected to directly induce growth in the study area because no new roads or interchanges are proposed, and much of the study area is built out. It is not anticipated that the proposed project would induce land development.

In terms of indirect project-related growth, the proposed project is not growth inducing; it includes minor land use changes that would convert existing uses to transportation uses. The proposed project would not indirectly influence growth because it would accommodate existing and future plans for the project area. Because the proposed transportation improvements would accommodate existing and planned development, the proposed project would have a minor influence with respect to stimulating the location, rate, timing, or amount of growth locally or regionally. The Build Alternative (Preferred Alternative) includes capacity enhancements along an existing freeway corridor, which are intended to respond to expected demand and improve current operations. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required.

b and c) Less than Significant

The Build Alternative (Preferred Alternative) would mostly be constructed within existing Caltrans ROW; however, partial permanent acquisitions would be required at six larger parcels along the project corridor, totaling approximately 0.12 acre of partial fee acquisitions and 0.36 acre of permanent easements. These would be partial fee acquisitions and

permanent easements of six larger parcels, including two industrial parcels, two vacant parcels, one commercial parcel, and undeveloped land from a single-family residential parcel, all of which are adjacent to the existing Caltrans ROW limits. The Build Alternative (Preferred Alternative) would result in the conversion of a very small percentage of the existing land use within the study area and would not result in indirect impacts on land use patterns.

The Build Alternative (Preferred Alternative) would not require full fee acquisition of any property, nor would the relocation or displacement of households or businesses occur. The proposed project would not necessitate the relocation of any existing developments and/or people, nor would replacement housing be required. Property acquisitions will be conducted in compliance with the requirements of the Uniform Act (Public Law 91-646, 84 Statutes 1894), as specified in minimization measure **CI-4**. With implementation of measure **CI-4,** permanent impacts related to partial fee acquisitions under the Build Alternative (Preferred Alternative) would be minimized to a less-than-significant level.

3.2.14 Public Services

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	Significant and Unavoidable Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
i. Fire protection?	☐	☐	☒	☐
ii. Police protection?	☐	☐	☒	☐
iii. Schools?	☐	☐	☒	☐
iv. Parks?	☐	☐	☒	☐
v. Other public facilities?	☐	☐	☒	☐

CEQA SIGNIFICANCE DETERMINATIONS FOR PUBLIC SERVICES

The potential for the proposed project to impact public services was assessed in Section 2.1.1, Land Use, and Section 2.1.4, Utilities, of this IS/EA. The following discussion is based on those analyses.

a, i) and ii) <u>Less than Significant</u>

Fire protection and emergency medical/paramedic services in the City of Anaheim are provided by the Anaheim Fire Department. The City of Placentia is serviced by the Orange County Fire Authority, and the City of Orange is serviced by the Orange Fire Department. Police protection services in the study area are provided by the police departments in the Cities of Anaheim, Orange, and Placentia as well as the Orange County Sheriff's Department.

As described in Section 2.1.4, Community Impacts, construction of the Build Alternative (Preferred Alternative) would result in temporary impacts on traffic circulation due to road detours, ramp closures, and access restrictions. Long-term ramp closures are not anticipated, and, when possible, ramp closures would occur at night and would re-open to commuter traffic in the morning. Additionally, implementation of CI-1 would prevent two consecutive/adjacent off-ramps or two consecutive/adjacent on-ramps in the same direction to be closed concurrently. Weekend closures would most likely be the longest full ramp closures. Access, though impeded, would be maintained to all interconnecting roadways at all times via detour. These temporary impacts on traffic circulation could result in short-term effects on emergency response (fire and police) times in the vicinity of the project segment. Avoidance and minimization measure **PF T-1**, provided in Section 2.1.5, Traffic and Transportation, requires the preparation of a Traffic Management Plan (TMP) prior to construction and implementation during construction of a TMP. The TMP would specifically address requirements for

coordination with emergency service providers and accommodation of emergency travel routes and access to, through, and around active construction areas. In addition, avoidance and minimization measure **UES-2**, provided in Section 2.1.4, Community Impacts, requires the coordination of detour plans with law enforcement, fire protection, and emergency medical service providers to minimize temporary delays in emergency response times.

In the long term, the Build Alternative (Preferred Alternative) would reduce traffic congestion and result in decreased travel times on the SR-91. These improvements in traffic flow are likely to improve emergency response times on the project segment of SR-91. Therefore, operation of the Build Alternative (Preferred Alternative) would not impact the delivery of emergency services in the long term. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required.

a, iii) and iv) Less than Significant

The 10 schools within 0.5 mile of the project area are: Crescent Elementary School, Edison Elementary School, Melrose Elementary School, Nohl Canyon Elementary School, Orange Unified Pre-K SDC School, Rio Vista Elementary School, Riverdale Elementary School, Sunkist Elementary School, Sycamore Junior High School, and Valadez Middle School Academy. The 12 parks and recreation within 0.5 mile of the project area are: Anaheim Five Coves – Northern Extension, Edison Park, Eisenhower Park and Lake, Olive Hills Park, Peralta Canyon Park, Pioneer Park, Pocket Park, Rio Vista Park, Riverdale Park, Santa Ana River Lakes, Santa Ana River Trail, and Whitten Community Center/McFadden Park. The two other public facilities are: Kaiser Permanente Hospital and the Al Farouk Learning Center. During construction of the Build Alternative (Preferred Alternative), access to all schools and public and community facilities in the vicinity of the project segment of SR-91 would not be affected.

Excluding the Santa Ana River Trail, access to all schools would also not be affected. As part of the road detours, the Santa Ana River Trail would be closed for approximately 8 months during construction at SR-91 over the trail. A detour route would be provided during the closure period, and vehicular and pedestrian access to Santa Ana River Trail would be maintained at all times during construction and operation of the Build Alternative (Preferred Alternative). The 50-mile-long trail has numerous access points; therefore, there would be no impacts on accessibility to the trail. The trail would be reopened with full use after the completion of construction activities.

Roadway segments of East Santa Ana Canyon Road, Lakeview Avenue, Tustin Avenue, Kraemer Boulevard, Glassell Street, and SR-57 have been identified as potential detour routes for closures. The TMP described earlier (measure **PF T-1)** would further minimize traffic-related impacts during construction. No mitigation is required.

The Build Alternative (Preferred Alternative) would not result in direct or indirect adverse visual/aesthetic, air quality, water quality, or noise effects on schools, parks, and the other community facilities in the vicinity of the project segment of SR-91. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required.

3.2.15 Recreation

Would the project:	Significant and Unavoidable Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

CEQA SIGNIFICANCE DETERMINATIONS FOR RECREATION

The potential for the proposed project to impact recreation resources was assessed in Section 2.1.1, under Parks and Recreation. The following discussion is based on that analysis.

a) Less Than Significant

The Build Alternative (Preferred Alternative) proposes modifications to the existing SR-91. The Build Alternative (Preferred Alternative) would not result in the construction of residential or other land uses that would attract visitors to parks in the cities adjacent to the project segment or to regional parks and other recreation facilities. As a result, the Build Alternative (Preferred Alternative) would not result in increased demand for those resources and, therefore, would not contribute to substantial or accelerated deterioration of those facilities. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required. The construction of the Build Alternative (Preferred Alternative) would require the temporary closure of the SART/Bicycle Path for up to eight months. A detour would be provided for the entire duration of the closure. Impacts would be less than significant with the implementation of measures **LU-1** and **LU-2.** Measure **LU-1** states that landscaping within Caltrans right-of-way that is temporarily disturbed or removed during construction will be returned to pre-project or better conditions. Measure **LU-2** states that detours at the SART/Bicycle Path would be finalized in the Transportation Plan prior to closure of the trail/bicycle path in the project area.

b) No Impact

The Build Alternative (Preferred Alternative) does not include the construction of new recreational facilities or expansion of existing recreational facilities. Therefore, the Build Alternative (Preferred Alternative) would not result in adverse effects related to constructing new or expanded recreation facilities. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required.

3.2.16 Transportation/Traffic

Would the project:	Significant and Unavoidable Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
e) Result in inadequate emergency access?	☐	☐	☒	☐
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☒	☐

CEQA SIGNIFICANCE DETERMINATIONS FOR TRANSPORTATION/TRAFFIC

The potential for the proposed project to impact transportation and traffic was assessed in Section 2.1.5 of this IS/EA. The following discussion is based on that analysis.

a) Less than Significant

As discussed in Section 2.1.5, operation of the Build Alternative (Preferred Alternative) is expected to improve long-term performance of SR-91 within the project limits. Specifically, the Build Alternative (Preferred Alternative) overall would reduce mainline travel times, improve freeway ramp performance, improve HOV lane performance, and reduce delay at arterial intersections. Although there are instances in which metrics for some locations indicate that transportation facilities would perform less efficiently under the Build Alternative (Preferred Alternative) than under the No-Build Alternative, these instances are the exception to the Build

Alternative (Preferred Alternative)'s overall improvement within the study area. Furthermore, the additional delay or performance reduction under the Build Alternative (Preferred Alternative) at these locations would be minor. As shown in Table 2.1.1-4, the Build Alternative (Preferred Alternative) would not conflict with the SCAG 2016-2040 RTP/SCS, OCTA 2014-2019 Strategic Plan, OCTA Long Range Transportation Plan, SR-91 Implementation Plan 2017, Orange County General Plan, City of Anaheim General Plan, or other local plans. Delays are expected during the construction period, but these delays would be short-term, and would not have substantial effects on the various modes of transportation in the study area and would not conflict with applicable plans, ordinances, or policies. Impacts related to potential conflicts with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system would be less than significant.

b) Less than Significant

As shown in Table 2.1.8-29, implementation of the Build Alternative (Preferred Alternative) would result in some changes to the intersection capacity utilization performance metrics at Congestion Management Program (CMP) locations. However, the changes in performance would be minor, with two intersections (SR-91 WB ramps at State College Boulevard and SR-91 EB ramps at State College Boulevard) projected to perform at LOS C during the PM peak hour under the 2025 Build Alternative (Preferred Alternative) relative to LOS B under the 2025 No-Build Alternative. The SR-91 EB ramps at Tustin Avenue intersection would improve to LOS A for both peak hours under the 2025 Build Alternative (Preferred Alternative) relative to the LOS B under the No-Build Alternative. All other intersections at the 2025 opening year would have the same LOS under the Build Alternative (Preferred Alternative) and No-Build Alternative.

At design year 2050, one intersection (SR-91 EB ramps at Tustin Avenue) would improve to LOS A during the AM peak hour under the Build Alternative (Preferred Alternative) relative to LOS B during the AM peak hour under the No-Build Alternative. In addition, operations at the SR-57 NB ramps at Orangethorpe Avenue would slightly deteriorate under the Build Alternative (Preferred Alternative), as it would perform at LOS B during the PM peak hour under the Build Alternative (Preferred Alternative) relative to LOS A during the PM peak hour under the No-Build Alternative. All other intersections at the 2050 design year would have the same LOS under the Build Alternative (Preferred Alternative) and No-Build Alternative.

Because the project improvements would not result in substantial changes in performance at CMP locations, the Build Alternative (Preferred Alternative) would not conflict with the 2015 Orange County Congestion Management Program. Impacts would be less than significant.

c) No Impact

No changes to air traffic patterns would result from implementation of the Build Alternative (Preferred Alternative). Cranes may be required for replacement and widening of the crossing structures over SR-91, but the height of the equipment would not interfere with air traffic. No impact related to air traffic patterns would occur.

d) Less than Significant

During the construction period, the Build Alternative (Preferred Alternative) would involve construction equipment and vehicles within delineated work areas behind traffic barriers. Because construction activities would be physically separated from travel lanes, no increase in hazards are anticipated. For long-term operations, the Build Alternative (Preferred Alternative)

would not implement any hazardous design features, such as sharp curves or dangerous intersections. Impacts would be less than significant.

e) Less than Significant

During the construction period, temporary reductions in capacity could increase response times of emergency responders. However, with the implementation of avoidance and minimization measure **PF T-1**, which would require advance communication about incident management and public information, impacts related to emergency access would be less than significant. Following construction, long-term operations would improve roadway operations, and the reduced travel time is expected to improve emergency response time in the study area.

f) Less than Significant

As discussed in Section 2.1.8.3, temporary disruptions to transit, bicycle, and pedestrian facilities are expected to occur where arterial or bike path crossing structures are widened or replaced. These temporary partial or full roadway closures would result in delays to those traveling by public transit, bicycle, or on foot in these locations. However, with the implementation of avoidance and minimization measure **PF T-1**, which would involve employment of traveler information strategies and the development of detours, impacts would be less than significant. Following the construction period, long-term operations of the Build Alternative (Preferred Alternative) would not conflict with adopted, plans, policies, or programs related to public transit, bicycle, or pedestrian facilities.

3.2.17 Tribal Cultural Resources

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	Significant and Unavoidable Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☐	☒
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☒	☐

CEQA SIGNIFICANCE DETERMINATIONS FOR TRIBAL CULTURAL RESOURCES

The potential for the proposed project to impact tribal cultural resources was assessed in Section 2.1.7 in this IS/EA. The following discussion is based on that analysis.

a) No Impact

As detailed in Section 2.1.7, Cultural Resources, the proposed project has determined that a finding of no historic properties affected is appropriate for this undertaking because there are no historic properties in the APE. Additionally, there can be no impact on historical resources, as there are none located within the project footprint. Therefore, there will be no impact on a CRHR-listed resource or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k).

b) Less than Significant

The NAHC was contacted for Section 106 consultation regarding the project on November 19, 2015. The NAHC responded in a letter on December 16, 2015, stating that a search of its Sacred Lands File did not yield any sacred lands or traditional cultural properties within the project area. Of the four Native American contacts that responded to outreach efforts, only Mr. Robert Dorame of the Gabrielino Tongva Indians of California Tribal Council responded with a potentially culturally sensitive location. He stated that the areas along the Santa Ana River are sensitive and that Native American monitors should be present during construction in those areas.

Caltrans submitted a second letter for the project to the NAHC on November 20, 2017, requesting a list for Assembly Bill (AB) 52 consultation. A response from NAHC was received on November 22, 2017, that included a list of 15 Native American tribes with traditional lands or cultural places within Orange County. Caltrans responded by sending letters on November 29, 2017, to the 15 Native American tribes, inviting them to consult under AB 52 and Section 106 of the NHPA. One response was received from the Viejas Band of Kumeyaay Indians, stating that the project has little significance or ties to the tribe.

On June 25, 2018, letters were sent to the two tribes that requested archaeological and Native American monitoring. The letters stated that construction monitoring would not be conducted during project implementation because of the lack of identified cultural resources and the extensive development within the APE and adjacent areas. To date, no responses have been received. Although no archaeological sites were identified in the literature and records search or through the pedestrian survey, there is a low possibility of encountering an undiscovered resource that may have significance to a Native American tribe in the vicinity of the Santa Ana River. If such a site exists and is encountered then the standard Caltrans design features **PF CR-1** and **PF CR-2** would avoid or minimize any potential impacts.

3.2.18 Utilities and Service Systems

Would the project:	Significant and Unavoidable Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

CEQA Significance Determinations for Utilities and Service Systems

The potential for the proposed project to impact utilities and service systems was assessed in Section 2.1.4 in this IS/EA. The following discussion is based on that analysis.

a) Less than Significant

The Build Alternative (Preferred Alternative) would not generate wastewater or discharge wastewater to the area sewer system. As a result, the Build Alternative (Preferred Alternative) would not exceed wastewater treatment requirements, require or result in the construction of new wastewater treatment facilities, or result in the need for a determination by a wastewater treatment provider that it has adequate capacity to serve the project. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required.

c) Less than Significant

Refer to thresholds c), d), and e) in Section 3.2.9, Hydrology and Water Quality, above, for discussion of the existing stormwater drainage facilities that would be extended or modified to accommodate the widened freeway and modified ramp facilities under the Build Alternative (Preferred Alternative). Those modifications would not require the construction of new stormwater drain facilities or substantial increases in the capacity of the existing storm drain facilities. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required.

d) Less than Significant

The use of water during project construction would be limited to water trucked to the site for dust control. The amount of water used during construction would be minimal. The use of water during project operations would be limited to areas in which new landscaping requires short-term watering while the plant material becomes established and areas in which limited use of water for landscaping requires permanent watering. The amount of landscaping provided in the Build Alternative (Preferred Alternative) would not differ substantially from the existing amount of landscaping in the limits of SR-91 and SR-57. Therefore, the amount of water needed for landscaping would be approximately the same as the existing demand. As a result, the Build Alternative (Preferred Alternative) would not require the water districts serving the project area to provide new or expanded entitlements to meet the need for water during construction and operation of the Build Alternative (Preferred Alternative)

f) Less than Significant

During project construction, the majority of waste materials generated by project construction would be vegetation, other plant material, and some excess soils; and solid waste such as concrete, asphalt, and wood. These waste materials would be disposed of or recycled at nearby landfills. The waste collected during construction would be properly disposed of at an existing landfill or recycled. The amount of waste that would be generated during the construction of the Build Alternative (Preferred Alternative) would be limited and would occur only during the construction period. That amount of waste would be only a very small amount of the total waste disposed of or recycled at area recycling facilities and landfills, on both a daily and annual basis. Therefore, the amount of waste generated during construction of the Build Alternative (Preferred Alternative) is anticipated to be accommodated by the existing recycling and landfill facilities in Orange County.

The waste collected during operation and routine maintenance of the Build Alternative (Preferred Alternative) would be properly disposed of at an existing landfill or recycled. The amount of waste that would be generated during the operation of the Build Alternative (Preferred Alternative) would be only a very small amount of the total waste disposed of or recycled at area recycling facilities and landfills, on both a daily and annual basis. Therefore, the amount of waste generated during operation of the Build Alternative (Preferred Alternative) is anticipated to be accommodated by the existing recycling and landfill facilities in Orange County.

The amount of waste generated during construction and operation of the Build Alternative (Preferred Alternative) is anticipated to be accommodated by the existing recycling and landfill facilities in Orange County. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required

g) Less than Significant

Any hazardous waste generated during construction of the Build Alternative (Preferred Alternative), collected during normal waste collection activities, or collected as a result of an accidental release on the SR-91 and SR-57 freeways or ramp facilities would be collected, handled, transported, and disposed of consistent with applicable federal, State, regional, and local regulations. Hazardous wastes would not be comingled with green waste non-hazardous trash. No mitigation is required.

Waste materials generated during construction and operation of the Build Alternative (Preferred Alternative) would be disposed of in accordance with federal, State, and local regulations related to recycling, which would minimize the amount of waste material entering local landfills. No impacts would occur; therefore, no avoidance, minimization, or mitigation measures are required.

3.2.19 Mandatory Findings of Significance

Would the project:	Significant and Unavoidable Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☒	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

CEQA SIGNIFICANCE DETERMINATIONS FOR MANDATORY FINDINGS OF SIGNIFICANCE

a) Less than Significant

Riverine Habitat

The proposed project would affect riverine habitat in the Santa Ana River, defined as generally open perennial water associated with the river that, due to management, does not contain any substantial riparian vegetation anymore. Approximately 2.89 acres of riverine habitat would be temporarily affected and 0.01 acre of riverine habitat would be permanently affected as a result of adding another lane to SR-91. Avoidance and minimization measures **BIO-1** through BIO**-10**, including SSP Section 21 (measure **PF BIO-4**)**,** would be incorporated during the project to ensure that effects on riverine habitat remain at a less-than-significant level.

Coastal Sage Scrub

The proposed project would result in the permanent loss of up to 1.69 acres of coastal sage scrub habitat, all of which is isolated and generally of low quality. No temporary impacts are expected on this community. The proposed project is one of a series of projects that fall under OCTA's Measure M2 NCCP/HCP, and project impacts on coastal sage scrub are considered fully addressed under the M2 NCCP/HCP. In addition, implementation of avoidance and minimization measures **BIO-1**, **BIO-5**, **BIO-6**, **PF BIO-9**, and **BIO-10** would help to reduce the ultimate acreage

of impacts on this sensitive vegetation community. Impacts on coastal sage scrub habitat would be less than significant.

Invasive Species

The spread of invasive species is a realistic threat for any proposed project if invasive seeds or plant material can be transferred to areas where they are not currently present. Avoidance and minimization measures **PF BIO-9** and **BIO-10** would reduce the permanent impacts related to invasive species that are anticipated to result from construction of the Build Alternative (Preferred Alternative).

Wetlands and other Waters

Permanent direct impacts on jurisdictional and non-jurisdictional features would occur as a result of implementation of the proposed project. The project would result in permanent impacts on approximately 0.03 acre of non-wetland and < 0.01 acre of wetland USACE/RWQCB features and 0.01 acre of streambed and 0.01 acre of riparian CDFW resources. All permanent impacts would be on earthen areas, with no permanent impacts in concrete areas. Permanent impacts would generally be the result of the permanent loss of jurisdictional waters due to existing earthen features being undergrounded below the new freeway sections or, in the Santa Ana River and its associated groundwater recharge channel, of pier extensions to support the widened SR-91 bridge.

The Build Alternative (Preferred Alternative) would temporarily affect approximately 4.82 acres of non-wetland and 0.49 acre of wetland USACE/RWQCB features and 6.28 acres of streambed and 0.84 acre of riparian CDFW resources. Temporary impacts would generally be the result of equipment staging or site preparation within or adjacent to features, fugitive dust, the spread of non-native vegetation, and fluid spills. Temporary impacts may also result from relocation and/or modification of concrete channels.

The proposed project is one of a series of projects that fall under OCTA's Measure M2 NCCP/HCP. Impacts on waters are considered fully addressed under the M2 NCCP/HCP. As part of the project, avoidance measures **BIO-1** through **BIO-10** shall be implemented; impacts on wetlands would be less than significant.

b) Less than Significant

"Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

The potential for cumulative impacts is discussed in Section 2.4 of this IS/EA. Though the project would have impacts to some resources, none of these would result in cumulatively considerable effects.

c) Less than Significant

Traffic and Transportation

During project construction temporary reductions in capacity could increase response times of emergency responders. However, with the implementation of avoidance and minimization measure **PF T-1** during construction, impacts related to emergency access would be considered less than significant.

Temporary disruptions to transit, bicycle, and pedestrian facilities are expected to occur where arterial or bike path crossing structures are widened or replaced. These temporary partial or full roadway closures would result in delays to those traveling by public transit, bicycle, or on foot in these locations. However, with the implementation of avoidance and minimization measure **PF T-1**, impacts would be considered less than significant.

Visual and Aesthetics

SR-91 is an officially designated State Scenic Highway from SR-55 to the project's eastern extent. Based on the project's location within an officially designated State Scenic Highway, impacts would be potentially significant.

To reduce visual impacts on Key Views, the project would be required to comply with measures **VIS-3** through **VIS-5**. Following conformance with measures **VIS-3** through **VIS-5**, the proposed project would have less-than-significant impacts on scenic resources.

Hazardous Wastes and Materials

One former landfill facility—DBW Metals Recycling; SA Recycling (formerly Canal Street Landfill, Orange County Steel Salvage, Remedy Environmental Services, LLC., Adams Steel and Adams International Metals), 3200/3400 East Frontera Street—was identified in the ISA as having the potential to affect soil and/or groundwater in one larger parcel (APNs 360-071-14, 360-071-28 and 360-071-24) to be used by the project as a permanent easement/temporary construction easement (TCE). As previously discussed, a Phase II Site Investigation was completed in January 2020. The investigation found that contaminated landfill material was present between 4.5 feet and 15.5 feet below ground surface. However, the levels of these contaminants were far below the levels for classification as hazardous waste. In accordance with measure **HAZ-1**, the contaminated landfill material will be excavated during the construction phase and disposed of at a Class I landfill facility. While the soil within the upper four feet of the site was not classified as hazardous, it will not be reused due to the presence of PCBs, dioxins/furans, and debris. Therefore, this non-hazardous soil will be disposed of at a Class II or III landfill. Additionally, as required by **HAZ-7**, the SR-91 roadway area adjacent to these parcels is recommended for further drilling and sampling during the design phase to verify whether contamination exists beneath SR-91. With implementation of measures **HAZ-1** and **HAZ-7,** impacts would be less than significant.

Additionally, in accordance with **HAZ-2**, soil sampling for the presence of ADL will be performed in unpaved locations within the project limits prior to construction activities. Yellow traffic striping and pavement-marking materials (paint, thermoplastic, permanent tape, and temporary tape) removed during construction could impact construction workers and the surrounding environment as these materials may potentially contain hazardous levels of lead chromate. Implementation of Caltrans SSP 15-2.02C(2) (avoidance and minimization measure **PF HAZ-3**) would reduce potential impacts to a less-than-significant level.

Based on the construction dates of bridges within the proposed project footprint, ACMs and LBP may be present in bridge structures proposed to be demolished or modified as part of the project implementation. Implementation of avoidance and minimization measures **HAZ-4** and **HAZ-5** would reduce these potential impacts to a less-than-significant level.

Should affected soil (as evidenced by staining and/or odors) be encountered during construction activities, implementation of measure **PF HAZ-6** would be required.

In summary, hazardous materials encountered during construction of the Build Alternative (Preferred Alternative) would require implementation of measures **HAZ-1** through **HAZ-7** which mandates remediation in compliance with state and federal environmental regulations, thereby improving overall environmental quality. Therefore, substantial adverse effects on human beings, either directly or indirectly are not anticipated.

3.3 Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the Earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gas (GHG) emissions, particularly those generated from the production and use of fossil fuels.

Although climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization in 1988 has led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are concerned primarily with the emissions of GHGs generated by human activity, including carbon dioxide (CO_2); methane (CH_4); nitrous oxide (N_2O); tetrafluoromethane; hexafluoroethane; sulfur hexafluoride (SF_6); fluoroform (HFC-23); 1,1,1,2-tetrafluoroethane (HFC-134a); and difluoroethane (HFC-152a).

In the U.S., the main source of GHG emissions is electricity generation, followed by transportation (U.S. Environmental Protection Agency [U.S. EPA] 2014). In California, however, transportation sources, including passenger cars, light-duty trucks, and other trucks, buses, and motorcycles, are the largest contributors of GHG emissions (FHWA 2018). The dominant GHG emitted is CO_2, mostly from fossil fuel combustion.

Two terms are typically used when discussing how we address the impacts of climate change: "greenhouse gas mitigation" and "adaptation." Greenhouse gas mitigation covers the activities and policies aimed at reducing GHG emissions to limit or "mitigate" the impacts of climate change. Adaptation, on the other hand, is concerned with planning for and responding to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels).

3.3.1 Regulatory Setting

This section outlines federal and state efforts to comprehensively reduce GHG emissions from transportation sources.

FEDERAL

To date, no national standards have been established for nationwide mobile-source GHG reduction targets, nor has any regulation or legislation been enacted specifically to address climate change and GHG emissions reduction at the project level.

National Environmental Policy Act (NEPA) (42 USC Part 4332) requires federal agencies to assess the environmental effects of their proposed actions prior to making a decision on the action or project.

The Federal Highway Administration (FHWA) recognizes the threats that extreme weather, sea-level change, and other changes in environmental conditions pose to valuable transportation infrastructure and those who depend on it. FHWA therefore supports a sustainability approach that assesses vulnerability to climate risks and incorporates resilience into planning, asset management, project development and design, and operations and maintenance practices.[1]

[1] https://www.fhwa.dot.gov/environment/sustainability/resilience/

This approach encourages planning for sustainable highways by addressing climate risks while balancing environmental, economic, and social values, "the triple bottom line of sustainability."[2] Program and project elements that foster sustainability and resilience also support economic vitality and global efficiency, increase safety and mobility, enhance the environment, promote energy conservation, and improve the quality of life. Addressing these factors up front in the planning process will assist in decision-making, improve efficiency at the program level, and inform the analysis and stewardship needs of project-level decision-making.

Various efforts have been promulgated at the federal level to improve fuel economy and energy efficiency and address climate change and its associated effects.

The Energy Policy Act of 1992 (EPACT92, 102nd Congress, H.R. 776.ENR): With this act, Congress set goals, created mandates, and amended utility laws to increase clean energy use and improve overall energy efficiency in the United States. EPACT92 consists of 27 titles, detailing various measures to lessen the nation's dependence on imported energy, provide incentives for clean and renewable energy, and promote energy conservation in buildings. Title III of EPACT92 addresses alternative fuels. It gives the U.S. Department of Energy administrative power to regulate the minimum number of light-duty alternative fuel vehicles required in certain federal fleets, beginning in fiscal year 1993. The primary goal of the program is to cut petroleum use in the United States by 2.5 billion gallons per year by 2020.

Energy Policy Act of 2005 (109th Congress, H.R. 6 (2005–2006): This act sets forth an energy research and development program that covers (1) energy efficiency; (2) renewable energy; (3) oil and gas; (4) coal; (5) Indian energy; (6) nuclear matters and security; (7) vehicles and motor fuels, including ethanol; (8) hydrogen; (9) electricity; (10) energy tax incentives; (11) hydropower and geothermal energy; and (12) climate change technology.

Energy Policy and Conservation Act of 1975 (42 USC Section 6201) and Corporate Average Fuel Standards: This act establishes fuel economy standards for on-road motor vehicles sold in the United States. Compliance with federal fuel economy standards is determined through the Corporate Average Fuel Economy (CAFE) program on the basis of each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the United States.

U.S. EPA's authority to regulate GHG emissions stems from the U.S. Supreme Court decision in *Massachusetts* v. *EPA* (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing Clean Air Act and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the court's ruling, U.S. EPA finalized an endangerment finding in December 2009. Based on scientific evidence, it found that six GHGs constitute a threat to public health and welfare. Thus, it is the Supreme Court's interpretation of the existing act and U.S. EPA's assessment of the scientific evidence that form the basis for U.S. EPA's regulatory actions.

U.S. EPA, in conjunction with the National Highway Traffic Safety Administration (NHTSA), issued the first of a series of GHG emissions standards for new cars and light-duty vehicles in April 2010[3] (National Highway Traffic Safety Administration no date) and significantly increased the fuel economy of all new passenger cars and light trucks sold in the United States. The standards required these vehicles to meet an average fuel economy standard of 34.1 miles per gallon by 2016. In August 2012, the federal government adopted a second rule that increased

[2] https://www.sustainablehighways.dot.gov/overview.aspx.
[3] http://www.c2es.org/federal/executive/epa/greenhouse-gas-regulation-faq

fuel economy for passenger cars, light-duty trucks, and medium-duty passenger vehicles from model years 2017 and beyond to an average fuel economy standard of 54.5 miles per gallon by 2025. Because NHTSA cannot set standards beyond model year 2021 because of statutory obligations and the rules' long timeframe, a mid-term evaluation is included in the rule. The mid-term evaluation is the overarching process by which NHTSA, U.S. EPA, and the California Air Resources Board (ARB) will decide on CAFE and GHG emissions standard stringency for model years 2022–2025. NHTSA has not formally adopted standards for model years 2022 through 2025. However, U.S. EPA finalized its mid-term review in January 2017, affirming that the target fleet average of at least 54.5 miles per gallon by 2025 was appropriate. In March 2017, President Trump ordered U.S. EPA to reopen the review and reconsider the mileage target[4] (NBC News 2017; *Federal Register* 2017).

NHTSA and U.S. EPA issued a Final Rule for Phase 2 for medium- and heavy-duty vehicles to improve fuel efficiency and cut carbon pollution in October 2016. The agencies estimate that the standards will save up to 2 billion barrels of oil and reduce CO_2 emissions by up to 1.1 billion metric tons over the lifetimes of model year 2018–2027 vehicles.

STATE

With the passage of legislation, including senate bills, assembly bills, and executive orders, California has been innovative and proactive in addressing GHG emissions and climate change.

Assembly Bill 1493, Pavley Vehicular Emissions, Greenhouse Gases, 2002: This bill requires the California Air Resources Board (ARB) to develop and implement regulations to reduce automobile and light-truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year.

Executive Order S-3-05 (June 1, 2005): The goal of this executive order (EO) is to reduce California's GHG emissions to (1) 2000 levels by 2010, (2) 1990 levels by 2020, and (3) 80% below 1990 levels by 2050. This goal was further reinforced with the passage of Assembly Bill 32 in 2006 and Senate Bill (SB) 32 in 2016.

Assembly Bill 32 (AB 32), Chapter 488, Núñez and Pavley, the Global Warming Solutions Act of 2006: AB 32 codified the 2020 GHG emissions reduction goals outlined in Executive Order S-3-05 while further mandating that ARB create a scoping plan and implement rules to achieve real, quantifiable, and cost-effective reductions in GHGs. The legislature also intended that the statewide GHG emissions limit continue in existence and be used to maintain and continue reductions in emissions of GHGs beyond 2020 (Health and Safety Code Section 38551(b)). The law requires ARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

Executive Order S-01-07 (January 18, 2007): This order sets forth the low-carbon fuel standard (LCFS) for California. Under this executive order, the carbon intensity of California's transportation fuels is to be reduced by at least 10% by 2020. ARB re-adopted the LCFS regulation in September 2015; the changes went into effect on January 1, 2016. The program

[4] http://www.nbcnews.com/business/autos/trump-rolls-back-obama-era-fuel-economy-standards-n734256 and https://www.federalregister.gov/documents/2017/03/22/2017-05316/notice-of-intention-to-reconsider-the-final-determination-of-the-mid-term-evaluation-of-greenhouse

establishes a strong framework for promoting the low-carbon fuel adoption necessary to achieve the governor's 2030 and 2050 GHG reduction goals.

Senate Bill 97 (SB 97), Chapter 185, 2007, Greenhouse Gas Emissions: This bill required the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the CEQA Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.

Senate Bill 375 (SB 375), Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires ARB to set regional emissions reduction targets for passenger vehicles. The Metropolitan Planning Organization (MPO) for each region must then develop a Sustainable Communities Strategy (SCS) that integrates transportation, land use, and housing policies to decide how it will achieve the emissions target for its region.

Senate Bill 391 (SB 391), Chapter 585, 2009, California Transportation Plan: This bill requires the state's long-range transportation plan to meet California's climate change goals under AB 32.

Executive Order B-16-12 (March 2012) orders state entities under the direction of the governor, including ARB, the California Energy Commission, and the Public Utilities Commission, to support the rapid commercialization of zero-emission vehicles. It directs these entities to achieve various benchmarks related to zero-emission vehicles.

Executive Order B-30-15 (April 2015) establishes an interim statewide GHG emission reduction target of 40% below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80% below 1990 levels by 2050. It further orders all state agencies with jurisdiction over sources of GHG emissions to implement measures, pursuant to statutory authority, to achieve reductions in GHG emissions to meet the 2030 and 2050 GHG emissions reductions targets. It also directs ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent ($MMTCO_2e$). Finally, it requires the Natural Resources Agency to update the state's climate adaptation strategy, *Safeguarding California*, every 3 years, and ensure that its provisions are fully implemented.

Senate Bill 32 (SB 32), Chapter 249, 2016, codifies the GHG reduction targets established in Executive Order B-30-15 to achieve a mid-range goal of 40% below 1990 levels by 2030.

3.3.2 Environmental Setting

In 2006, the legislature passed the California Global Warming Solutions Act of 2006 (AB 32), which created a comprehensive, multi-year program to reduce GHG emissions in California. AB 32 required ARB to develop a scoping plan that describes the approach California will take to achieve the goal of reducing GHG emissions to 1990 levels by 2020. The scoping plan was first approved by ARB in 2008 and must be updated every 5 years. The second updated plan, California's 2017 Climate Change Scoping Plan, adopted on December 14, 2017, reflects the 2030 target established in EO B-30-15 and SB 32.

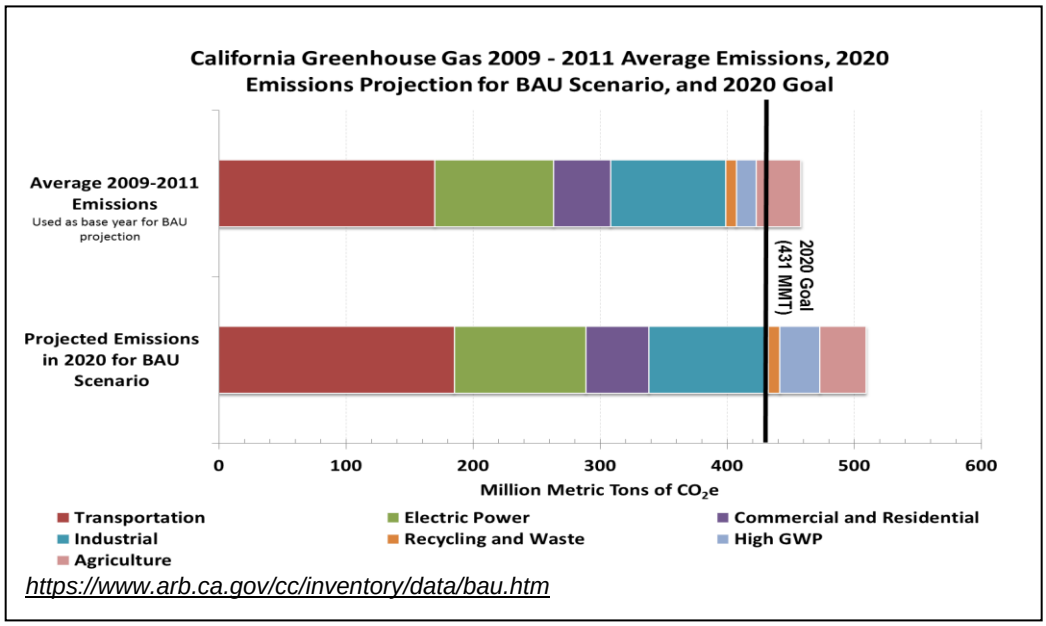
The AB 32 Scoping Plan and the subsequent updates contain the main strategies California will use to reduce GHG emissions. As part of its supporting documentation for the updated scoping

plan, ARB released the GHG inventory for California.[5] ARB is responsible for maintaining and updating California's GHG inventory per Health and Safety Code Section 39607.4. The associated forecast/projection is an estimate of the emissions anticipated to occur in 2020 if none of the foreseeable measures included in the scoping plan are implemented.

An emissions projection estimates future emissions based on current emissions, expected regulatory implementation, and technological, social, economic, and behavioral patterns. The projected 2020 emissions provided in Figure 3-1 represent a business-as-usual (BAU) scenario, assuming none of the scoping plan measures are implemented. The 2020 BAU emissions estimate assists ARB in demonstrating progress toward meeting the 2020 goal of 431 $MMTCO_2e$.[6] The 2018 edition of the GHG emissions inventory found total California emissions of 429 $MMTCO_2e$ for 2016.

The 2020 BAU emissions projection was revisited in support of the First Update to the Scoping Plan (2014). This projection accounts for updates to the economic forecasts of fuel and energy demand as well as other factors. It also accounts for the effects of the 2008 economic recession and the projected recovery. The total emissions expected in the 2020 BAU scenario include reductions anticipated from Pavley I and the Renewable Electricity Standard (30 $MMTCO_2e$ total). With these reductions in the baseline, estimated 2020 statewide BAU emissions are 509 $MMTCO_2e$.

Figure 3-1. 2020 BAU Emissions Projection, 2014 Edition



[5] The 2018 edition of the GHG Emission Inventory released July 2018. (https://www.arb.ca.gov/cc/inventory/data/data.htm).
[6] The revised target, using Global Warming Potentials (GWPs) from the IPCC Fourth Assessment Report (AR4).

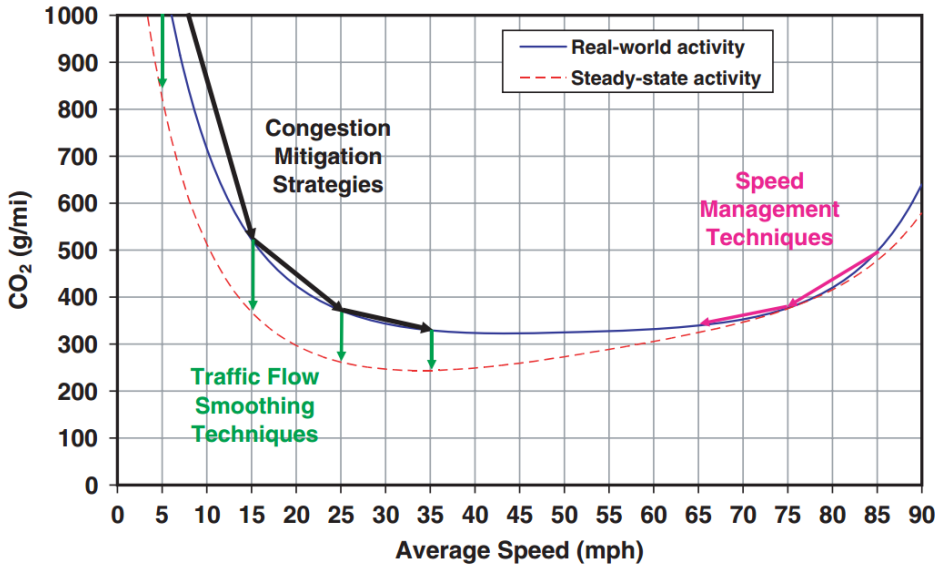
3.3.3 Project Analysis

An individual project does not generate enough GHG emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may contribute to a potential impact through its *incremental* change in emissions when combined with the contributions of all other sources of GHG.[7] In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (CEQA Guidelines Sections 15064(h)(1) and 15130). To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects to make this determination is a difficult, if not impossible, task.

GHG emissions for transportation projects can be divided into those produced during operations and those produced during construction. The following represents a good-faith effort to describe the potential GHG emissions related to the proposed project.

OPERATIONAL EMISSIONS

Figure 3-2. Possible Use of Traffic Operation Strategies in Reducing On-road CO_2 Emissions



*Source: Matthew Barth and Kanok Boriboonsomsin, University of California, Riverside, May 2010 (*http://uctc.berkeley.edu/research/papers/846.pdf*)*

Four primary strategies can reduce GHG emissions from transportation sources: (1) improving the transportation system and operational efficiencies, (2) reducing travel activity, (3) transitioning fuels with lower GHG emissions, and (4) improving vehicle technologies/efficiency. To be most effective, all four strategies should be pursued concurrently. FHWA supports these

[7] This approach is supported by the Association of Environmental Professionals (*Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents*, March 5, 2007), as well as the South Coast Air Quality Management District (The CEQA Guide, Chapter 6, April 2011), and the U.S. Forest Service (Climate Change Considerations in Project Level NEPA Analysis, July 13, 2009).

strategies to lessen climate change impacts, which correlate with efforts that the state is undertaking to reduce GHG emissions from the transportation sector.

The highest levels of CO_2 from mobile sources such as automobiles occur at stop-and-go speeds (0–25 miles per hour) and speeds over 55 miles per hour; the most severe emissions occur from 0–25 miles per hour (see Figure 3-2, above). To the extent that a project relieves congestion by enhancing operations and improving travel times in high-congestion travel corridors, GHG emissions, particularly CO_2, may be reduced.

The Southern California Association of Governments' (SCAG's) 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) includes proposed transportation improvements to be integrated and coordinated with proposed land use changes that would lead to reduced congestion, reduced vehicle miles traveled (VMT), and increased transit, walking, and biking options. The RTP/SCS includes integrated transportation and land use strategies to promote active transportation opportunities, compact development, car sharing and ride sourcing, and technology in zero-emission vehicles and neighborhood electric vehicles. The Program Environmental Impact Report for the 2016 RTP/SCS determined that across the six counties in the SCAG region, the 2016 RTP/SCS would result in an approximately 24% decrease in GHG emissions by 2040. The 2016 RTP/SCS also includes land use strategies that seek to balance the region's land use choices and transportation investments. Because the proposed project is included in the 2016 RTP/SCS (amendment #2), it would assist the region with the overall goals to reduce vehicle-related GHGs.

Table 3-1 depicts the daily vehicle hours traveled (VHT) associated with existing conditions as well as build and no-build conditions in the design year. As shown in Table 3-1, VHT would generally increase in the project area. However, the project would improve travel time in the project area by relieving congestion, as identified in Tables 2.1.5-13 through 2.1.5-15.

Table 3-1. Daily Vehicle Hours Traveled Summary

Scenario	Daily Vehicle Hours Traveled
Existing/Baseline (2016)	300,027
Opening Year (2030)	
No-Build Scenario	323,671
Build Scenario	328,138
- Net Change from No-Build to Build Scenario	4,467
- Percent Change from 2030 No-Build Scenario	1.36%
Horizon Year (2050)	
No-Build Scenario	356,777
Build Scenario	357,016
- Net Change from No-Build to Build Scenario	239
- Percent Change from 2050 No-Build Scenario	0.07%

Source: Vehicle miles traveled and vehicle hours traveled data provided by System Metrics Group, December 13, 2016.

The VMT increase in the project area (Table 3-2) assumes that the additional general purpose lanes proposed by the project would attract traffic from the surrounding area. It should be noted that the project would improve mobility, reduce congestion, and enhance operations, and would not induce additional growth in the project area.

Table 3-2 displays existing and future GHG emissions from vehicles traveling within the project area. Existing, opening-year, and horizon-year emissions in the project area were calculated

using emissions factors from the latest version of CT-EMFAC (version 6.0). Traffic data included 5-miles-per-hour VMT speed bin data and the project study area VMT for the following categories: freeway mainline, ramps, arterials, and high-occupancy vehicle (HOV) lanes. Each category contains VMT from a range of 0 to 75 mph for the AM hour, PM hour, midday period, and night period. Each VMT speed bin value was multiplied by emissions factors from CT-EMFAC and then added together to get the total. Emissions factors are in grams per day, which were converted to metric tons per year (1,000,000 grams per metric ton).

As shown in Table 3-2, the existing (2015) VMT in the study area generates 1,181,879 metric tons per year of carbon dioxide equivalent ($MTCO_2e$). GHG emissions would decrease to 786,786 $MTCO_2e$ per year under the opening-year 2030 no-build scenario and 790,566 $MTCO_2e$ under the 2030 build scenario. VMT continues to increase in horizon-year 2050, but CO_2e decreases relative to both existing and 2030 conditions.

As with the VMT data, CO_2e emissions would generally increase in the project area relative to the no-build scenario in both 2030 and 2050. However, the increase in the study area would be less than 1%. The emissions increase in the project area assumes that the additional general purpose lanes proposed by the project would attract traffic from the surrounding area. Additional traffic would also be generated given projections for 2010 to 2035 that population and employment in the study area will grow 12 percent and 17 percent, respectively.

Although VMT would increase under build conditions, CO_2e emissions would decrease compared with existing conditions due primarily to the retirement of older, less efficient vehicles over time and replacement with newer, more efficient vehicles. In addition, the project would improve mobility, reduce congestion, and enhance operations in the project vicinity; however, the project would not induce additional growth in the area. All of these outcomes would help reduce CO_2e emissions. The proposed project would not be growth-inducing because it would include minor land use changes that would convert existing uses to transportation uses. The proposed project would not influence growth because it would accommodate existing and future plans for the project area. Therefore, the proposed project would have a minor influence with respect to stimulating the location, rate, timing, or amount of growth locally or regionally. The proposed project would include capacity enhancements along an existing freeway corridor that are intended to respond to expected demand and improve current operations.

Table 3-2. Annual Greenhouse Gas Emissions

Scenario	Daily Vehicle Miles Traveled	CO_2e (metric tons/year)
Existing/Baseline Conditions (2015)	9,075,756	1,181,879
Opening Year (2030)		
2030 No-Build Scenario	9,783,990	786,786
2030 Build Scenario	9,802,818	790,566
- Net Change from No-Build to Build Scenario	18,828	3,780
- Percent Change from 2030 No-Build Scenario	*0.19%*	*0.48%*
- Net Change from Existing to Build Scenario	727,062	-391,313
Horizon Year (2050)		
2050 No-Build Scenario	10,782,554	783,627
2050 Build Scenario	10,807,917	788,150
- Net Change from No-Build to Build Scenario	25,363	4,523
- Percent Change from 2050 No-Build Scenario	*0.23%*	*0.57%*
- Net Change from Existing to Build Scenario	1,732,161	-393,729

CO_2e = carbon dioxide equivalent, a metric measure used to compare the emissions from various GHGs, based upon their global warming potential.
Emissions calculations based on VMT data provided by System Metrics Group and calculated with CT-EMFAC2014.

Note that although EMFAC has a rigorous scientific foundation and has been vetted through multiple stakeholder reviews, its emission rates are based on tailpipe emissions test data. The numbers are estimates of CO_2 emissions and not necessarily the actual CO_2 emissions. The model does not account for factors such as the rate of acceleration and a vehicle's aerodynamics, which would influence CO_2 emissions. To account for CO_2 emissions, ARB's GHG inventory follows the IPCC guideline by assuming complete fuel combustion while still using EMFAC data to calculate CH_4 and N_2O emissions. Though EMFAC is currently the best available tool for calculating GHG emissions, it is important to note that the CO_2 numbers provided are useful only for a comparison of alternatives.

Limitations and Uncertainties with Modeling

EMFAC

Although EMFAC can calculate CO_2 emissions from mobile sources, the model does have limitations when it comes to accurately reflecting changes in CO_2 emissions due to impacts on traffic. According to the National Cooperative Highway Research Program report, *Development of a Comprehensive Modal Emission Model* (April 2008) and a 2009 University of California study,[8] brief but rapid accelerations, such as those occurring during congestion, can contribute significantly to a vehicle's CO_2 emissions during a typical urban trip. Current emission-factor models do not distinguish the emission of such modal events (i.e., acceleration, deceleration) in the operation of a vehicle and instead estimate emissions by average trip speed. It is difficult to model this because the frequency and rate of acceleration or deceleration with which drivers choose to operate their vehicles depend on each individual's human behavior, their reaction to other vehicles' movements around them, and their acceptable safety margins. Currently, the EPA and the ARB have not approved a modal emissions model that is capable of conducting such detailed modeling. This limitation is a factor to consider when comparing the model's estimated emissions for various project alternatives against a baseline value to determine impacts.

Other Variables

With the current understanding, project-level analysis of GHG emissions has limitations. Although a GHG analysis is included for this project, there are numerous external variables that could change during the design life of the proposed project and would thus change the projected CO_2 emissions.

First, vehicle fuel economy is increasing. The EPA's annual report, "Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2016,"[9] which provides data on the fuel economy and technology characteristics of new light-duty vehicles including cars, minivans, sport utility vehicles, and pickup trucks, confirms that average fuel economy improves each year with a noticeable rate of change beginning in 2005. CAFE standards remained the same between model years 1995 and 2003, subsequently increasing to higher fuel economy

[8] Matthew Barth, Kanok Boriboonsomsin. 2009. *Energy and emissions impacts of a freeway-based dynamic eco-driving system.* Transportation Research Part D: Transport and Environment Volume 14, Issue 6, August 2009, Pages 400–410

[9] https://www.epa.gov/fueleconomy/light-duty-automotive-technology-carbon-dioxide-emissions-and-fuel-economy-trends-1975-1

standards for future vehicle model years. The EPA estimates that light duty fuel economy rose by 29% from model year 2004 to 2015, attributed to new technology that improved fuel economy while keeping vehicle weight relatively constant. Table 3-3 shows the increases in required fuel economy standards for cars and trucks between Model Years 2012 and 2025, from the NHTSA for the 2012–2016 and 2017–2025 CAFE Standards.

Table 3-3. Average Required Fuel Economy (mpg)

	2012	2013	2014	2015	2016	2017	2018	2020	2025
Passenger Cars	33.3	34.2	34.9	36.2	37.8	39.6-40.1	41.1-41.6	44.2-44.8	55.3-56.2
Light Trucks	25.4	26	26.6	27.5	28.8	29.1-29.4	29.6-30.0	30.6-31.2	39.3-40.3
Combined	29.7	30.5	31.3	32.6	34.1	35.1-35.4	36.1-36.5	38.3-38.9	48.7-49.7

Sources: EPA 2010, 2012. https://www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-greenhouse-gas-emissions-passenger-cars-and

Second, new lower-emission and zero-emission vehicles will come into the market within the expected design life of this project. According to the 2013 Annual Energy Outlook (AEO 2013):

> "LDVs that use diesel, other alternative fuels, hybrid-electric, or all-electric systems play a significant role in meeting more stringent GHG emissions and CAFE standards over the projection period. Sales of such vehicles increase from 20 percent of all new LDV sales in 2011 to 49 percent in 2040 in the AEO2013 Reference case."[10]

The greater percentage of lower-emissions and zero-emissions vehicles on the road in the future will reduce overall GHG emissions as compared to scenarios in which vehicle technologies and fuel efficiencies do not change.

Third, California adopted an LCFS in 2009 to reduce the carbon intensity of transportation fuels by 10 percent by 2020. The regulation became effective on January 12, 2010 (codified in title 17, California Code of Regulations, Sections 95480-95490). Beginning January 1, 2011, transportation fuel producers and importers must meet specified average carbon intensity requirements for fuel in each calendar year.

Limitations and Uncertainties with Impact Assessment

Figure 3-3 illustrates how the range of uncertainties in assessing GHG impacts grows with each step of the analysis, as noted in the *National Highway Traffic Safety Administration Final EIS for MY2017–2025 CAFE Standards* (NHTSA 2012[11]):

> "Moss and Schneider (2000)[12] characterize the 'cascade of uncertainty' in climate change simulations (Figure 3-3). As indicated in Figure 3-3, the emission estimates …

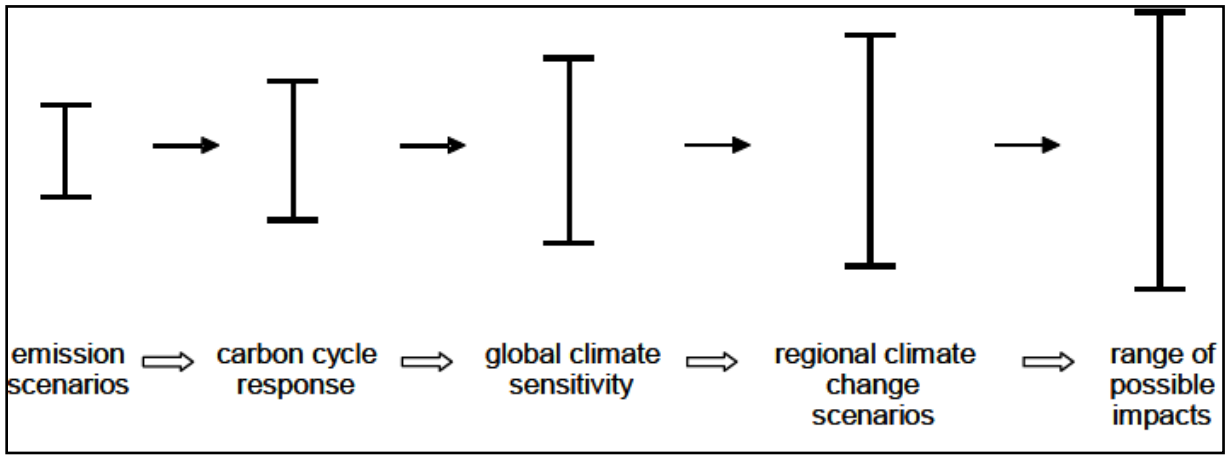
[10] http://www.eia.gov/forecasts/aeo/pdf/0383(2013).pdf

[11] National Highway Traffic Safety Administration. 2012. *Final Environmental Impact Statement Corporate Average Fuel Economy Standards Passenger Cars and Light Trucks Model Years 2017–2025*. Page 5-22. Washington, DC. July. Available: http://www.nhtsa.gov/staticfiles/rulemaking/pdf/cafe/FINAL_EIS.pdf. Accessed on September 17, 2018.

[12] Moss, R.H., and S.H. Schneider. 2000. Uncertainties in the IPCC TAR: Recommendations to Lead Authors for More Consistent Assessment and Reporting. Pgs. 33–51. In: *Guidance Papers on the Cross-cutting Issues of the Third Assessment Report of the IPCC*. [R.K. Pachauri, and A. Reisinger (Eds.)]. Cambridge University Press: Cambridge, United Kingdom. 138 pgs. Available: http://stephenschneider.stanford.edu/Publications/PDF_Papers/UncertaintiesGuidanceFinal2. (Accessed: September 17, 2018).

have narrower bands of uncertainty than the global climate effects, which are less uncertain than regional climate change effects. The effects on climate are, in turn, less uncertain than the impacts of climate change on affected resources (such as terrestrial and coastal ecosystems, human health, and other resources …). Although the uncertainty bands broaden with each successive step in the analytic chain, all values within the bands are not equally likely; the mid-range values have the highest likelihood."[13]

Figure 3-3. Cascade of Uncertainty in Climate Change Simulations



Source: NHTSA 2012[10]

Much of the uncertainty in assessing an individual project's impact on climate change surrounds the global nature of the climate change. Even assuming that the target of meeting the 1990 levels of emissions is met, there is no regulatory or other framework in place that would allow for a ready assessment of what any modeled increase in CO_2 emissions would mean for climate change given the overall California GHG emissions inventory of approximately 430 $MMTCO_2e$. This uncertainty only increases when viewed globally. The IPCC has created multiple scenarios to project potential future global greenhouse gas emissions as well as to evaluate potential changes in global temperature, other climate changes, and their effect on human and natural systems. These scenarios vary in terms of the type of economic development, the amount of overall growth, and the steps taken to reduce greenhouse gas emissions. Non-mitigation IPCC scenarios project an increase in global greenhouse gas emissions by 9.7 up to 36.7 billion metric tons CO_2 from 2000 to 2030, which represents an increase of between 25 and 90%.[14]

The assessment is further complicated by the fact that changes in GHG emissions can be difficult to attribute to a particular project because the projects often cause shifts in the locale for some type of GHG emissions, rather than causing "new" GHG emissions. It is difficult to assess the extent to which any project-level increase in CO_2 emissions represents a net global increase, reduction, or no change; there are no models approved by regulatory agencies that operate at the global or even statewide scale.

[13] http://www.nhtsa.gov/staticfiles/rulemaking/pdf/cafe/FINAL_EIS.pdf. page 5-21
[14] Intergovernmental Panel on Climate Change (IPCC). February 2007. *Climate Change 2007: The Physical Science Basis: Summary for Policy Makers*.
https://www.ipcc.ch/publications_and_data/ar4/wg1/en/spm.html

CONSTRUCTION EMISSIONS

Construction GHG emissions would result from material processing, on-site construction equipment, and traffic delays due to construction. These emissions would be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction could be offset to some degree by longer intervals between maintenance and rehabilitation activities.

Based on project-specific parameters entered into the Roadway Construction Emissions Model (RCEM) (version 8.1.0) developed by the Sacramento Metropolitan Air Quality Management District (SMAQMD), estimated GHG emissions associated with construction of the project would be 186 $MTCO_2e$ during grubbing/land clearing, 1,996 $MTCO_2e$ during grading/excavation, 1,000 $MTCO_2e$ during drainage/utilities/sub-grade, and 248 $MTCO_2e$ during paving. This would total 3,429 $MTCO_2e$ across all project phases during the 3.5-year construction period.

Caltrans Standard Specification 14-9.02 requires that the contractor comply with air-pollution-control rules, regulations, ordinances, and statutes, including those of ARB and local air pollution control districts. Requirements such as idling time restrictions and keeping equipment engines properly tuned and maintained help reduce GHG emissions.

CEQA CONCLUSION

As discussed above, the build scenario GHG emissions would increase by less than 1% in the project area compared with the no-build scenario at both opening year (2030) and horizon year (2050). However, compared with existing conditions, the build scenario's GHG emissions would decrease by 33%. The emissions increase in the project area assumes that the additional general purpose lanes proposed by the project would attract traffic from the surrounding area and accommodate future growth. Construction activities would result in a slight increase in GHG. Nonetheless, there are also limitations with EMFAC and with assessing what a given CO_2 emissions increase means for climate change. Therefore, it is Caltrans' determination that in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a determination regarding significance of the project's direct impact and its contribution on the cumulative scale to climate change. However, Caltrans is firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the following section.

Greenhouse Gas Reduction Strategies

Statewide Efforts

In an effort to further the vision of California's GHG reduction targets, outlined an AB 32 and SB 32, Governor Brown identified key climate change strategy pillars (concepts). These pillars highlight the idea that several major areas of the California economy will need to reduce emissions to meet the 2030 GHG emissions target. These pillars are (1) reducing today's petroleum use in cars and trucks by up to 50%; (2) increasing from one-third to 50% our electricity derived from renewable sources; (3) doubling the energy efficiency savings achieved at existing buildings and making heating fuels cleaner; (4) reducing the release of CH_4, black carbon, and other short-lived climate pollutants; (5) managing farm and rangelands, forests, and

wetlands so they can store carbon; and (6) periodically updating the state's climate adaptation strategy, *Safeguarding California*.

The transportation sector is integral to the people and economy of California. To achieve GHG emission reduction goals, it is vital that we build on our past successes in reducing criteria and toxic air pollutants from transportation and goods movement activities. GHG emission reductions will come from cleaner vehicle technologies, lower-carbon fuels, and reductions in VMT. One of Governor Brown's key pillars sets the ambitious goal of reducing today's petroleum use in cars and trucks by up to 50% by 2030.

Figure 3-4. The Governor's Climate Change Pillars: 2030 Greenhouse Gas Reduction Goals



Governor Brown called for support to manage natural and working lands, including forests, rangelands, farms, wetlands, and soils, so they can store carbon. These lands have the ability to remove CO_2 from the atmosphere through biological processes and then sequester carbon in above- and below-ground matter.

California Department of Transportation Activities

The California Department of Transportation (Caltrans) continues to be involved on the governor's Climate Action Team as ARB works to implement Executive Orders S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. Executive Order B-30-15, issued in April 2015, and SB 32 (2016) set a new interim target to cut GHG emissions to 40% below 1990 levels by 2030. The following major initiatives are under way at Caltrans to help meet these targets.

California Transportation Plan (CTP 2040)

The California Transportation Plan (CTP) is a statewide long-range transportation plan to meet our future mobility needs and reduce GHG emissions. The CTP defines performance-based goals, policies, and strategies to achieve our collective vision for California's future statewide, integrated multimodal transportation system. It serves as an umbrella document for all other statewide transportation planning documents.

SB 391 (Liu 2009) requires the CTP to meet California's climate change goals under AB 32. Accordingly, the CTP 2040 identifies the statewide transportation system needed to achieve maximum feasible GHG emission reductions while meeting the state's transportation needs. Although MPOs have primary responsibility for identifying land use patterns to help reduce GHG emissions, CTP 2040 identifies additional strategies in pricing, transportation alternatives, mode shift, and operational efficiency.

Caltrans Strategic Management Plan

The Strategic Management Plan, released in 2015, creates a performance-based framework to preserve the environment and reduce GHG emissions, among other goals. Specific performance targets in the plan that will help to reduce GHG emissions include:

- Increasing the percentage of non-auto mode share
- Reducing VMT per capita
- Reducing Caltrans' internal operational (buildings, facilities, and fuel) GHG emissions

Funding and Technical Assistance Programs

In addition to developing plans and performance targets to reduce GHG emissions, Caltrans also administers several funding and technical assistance programs that have GHG reduction benefits. These include the Bicycle Transportation Program, Safe Routes to School, Transportation Enhancement Funds, and Transit Planning Grants. A more extensive description of these programs can be found in Caltrans Activities to Address Climate Change (2013).

Caltrans Director's Policy 30, Climate Change (June 22, 2012), is intended to establish a department policy that will ensure coordinated efforts to incorporate climate change into departmental decisions and activities.

Caltrans Activities to Address Climate Change (April 2013) provides a comprehensive overview of activities undertaken by Caltrans statewide to reduce GHG emissions resulting from agency operations.

Project-Level GHG Reduction Strategies

PF **AQ-2** requires the contractor to comply with all South Coast Air Quality Management District (SCAQMD) rules, ordinances, and regulations regarding air quality restrictions. **PF T-1** requires that a Traffic Management Plan be developed by Caltrans prior to construction to minimize potential impacts on commuters during construction.

Additionally, the following measures will also be implemented under the project to reduce GHG emissions and potential climate change impacts from the project:

GHG-1 The project will implement Intelligent Transportation Systems (ITS) to help manage the efficiency of the existing highway system. ITS elements include improved ramp metering hardware, upgraded traffic signals interconnected and coordinated with adjacent signals and ramp meters at improved interchanges, fiber-optic and other communication systems for improved connectivity and remote management, and traveler information management system improvements.

GHG-2 Landscaping reduces surface warming and, through photosynthesis, decreases CO_2. The project will implement landscaping, as determined during final design, in

coordination with the cities of Anaheim and Orange, the County of Orange, and Caltrans' District Landscape Architect. This landscaping will help partially offset any potential CO_2 emissions increase.

GHG-3 The project will incorporate the use of energy efficient lighting, such as LED, which will also help reduce the project's CO_2 emissions.

GHG-4 The proposed project will reduce emissions from construction equipment by minimizing idling time or by shutting off equipment when not in use.

GHG-5 Bicycle lanes and sidewalks will be added or improved at certain locations to support active, non-motorized transportation.

GHG-6 Use energy and fuel efficient vehicles and equipment. Project proponents are encouraged to meet or exceed all EPA/NHTSA/CARB standards relating to fuel efficiency and emission reduction.

GHG-7 Use cement blended with the maximum feasible amount of fly ash or other materials that reduce GHG emissions from cement production.

GHG-8 Use lighter-colored pavement to the extent feasible.

GHG-9 Recycle construction debris to maximum extent feasible.

GHG-10 Provide an operational water truck on-site at all times. Use watering trucks to minimize dust; watering should be sufficient to confine dust plumes to the project work areas.

GHG-11 Suspend grading and earth moving when wind gusts exceed 25 miles per hour unless the soil is wet enough to prevent dust plumes.

GHG-12 Cover trucks when hauling dirt.

GHG-13 Stabilize the surface of dirt piles if not removed immediately.

GHG-14 Limit vehicular paths on unpaved surfaces and stabilize any temporary roads.

GHG-15 Ensure that all construction equipment is properly tuned and maintained.

GHG-16 Use diesel construction equipment meeting ARB's Tier 4 certified engines or cleaner offroad heavy-duty diesel engines and comply with state off-road regulation.

GHG-17 Signs shall be posted in designated queuing areas and job sites to remind drivers and operators to minimize idling.

Adaptation Strategies

The term "adaptation strategies" refers to how Caltrans and others can plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage—or, put another way, plan and design for resilience. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, variability

in storm surges and their intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damage to roadbeds from longer periods of intense heat, increased storm damage from flooding and erosion, and inundation from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. These types of impacts on the transportation infrastructure may also have economic and strategic ramifications.

Federal Efforts

At the federal level, the Climate Change Adaptation Task Force, co-chaired by the Council on Environmental Quality, the Office of Science and Technology Policy (OSTP), and the National Oceanic and Atmospheric Administration (NOAA), released its interagency task force progress report on October 28, 2011,[15] outlining the federal government's progress in expanding and strengthening the nation's capacity to better understand, prepare for, and respond to extreme events and other climate change impacts. The report provided an update on actions in key areas of federal adaptation, including building resilience in local communities, safeguarding critical natural resources such as fresh water, and providing accessible climate information and tools to help decision-makers manage climate risks.

The U.S. Department of Transportation (DOT) issued its *U.S. DOT Policy Statement on Climate Adaptation* in June 2011, committing to "integrate consideration of climate change impacts and adaptation into the planning, operations, policies, and programs of DOT in order to ensure that taxpayer resources are invested wisely and that transportation infrastructure, services and operations remain effective in current and future climate conditions."[16] To further the DOT policy statement, on December 15, 2014, FHWA issued Order 5520, *Transportation System Preparedness and Resilience to Climate Change and Extreme Weather Events*.[17] This directive established FHWA policy to strive to identify the risks of climate change and extreme weather events for current and planned transportation systems. FHWA will work to integrate consideration of these risks into its planning, operations, policies, and programs in order to promote preparedness and resilience, safeguard federal investments, and ensure the safety, reliability, and sustainability of the nation's transportation systems. FHWA has developed guidance and tools for transportation planning that fosters resilience to climate effects and sustainability at the federal, state, and local levels.[18]

State Efforts

On November 14, 2008, then-Governor Arnold Schwarzenegger signed Executive Order S-13-08, which directed a number of state agencies to address California's vulnerability to sea-level rise caused by climate change. This executive order set in motion several agencies as well as actions to address sea-level rise. It directed all state agencies that may be planning to construct projects in areas that are vulnerable to future sea-level rise to consider a range of sea-level rise scenarios for 2050 and 2100, assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea-level rise. Sea-level rise estimates should also be used in conjunction with information on local uplift and subsidence, coastal erosion rates, predicted higher high-water levels, and storm surge and storm wave data. Governor Schwarzenegger also requested the National Academy of Sciences to prepare an assessment report to recommend how California should plan for future sea-level rise. The final report, *Sea-Level Rise for the Coasts of California, Oregon, and Washington* (Sea-Level Rise

[15] https://obamawhitehouse.archives.gov/administration/eop/ceq/initiatives/resilience.
[16] https://www.fhwa.dot.gov/environment/sustainability/resilience/policy_and_guidance/usdot.cfm.
[17] https://www.fhwa.dot.gov/legsregs/directives/orders/5520.cfm.
[18] https://www.fhwa.dot.gov/environment/sustainability/resilience/.

Assessment Report),[19] was released in June 2012 and included relevant sea-level rise projections for California, Oregon, and Washington, taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge, land subsidence rates, and the range of uncertainty in selected sea-level rise projections. It provided a synthesis of existing information on projected sea-level rise impacts on state infrastructure (such as roads, public facilities, and beaches), natural areas, and coastal and marine ecosystems; it also provided a discussion of future research needs regarding sea-level rise.

In response to Executive Order S-13-08, the California Natural Resources Agency, in coordination with local, regional, state, federal, and public and private entities, developed *The California Climate Adaptation Strategy* (December 2009),[20] which summarized the best available science on climate change impacts on California, assessed California's vulnerability to the identified impacts, and outlined solutions that can be implemented within and across state agencies to promote resiliency. The adaptation strategy was updated and rebranded in 2014 as *Safeguarding California: Reducing Climate Risk* (Safeguarding California Plan).

Governor Jerry Brown enhanced the overall adaptation planning effort by signing Executive Order B-30-15 in April 2015, requiring state agencies to factor climate change into all planning and investment decisions. In March 2016, sector-specific implementation action plans that demonstrate how state agencies are implementing Executive Order B-30-15 were added to the Safeguarding California Plan. This effort represents a multi-agency, cross-sector approach to addressing adaptation to climate change-related events statewide.

Executive Order S-13-08 also gave rise to the *State of California Sea-Level Rise Interim Guidance Document* (SLR Guidance), produced by the Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT), of which Caltrans is a member. First published in 2010, the document provided "guidance for incorporating sea-level rise (SLR) projections into planning and decision making for projects in California," specifically, "information and recommendations to enhance consistency across agencies in their development of approaches to SLR."[21]

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation and flooding, the increased frequency and intensity of storms and wildfires, rising temperatures, and rising sea levels. Caltrans is actively engaged in in working toward identifying these risks throughout the state and will work to incorporate this information into all planning and investment decisions as directed in Executive Order B-30-15.

The proposed project is outside the coastal zone and not in an area that is subject to sea-level rise. Accordingly, direct impacts on transportation facilities due to projected sea-level rise are not expected.

The proposed project involves structures that would cross the Santa Ana River and the Carbon Canyon Diversion Channel in a 100-year floodplain. Although climate change may contribute to more frequent and intense precipitation events in the study area, these conditions would not

[19] *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future* (2012) is available at: http://www.nap.edu/catalog.php?record_id=13389.
[20] http://www.climatechange.ca.gov/adaptation/strategy/index.html.
[21] http://www.opc.ca.gov/2013/04/update-to-the-sea-level-rise-guidance-document/

result in a higher risk of flooding in these waterways. The Santa Ana River is regulated by the Prado Dam approximately 12.5 miles upstream of this crossing. The flows from the Prado Basin are controlled by the U.S. Army Corps of Engineers. The SR-91 Santa Ana Bridge has freeboard in the existing condition over the Base Flood Elevation. The Base Flood Elevation is based on the maximum spillway discharge from Prado Dam. There is additional storage within the Prado Basin that will attenuate more frequent or more intense precipitation due to climate change upstream of the dam. Downstream of the dam, flows in excess of the current Base Flood would be accommodated by the existing freeboard at the bridge. The Carbon Canyon Diversion Channel is designed with freeboard in the culverts and bridges within the SR-91/North Glassell Street Interchange. As displayed in Table 4 of the Location Hydraulic Study prepared for the proposed project, the proposed project would not impact the water surface elevation within the channel. Accordingly, more frequent and intense precipitation events would not result in direct impacts on transportation facilities.

3.4 References

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U.S. Environmental Protection Agency. 2014. *U.S. Greenhouse Gas Inventory Report: 1990–2014.* Available: https://www.epa.gov/ghgemissions/us-greenhouse-gas-inventory-report-1990-2014. Accessed: June 15, 2018.

Chapter 4 Comments and Coordination

Early and continuing coordination with the general public and public agencies is an essential part of the environmental process. It helps planners determine the necessary scope of environmental documentation and the level of analysis required and identify potential impacts and avoidance, minimization, and/or mitigation measures as well as related environmental requirements. Agency and tribal consultation as well as public participation for this project have been accomplished through a variety of formal and informal methods, including interagency coordination meetings, public meetings, public notices, Project Development Team (PDT) meetings, a public meeting, interagency coordination, and consultation with interested parties. This chapter summarizes the results of California Department of Transportation (Caltrans) efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

4.1 Interagency Coordination and Consultation

Formulation of the project alternatives and environmental evaluation has been carried out through a cooperative dialogue among representatives of the following agencies and organizations:

- Orange County Transportation Authority (OCTA)
- Native American representatives
- Historical groups
- State Historic Preservation Officer (SHPO)
- National Marine Fisheries Service (NMFS)
- U.S. Fish and Wildlife Service (USFWS)
- OC Parks
- Federal Highway Administration (FHWA)
- California Department of Fish and Wildlife (CDFW)
- City of Anaheim
- City of Orange
- City of Placentia
- City of Fullerton

The following sections summarize the results of Caltrans' efforts to identify, address, and resolve project-related issues through early and continuing coordination.

4.1.1 Native American Consultation

The Native American Heritage Commission (NAHC) was contacted for Section 106 consultation regarding the project on November 19, 2015. The NAHC responded in a letter on December 16, 2015, stating that a search of its Sacred Lands File did not yield any sacred lands or traditional cultural properties within the project area. In addition, the NAHC provided a list of Native

American contacts who may have further information on resources in the area. Based on this NAHC list, consultation letters and maps of the project area were sent to nine Native American groups on January 3, 2017.

Caltrans submitted a letter to the NAHC on November 20, 2017, requesting a consultation list for Assembly Bill (AB) 52. A response from NAHC was received on November 22, 2017, with a list of 15 Native American tribes with traditional lands or cultural places within Orange County.

Correspondence and the results of contact efforts are included at the end of this chapter. A summary of Native American communications is provided in Table 4-1.

Table 4-1. Summary of Native American Consultation

Native American Group/Individual	Date of Contact by Letter[1]	Date of Reply	Date of Contact by phone	Summary of Conversation
Gabrieleño Band of Mission Indians – Kizh Nation Andrew Salas, Chairperson	1/3/2017 11/29/2017	1/31/2017	N/A	1/31/2017: Mr. Salas requested that Native American and cultural resources monitors be present during ground disturbance.
Gabrielino/Tongva San Gabriel Band of Mission Indians Anthony Morales, Chairperson	1/3/2017 11/29/2017	None	4/6/2017 email sent the same day. Email sent on 11/7/18	4/6/2017: Wrong number was listed for Mr. Morales; therefore, an email was sent.
Gabrielino/Tongva Nation Sandonne Goad, Chairperson	1/3/2017 11/29/2017	None	4/6/2017 11/7/17	4/6/2017: Left voicemail for Ms. Sandonne, asking her to return the call if she had any comments about the project.
Gabrielino Tongva Indians of California Tribal Council Robert F. Dorame, Tribal Chair	1/3/2017 11/29/2017	4/11/2017	4/6/2017	4/11/2017: Received a call from Mr. Dorame, who said that he had spoken to some people who have knowledge of the area. He stated that areas near the Santa Ana River are culturally sensitive and asked to be involved in monitoring.
Gabrielino-Tongva Tribe Linda Candelaria, Co-Chairperson	1/3/2017 11/29/2017	None	4/6/2017 11/7/17	4/6/2017: Left voicemail for Ms. Candelaria, asking her to return the call if she had any comments about the project.
Juaneño Band of Mission Indians Sonia Johnston, Chairperson	1/3/2017	None	4/6/2017 11/7/17	4/6/2017: Email only; request for comment sent to Ms. Johnston.
Juaneño Band of Mission Indians-Acjachemen Nation Joyce Perry, Tribal Manager	1/3/2017	4/6/2017	4/6/2017	4/6/2017: Telephone answered by Ms. Joyce Perry, who had no concerns but wished to be notified of any finds as a result of monitoring.
Juaneño Band of Mission Indians-Acjachemen Nation Teresa Romero, Chairperson	1/3/2017	None	4/6/2017 11/7/17	4/6/2017: Left voicemail for Ms. Romero, asking her to return the call if she had any comments about the project.

Native American Group/Individual	Date of Contact by Letter[1]	Date of Reply	Date of Contact by phone	Summary of Conversation
Juaneño Band of Mission Indians-Acjachemen Nation Matias Belardes, Chairperson	1/3/2017	4/6/2017	4/6/2017	4/6/2017: Chairperson Belardes responded by phone; he wishes to be notified of any finds as a result of monitoring.
Viejas Band of Kumeyaay Indians Robert Welch, Chairperson	11/29/2017	1/10/2018	None	A letter stated that the project has little significance or ties to the tribe. Notification requested if artifacts or remains discovered.
Sycuan Band of the Kumeyaay Nation Cody J. Martinez, Chairperson	11/29/2017	None	None	N/A
San Pasqual Band of Mission Indians Allen E. Lawson, Chairperson	11/29/2017	None	None	N/A
Manzanita Band of Kumeyaay Nation Angela Elliott Santos, Chairperson	11/29/2017	None	None	N/A
La Posta Band of Mission Indians Gwendolyn Parada, Chairperson	11/29/2017	None	None	N/A
La Posta Band of Mission Indians Javaughan Miller, Tribal Administrator	11/29/2017	None	None	N/A
Jamul Indian Village Erica Pinto, Chairperson	11/29/2017	None	None	N/A
Ewiiaapaayp Tribal Office Michael Garcia, Vice Chairperson	11/29/2017	None	None	N/A
Ewiiaapaayp Tribal Office Robert Pinto, Chairperson	11/29/2017	None	None	N/A
Campo Band of Mission Indians Ralph Goff, Chairperson	11/29/2017	None	None	N/A

[1]No follow-up contact was attempted with the Native American tribes originally contacted on November 29, 2017, for the purpose of AB 52 consultation. Follow-up contact was attempted with tribes originally contacted on January 3, 2017, for the purposes of Section 106

4.1.2 Historical Consultation

On September 9, 2017, a letter and map were sent to agencies and interested parties that were identified as having knowledge of or concerns regarding historical resources. Contacted parties included the Anaheim Cultural and Heritage Commission, Anaheim Planning Commission, City of Orange Planning Commission, Orange County Historical Commission, Placentia Historical Committee, and Placentia Planning Commission. Responses were received from September 13, 2017, to October 9, 2017. Consultation with these parties is summarized in Table 4-2.

Table 4-2. Summary of Historical Consultation

Historical Consultation Group	Date of Contact by Letter	Date of Reply	Summary of Conversation
Anaheim Cultural and Heritage Commission	9/8/2017	None	N/A
Anaheim Planning Commission	9/8/2017	9/13/2017	Response received by letter dated September 13, 2017, from Christine Nguyen, who identified six properties within 1,000 feet of the Area of Potential Effect (APE); none are within the APE.

Historical Consultation Group	Date of Contact by Letter	Date of Reply	Summary of Conversation
City of Orange Planning Commission	9/8/2017	10/9/2017	Response received by letter dated October 9, 2017, from Marissa Moshier, who discussed resources for identifying historic resources within the City of Orange and nearby unincorporated portions of Orange County. The City of Orange's General Plan identifies areas of potential sensitivity for historic resources. The areas of potential sensitivity and other local historic resources are not in the APE.
Orange County Historical Commission	9/8/2017	None	N/A
Placentia Historical Committee	9/8/2017	None	N/A
Placentia Planning Commission	9/8/2017	None	N/A

4.1.3 State Historic Preservation Officer

As assigned by the Federal Highway Administration (FHWA), Caltrans has determined that there are properties that were evaluated as a result of the project that are not eligible for inclusion in the National Register of Historic Places within the project APE. Under Section 106 Programmatic Agreement (PA) Stipulation VIII.C, Caltrans requested SHPO's concurrence on this determination on May 8, 2018. SHPO concurrence was received on August 30, 2018; a copy is provided at the end of this chapter.

4.1.4 U.S. Fish and Wildlife Service

Official species lists were obtained from USFWS on November 18, 2015, and February 7, 2017. More than 180 days have elapsed since the original species lists were obtained; therefore, updated lists were obtained on October 1, 2018 and April 21, 2020. The species lists provide information about threatened, endangered, and proposed species; designated critical habitat; and candidate species that may occur in the vicinity of a proposed project. The species lists provided by USFWS are included at the end of this chapter.

4.1.5 National Marine Fisheries Service

An official ESA species list was obtained from the National Marine Fisheries Service (NMFS) on April 21, 2020. The species list provides information about endangered and threatened marine species, as well as essential fish habitat, that may occur in the vicinity of a proposed project. The species list provided by NMFS is included at the end of this chapter.

4.1.6 Section 4(f) Resources Consultation

On August 28, 2018, Caltrans sent a letter to OC Parks to provide preliminary project information to the agency, and to inform them of the formal consultation process. A letter requesting OC Parks concurrence of the Section 4(f) De Minimis Determination relating to the Santa Ana River Trail was sent on April 26, 2019. On July 22, 2019, OC Parks provided written concurrence that the project would not adversely affect the activities, features, and attributes of the Section 4(f) property. Correspondence with OC Parks has been added to Appendix A.

4.1.7 Federal Highway Administration

On July 16, 2019, Caltrans sent a letter request to the Federal Highway Administration (FHWA) for a project-level conformity determination for the project. The proposed project is in an area designated as non-attainment or maintenance for nitrogen dioxide (NO_2), carbon monoxide (CO), ozone, and particulate matter (PM_{10}, $PM_{2.5}$). In a letter dated August 8, 2019, FHWA wrote that the SR-91 Improvement Project was found to conform with the State Implementation Plan (SIP) in accordance with 40 CFR Part 93. These letters are provided at the end of this chapter.

4.1.8 California Department of Fish and Wildlife

As stated in Section 2.3.5, Threatened and Endangered Species, Senate Bill (SB) 857 requires Caltrans to prepare an annual report to the Legislature describing the status of Caltrans' progress in locating, assessing, and remediating barriers to fish passage, as defined. The bill requires Caltrans to complete assessments of potential barriers to anadromous fish prior to commencing any project using state or federal transportation funds. The bill also requires Caltrans to submit these assessments to CDFW to be added to the CALFISH database. On April 22, 2020, OCTA sent the August 2019 *Natural Environment Study (NES) Amendment* (ICF 2019), provided in Appendix K, which discusses potential fish passage effects from the proposed project and requested a concurrence determination as to whether the project would have any issues regarding SB 857. On May 15, 2020, CDFW concurred that the existing Santa Ana River bridge is not producing adverse hydraulic conditions that would affect fish passage; rather, it is the channel conditions and the proposed widening would not contribute to a fish passage barrier. This correspondence is provided at the end of this chapter.

4.2 Community Outreach and Public Involvement

4.2.1 History of Community Outreach

On March 14, 2018, a public information meeting for the proposed project was held from 5 p.m. to 8 p.m. at Rio Vista Elementary School in the city of Anaheim. The meeting informed the public of the proposed project and explained the purpose and need for the proposed project. The anticipated project schedule was also outlined. Caltrans and OCTA listened to public feedback, provided a forum for public discussion, and explained how to be notified regarding the project.

Approximately 55 individuals attended the meeting. Attendees were given the opportunity to submit written comments on comment cards. In total, nine comments were submitted on the cards. Below are the primary requests and concerns from the comment cards.

- Requested that information be shared in a less technical way
- Requested improvements to the eastbound off-ramp at Glassell Street/Kraemer Place; claimed that there are weekly accidents at Frontera Street/Kraemer Place
- Requested minimal environmental impacts
- Requested that the project schedule be displayed on the flyer and that the meeting format be emphasized
- Concerned that narrowing Frontera Street will negatively affect the safety of vehicles and cyclists and increase vibrations at adjacent homes

- Requested that the project team provide information regarding where the draft environmental document will be made available for public review
- Submitted questions regarding the alternatives
- Requested that more information regarding direct impacts on local residents be provided at public information meetings

These comments have been recorded and were taken into consideration when preparing the environmental documentation for the proposed project.

4.2.2 Project Development Team

The City of Anaheim participated in the regular PDT meetings conducted by Caltrans and OCTA for the proposed project. The cities of Fullerton, Orange, and Placentia were also been invited to participate in PDT meetings. The PDT meetings covered a wide range of topics related to the proposed project, including development and evaluation of alternatives, engineering considerations, environmental considerations, the environmental document, and the documentation process.

4.2.3 Orange County Transportation Authority Project Website

OCTA has a webpage (https://bit.ly/2GMpslO) that provides information to the public regarding the proposed project, the status of the environmental document, and the environmental documentation process for the project.

4.3 Draft IS/EA Circulation and Outreach

Public circulation of the Draft IS/EA began on November 21, 2018, for a 30-day review period and ended on December 21, 2018. As required by CEQA Guidelines Section 15072, a public Notice of Intent (NOI) to Adopt a Negative Declaration and Availability of Initial Study, Notice of Public Meeting for the proposed State Route 91 Improvement Project between State Route 57 and State Route 55 was submitted to the State Clearinghouse and Orange County Clerk on November 14, 2018. The NOI was also mailed to all of the agencies and persons that requested to be notified.

4.3.1 Public Hearing Outreach

Caltrans and OCTA hosted a public hearing (open house format) on December 11, 2018. The public meeting was held from 5:30 p.m. to 7:30 p.m. at Rio Vista Elementary School in Anaheim. Rio Vista Elementary School is accessible by public transit, is Americans with Disabilities Act (ADA)-compliant, and is close to the SR-91 project corridor. Outreach methods included newspaper advertisements, media advisory, direct mail, fliers and extended outreach, announcements, and electronic notices.

Newspaper Advertisements

Caltrans and OCTA advertised in the newspaper of record, the *Orange County Register*. The *Orange County Register* is Orange County's largest newspaper and premier source for local news. Three ¼-page ads advising of the public meeting were purchased and featured in this newspaper. The ads were published on Tuesday, November 27; Sunday, December 2; and Sunday, December 9, 2018. An ad was also published on *Orange County Register* online between November 29 and December 11, 2018.

To target members of the public within the project study area, Caltrans and OCTA purchased one ¼-page ad in the *Anaheim Bulletin* for Thursday, November 29, 2018 and one ¼-page ad in the *North County News* for Thursday, December 6, 2018. To reach Orange County's diverse communities within the study area, Caltrans and OCTA purchased two ¼-page ads in one of Orange County's leading Spanish-language newspapers, *Excélsior*, on Friday, November 30 and Friday, December 7, 2018. An ad also ran on *Excélsior* online between November 29 and December 11, 2018. All newspaper ads described above can be viewed in Section 4.4.1 of this chapter.

Media Advisory

Caltrans and OCTA purchased an advertisement to be posted on Facebook between November 27 and December 11, 2018, announcing the public information meeting date, time, and location, as well as noting the intended purpose to inform the public and receive comments. This ad can be viewed in Section 4.4.3 of this chapter.

Direct Mail

The target audience of the direct mail program consisted of residential and commercial property owners and tenants within the corridor area of approximately 2,500 feet of SR-91 within the project limits. As such, approximately 8,000 color, double-sided postcards were mailed on November 16, 2018, with estimated delivery on November 21, 2018, which was 20 days before the public meeting. Caltrans and OCTA also delivered approximately 6,500 color, double-sided fliers in both English and Spanish directly to residential and commercial property owners and tenants within the corridor area. A copy of the postcard and flier can be viewed in Section 4.4.2 of this chapter.

Electronic Notices

Electronic notices were sent to individuals on Caltrans' and OCTA's electronic database list. An initial invitation was sent electronically on Tuesday, November 27, 2018, inviting members of the community to attend the public meeting. Two additional notices were sent to the database leading up to the event, and two follow-up e-mails were distributed following the meeting to thank members of the public for their participation and to provide a reminder of the commenting deadline.

The same types of electronic notices were also published on social media (Facebook and Twitter) through the project and OCTA channels. An event invitation was posted on the SR-91 Improvement Project Facebook page on November 21, 2018. A reminder about the public hearing was posted on December 6 and December 11, 2018. A post was published on December 12, 2018 thanking those who joined the public hearing and providing a reminder that comments may be submitted through December 21, 2018. A final reminder about the commenting deadline was posted on December 20, 2018. These electronic notices can be viewed in Section 4.4.3 of this chapter.

Extended Outreach

Caltrans and OCTA distributed fliers between November 21 and November 28, 2018 at various community-based sites within the corridor area, including homeowner associations, community centers, public libraries, and schools. Key stakeholders within the bicycling community, including agencies and Orange County cycling groups, were called and emailed starting November 27, 2018. Caltrans and OCTA also used geo-fenced mobile advertising to reach local community members within the corridor area. OCTA contacted elected officials, media, and

PDT to increase engagement in the public participation process. The flier can be viewed in Section 4.4.1 of this chapter.

4.3.2 Public Hearing

The public hearing (open house format) took place on December 11, 2018 from 5:30 p.m. to 7:30 p.m. at Rio Vista Elementary School in Anaheim.

To maximize awareness and attendance of the public hearing, an extensive public communications campaign was developed and executed. The target audience included residents and business in the project study area, as well as those with professional and/or civic interests. Consistent with the spirit of Title VI, the public communications effort included outreach in Spanish, which is extensively spoken in the project area. One completed Title VI survey was received during this process. As described above in Section 4.3.1, Scoping Process, communications and outreach methods included, but were not limited to: briefings, print and electronic notifications, and targeted community outreach.

A total of approximately 54 individuals attended the meeting. Forty-four individuals signed in, but it is estimated that seven to 10 individuals did not sign in because they arrived with another person that did sign in. Among those in attendance were Norma Campos Kurtz, District Director, Office of Assemblymember Tom Daly, 69th District, and Doug Keys, City of Orange Public Works, Traffic Division. The public hearing served to collect feedback from meeting participants. At the hearing, nine comment cards were submitted in writing and 12 verbal comments were received by the court reporter present at the meeting. These comments are provided in Appendix I, Response to Comments under Sections 1.7 and 1.8, respectively. The primary topics raised during the public hearing consisted of:

- Request for sound-proof windows
- Concern regarding property impacts
- Request for more effective signage on freeways
- Request for more information about traffic plans during construction
- Request for improved access to the SR-91 Express Lanes

4.3.3 Noise Barrier Surveys

Noise barrier surveys were conducted to determine the viewpoint of the benefited receptor of the feasible and reasonable noise barrier identified in the Draft IS/EA. The surveys were sent by registered mail on November 20, 2018, during the public review period of the Draft IS/EA and included information for the public meeting held on December 11, 2018. The initial mailing via registered mail did not elicit a response, so a second mailing via Federal Express was sent on December 12, 2018. The survey recipient was asked to return the voting form by January 4, 2019. The completed survey from the recipient was received on January 7, 2019. Results of the survey are discussed in Section 2.2.7.

4.4 Draft IS/EA Circulation Documents

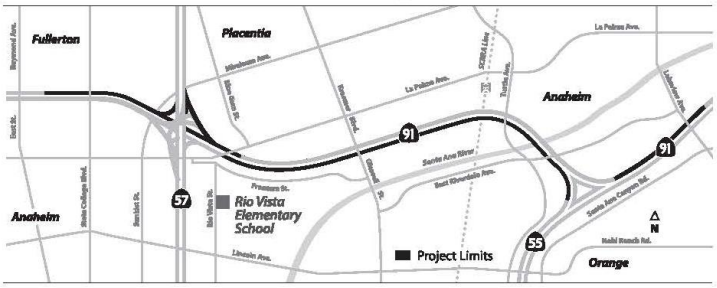
4.4.1 Newspaper Ads

PUBLIC NOTICE

Caltrans **STATE ROUTE 91 IMPROVEMENT PROJECT** **OCTA**

(west of State College Boulevard to east of Lakeview Avenue)

Notice of Intent to Adopt a Negative Declaration
Notice of Availability of an Initial Study/Environmental Assessment
Study Results Available
Announcement of Public Hearing (Open House Format)



WHAT'S BEING PLANNED?

The California Department of Transportation (Caltrans) District 12, in cooperation with the Orange County Transportation Authority (OCTA), proposes to widen and make operational improvements, including reconstructing ramps, bridges and connectors, on State Route 91 (SR-91), from west of State College Boulevard to east of Lakeview Avenue, Post Mile (PM) 4.8 to R10.4, SR-57 from PM 15.6 to 16.1 and SR-55 from PM 17.5 to R17.9 in the cities of Anaheim, Fullerton, Orange and Placentia in Orange County. This segment of SR-91 crosses the Santa Ana River and the OCTA/SCRRA Railroad. In addition to the No Build Alternative, there is a single Build Alternative under consideration. Minor Right-of-Way acquisitions are anticipated.

WHY THIS AD?

Caltrans has studied the effects this project may have on the environment. Our studies show this project will not significantly affect the quality of the environment. The report that explains why is called an Initial Study/Environmental Assessment (IS/EA). This notice is to tell you of the availability of the draft IS/EA with a proposed Negative Declaration (ND). A public hearing (open house format) will be held to give you an opportunity to learn about the proposed project and potential impacts before a build alternative is recommended and approved.

WHAT'S AVAILABLE?

The proposed ND & IS/EA and other project information are available for review and copying (for a fee) at the Caltrans District 12 Office at 1750 East 4th Street, Suite 100, Santa Ana, CA 92705 on weekdays from 8:00 am to 5:00 pm. The proposed ND and IS/EA are also available for review at the following locations during normal business hours:

- Placentia Library, 411 E. Chapman Avenue, Placentia, CA 92870
- Fullerton Library, 353 W. Commonwealth Avenue, Fullerton, CA 92832
- Anaheim Library, 500 W. Broadway, Anaheim, CA 92805
- Anaheim Sunkist Branch, 901 S. Sunkist Street, Anaheim, CA 92806
- Charles P. Taft Branch Library, 740 E. Taft Avenue, Orange, CA 92865

In addition, the documents are available online at: http://www.dot.ca.gov/d12/DEA/91/OK980

WHERE YOU COME IN

Do you have any comments about processing the project with a proposed ND and IS/EA? Do you disagree with the findings of the study as set forth in the proposed ND? Would you care to make any other comments on the project? Please submit your comments in writing no later than 5:00 p.m. on Friday, December 21, 2018 to Kathleen Dove, Associate Environmental Planner, Caltrans District 12, Division of Environmental Analysis, 1750 East 4th Street, Suite 100, Santa Ana, CA 92705 or via e-mail to D12.SR91.Project@dot.ca.gov. The date we will begin accepting comments is Tuesday, November 20, 2018. If there are no major comments, Caltrans will proceed with the project's design.

WHEN AND WHERE?

A public hearing (open house format) will be held:

Served by Orange County Transportation Authority bus routes:

Route 38: Lakewood - Anaheim Hills
Route 42 & 42A: Seal Beach - Orange
Route 153: Brea - Anaheim

DATE:	Tuesday, December 11, 2018
TIME:	Stop by any time between 5:30 - 7:30 p.m.
LOCATION:	Rio Vista Elementary School Multi-purpose Room 310 North Rio Vista Street Anaheim, CA 92806

CONTACT

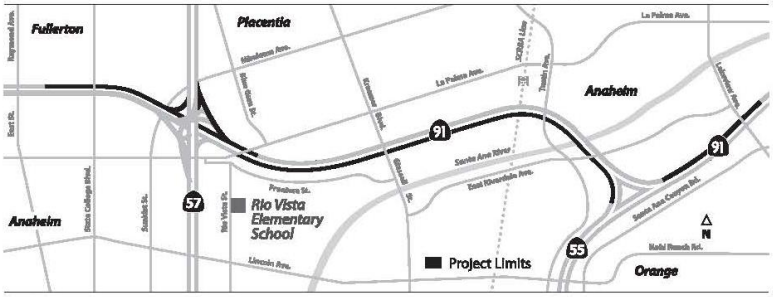
Individuals who require special accommodation (American Sign Language interpreter, accessible seating, documentation in alternate formats, etc.) are requested to contact Van Nguyen at District 12's Public Information Office by phone at (657) 328-6363 or by e-mail at Van.Nguyen@dot.ca.gov at least 14 days prior to the scheduled hearing date, or use California Relay Service, 1 (800) 735-2929 (TTY), 1 (800) 735-2922 (voice). For more information about this study or any other public transportation matter in Orange County, call Van Nguyen at District 12's Public Information Office at (657) 328-6363 or e-mail her at Van.Nguyen@dot.ca.gov.

AVISO PÚBLICO

PROYECTO DE MEJORA EN LA RUTA ESTATAL 91

(Entre el oeste de State College Boulevard y el este de Lakeview Ave.)

Aviso de la intención de adoptar la Declaración Negativa
Aviso de disponibilidad del Estudio Inicial/Evaluación Ambiental
Disponibilidad de los resultados del estudio
Aviso de audiencia pública (en formato de evento a puertas abiertas)



¿QUÉ ES LO QUE SE ESTÁ PLANEANDO?

El Distrito 12 del Departamento de Transporte de California (Caltrans), en cooperación con la Autoridad de Transporte del Condado de Orange (OCTA), propone la ampliación y la implementación de mejoras operacionales, incluyendo la reconstrucción de rampas, puentes y conectores de la Ruta Estatal 91 (SR-91), desde el oeste de State College Boulevard hasta el este de Lakeview Avenue, Poste de señalización de milla (PM) 4.8 hasta R10.4, SR-57 desde el PM 15.6 hasta el 16.1, y SR-55 desde el PM 17.5 hasta R17.9, en las ciudades de Anaheim, Fullerton, Orange y Placentia en el Condado de Orange. Este segmento de la SR-91 cruza el río Santa Ana y la vía ferroviaria OCTA/SCRRA. Además de la alternativa para no construir, existe una única alternativa de construcción que se encuentra bajo consideración. Se anticipan adquisiciones menores para el Derecho de Paso.

¿POR QUÉ ESTE ANUNCIO?

Caltrans ha estudiado los efectos que este proyecto puede causar en el medioambiente. Nuestros estudios muestran que este proyecto no afectará significativamente la calidad del medioambiente. El informe que explica el por qué, se denomina Estudio Inicial/ Evaluación Ambiental (IS/EA, por sus siglas en inglés). Este aviso tiene el fin de comunicarle la disponibilidad del borrador del IS/EA junto con una propuesta de Declaración Negativa (ND, por sus siglas en inglés). Se llevará a cabo una audiencia pública (en formato de evento a puertas abiertas), para darle la oportunidad de enterarse acerca de la propuesta del proyecto y los impactos potenciales antes que se realice la recomendación y aprobación de una alternativa de construcción específica.

¿QUÉ ES LO QUE ESTÁ DISPONIBLE?

La propuesta de ND y IS/EA y otra información sobre el proyecto se encuentran disponibles para su revisión y copia (pagando una tarifa) en la Oficina del Distrito 12 de Caltrans, ubicada en 1750 East 4th Street, Suite 100, Santa Ana, CA 92705, durante los días ordinarios de la semana, desde las 8:00 am hasta las 5:00 pm. La propuesta de ND y IS/EA también está disponible para su revisión durante horas laborables en los siguientes lugares:

- Biblioteca de Placentia, 411 E. Chapman Avenue, Placentia, CA 92870
- Biblioteca de Fullerton, 353 W. Commonwealth Avenue, Fullerton, CA 92832
- Biblioteca de Anaheim, 500 W. Broadway, Anaheim, CA 92805
- Sucursal Sunkist de Anaheim, 901 S. Sunkist Street, Anaheim, CA 92806
- Biblioteca Charles P. Taft, 740 E. Taft Avenue, Orange, CA 92865

Adicionalmente, los documentos se encuentran disponibles para su consulta en el internet, visitando:
http://www.dot.ca.gov/d12/DEA/91/0K980

AQUÍ ES DONDE ENTRA USTED

¿Tiene algún comentario acerca del proceso que sigue el proyecto con la propuesta de ND y IS/EA? ¿Está en desacuerdo con los resultados del estudio tal como están establecidos en la propuesta de ND? ¿Le gustaría hacer algún otro comentario sobre el proyecto? Por favor envíe sus comentarios por escrito a más tardar hasta el viernes 21 de diciembre de 2018 no más tarde de las 5:00 p.m., a Kathleen Dove, Associate Environmental Planner, Caltrans District 12, Division of Environmental Analysis, 1750 East 4th Street, Suite 100, Santa Ana, CA 92705, o mediante correo electrónico a D12.SR91.Project@dot.ca.gov. La fecha en la que empezaremos a aceptar comentarios es el martes 20 de noviembre de 2018. Si no existieran mayores comentarios, Caltrans procederá con el diseño del proyecto.

¿CUÁNDO Y DÓNDE?

Una audiencia pública (en formato de evento a puertas abiertas) Se llevará a cabo el:

Rutas de autobuses de la Autoridad de Transporte del Condado de Orange que llegan hasta el lugar:
Ruta 38: Lakewood - Anaheim Hills
Ruta 42 & 42A: Seal Beach - Orange
Ruta 153: Brea - Anaheim

FECHA:	**Martes 11 de diciembre de 2018**
HORA:	**Acompáñenos en cualquier momento entre las 5:30 y las 7:30 p.m.**
LUGAR:	**Rio Vista Elementary School Multi-purpose Room 310 North Rio Vista Street Anaheim, CA 92806**

CONTACTO

Las personas que requieren acomodos especiales (Interprete del idioma de señas estadounidense, asiento accesible, documentación en formatos alternativos, etc.) deben contactar a Van Nguyen, de la Oficina de Información Pública del Distrito 12, llamando al teléfono (657) 328-6363 o por medio del correo electrónico Van.Nguyen@dot.ca.gov, al menos 14 días antes de la fecha de la audiencia programada, o utilicen el Servicio de California Relay llamando al 1 (800) 735-2929 (TTY), 1 (800) 735-2922 (voz). Para obtener mayor información acerca de este estudio o cualquier otro asunto referido al transporte en el Condado de Orange, llame a Van Nguyen de la Oficina de Información Pública del Distrito 12, al teléfono (657) 328-6363 o comuníquese por medio del correo electrónico Van.Nguyen@dot.ca.gov.

4.4.2 Fliers and Extended Outreach

State Route 91 Improvement Project
c/o Westbound Communications
625 The City Drive, Suite 480
Orange, CA 92868

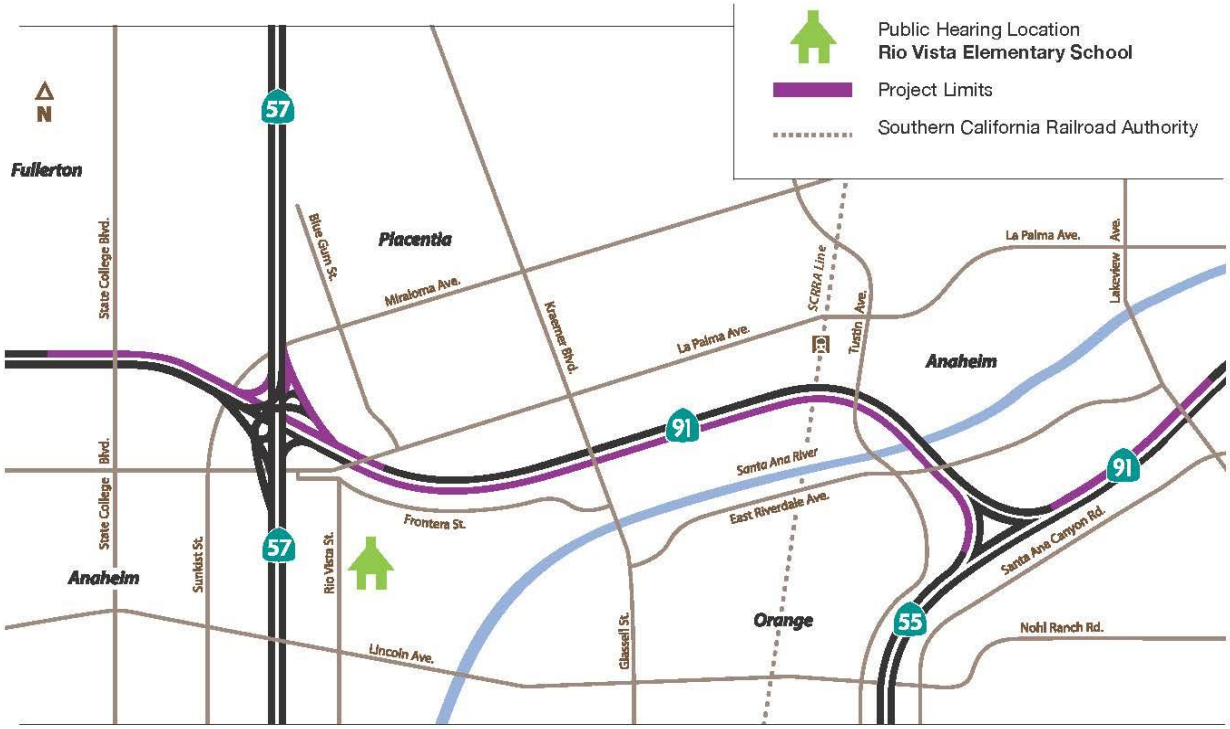
OCTA Caltrans OCGO

CALIFORNIA 91

State Route 91 Improvement Project
West of State College Boulevard to East of Lakeview Avenue

Public Hearing
OPEN HOUSE FORMAT

Tuesday, December 11, 2018 5:30 – 7:30 P.M.
RIO VISTA ELEMENTARY SCHOOL ANAHEIM



You're Invited

Public Hearing – Open House Format

Tuesday, December 11, 2018
Stop by anytime between 5:30 – 7:30 p.m.
Rio Vista Elementary School
310 North Rio Vista Street, Anaheim, CA 92806

Join the California Department of Transportation (Caltrans) and the Orange County Transportation Authority (OCTA) at a Public Hearing in an Open House Format to learn more about the proposed project, view exhibit boards, receive one-on-one updates from project team members and submit your comments.

Special accommodations are available by calling 657.328.6000 or emailing van.nguyen @dot.cagov at least 14 days in advance of the meeting.

SR-91 IMPROVEMENT PROJECT

Caltrans and OCTA are proposing to improve capacity and operations on SR-91 from west of State College Boulevard to east of Lakeview Avenue. Proposed improvements include:

- Increasing (widening) mainline capacity
- Realigning/constructing ramps and bridges
- Improving connectors to/from SR-57 and SR-55

This project is the fifth in a series designed to increase capacity and enhance operations on State Route 91 in Orange County.

Caltrans has studied the effects this project may have on the environment. That report is called an Initial Study/Environmental Assessment (IS/EA).

The proposed Negative Declaration & IS/EA and other project information are available for review and copying (for a fee) at the Caltrans District 12 Office at 1750 East 4th Street, Suite 100, Santa Ana, CA 92705 on weekdays from 8:00 am to 5:00 pm. They are also available for review and comment between November 20 and December 21, 2018 at http://www.dot.ca.gov/d12/DEA/91/0K980

FOR MORE INFORMATION:

Fernando Chavarria, OCTA Outreach
Fchavarria@octa.net or 714.560.5306

DEADLINE FOR PUBLIC COMMENT IS DECEMBER 21, 2018

Your comments are important in selecting a preferred alternative to advance into design and construction. Some comments received will be included and responded to in the final IS/EA with a proposed Negative Declaration (ND), which is anticipated to be published in mid-2019.

There are four ways to comment:

- Submit comment card at public hearing
- Verbally share comments to a licensed court reporter at the public hearing
- Email: D12.SR91.project@dot.ca.gov
- Mail a letter to:

Kathleen Dove
Caltrans District 12
Division of Environmental Analysis
1750 E. 4th Street, Suite #100
Santa Ana, CA 92075

Están Invitados

Audiencia Pública – Formato Abierto al Público

martes, 11 de diciembre de 2018
Pase en cualquier horario entre las 5:30 y 7:30 p.m.
Rio Vista Elementary School
310 North Rio Vista Street, Anaheim, CA 92806

Únase al Departamento de Transporte de California (California Department of Transportation, Caltrans) y a la Autoridad de Transporte del Condado de Orange (Orange County Transportation Authority, OCTA) en una Audiencia Pública en formato Abierto al Público para obtener más información sobre el proyecto propuesto, ver paneles de exposición, recibir novedades individuales de los miembros del equipo del proyecto y enviar sus comentarios.

Hay acomodaciones especiales disponibles llamando al 657.328.6000 o enviando un correo electrónico a van.nguyen@dot.cagov con al menos 14 días de anticipación a la reunión.

PROYECTO DE MEJORA DE LA SR-91

Caltrans y OCTA proponen mejorar la capacidad y las operaciones en la SR-91 desde el oeste de State College Boulevard hasta el este de Lakeview Avenue. Las mejoras propuestas incluyen:

- Aumento de la capacidad del carril principal
- Alineación/construcción de rampas y puentes.
- Mejora de conectores a/desde SR-57 y SR-55

Este proyecto es el quinto de una serie diseñado para aumentar la capacidad y mejorar las operaciones en la Ruta Estatal 91 en el Condado de Orange.

Caltrans ha estudiado los efectos que este proyecto puede tener en el medio ambiente. Ese informe se llama Estudio inicial/Evaluación ambiental (Initial Study/Environmental Assessment, IS/EA).

La Declaración Negativa propuesta e IS/EA y otra información del proyecto están disponibles para su revisión y copia (por una tarifa) en la Oficina del Distrito 12 de Caltrans en 1750 East 4th Street, Suite 100, Santa Ana, CA 92705 de lunes a viernes de 8:00 a.m. a 5:00 p.m. También están disponibles para revisión y comentarios entre el 20 de noviembre y el 21 de diciembre de 2018 en http://www.dot.ca.gov/d12/DEA/91/0K980

PARA OBTENER MÁS INFORMACIÓN:

Fernando Chavarria, Alcance Público de OCTA
Fchavarria@octa.net or 714.560.5306

LA FECHA LÍMITE PARA LOS COMENTARIOS PÚBLICOS ES EL 21 DE DICIEMBRE DE 2018

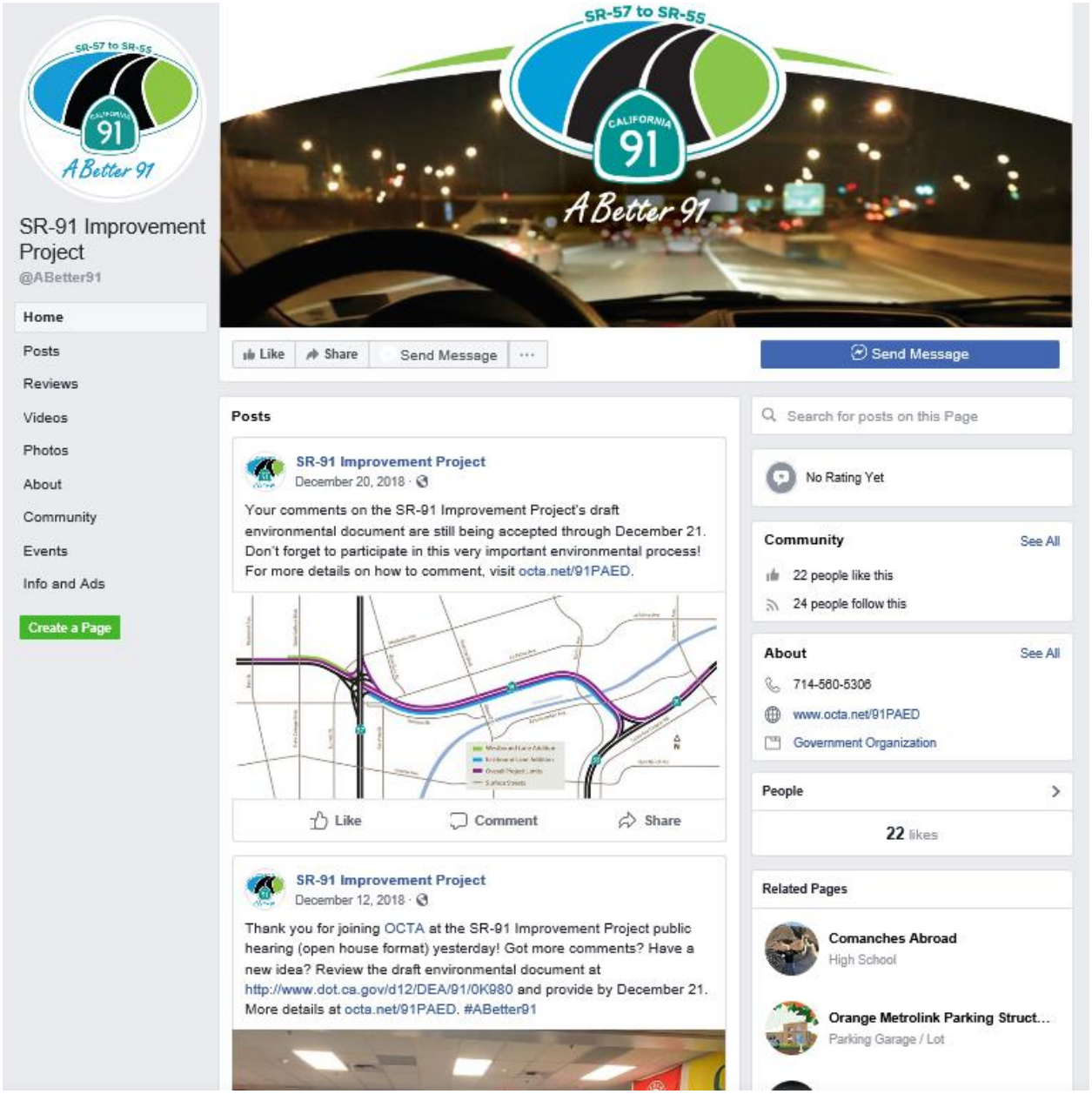
Sus comentarios son importantes para seleccionar una alternativa preferida para avanzar en el diseño y la construcción. Algunos comentarios recibidos se incluirán y responderán en el IS/EA final con una Declaración Negativa (Negative Declaration, ND) propuesta, que se prevé que se publicará a mediados de 2019.

Hay cuatro formas de comentar:

- Presentando una tarjeta de comentarios en la audiencia pública
- Compartiendo verbalmente los comentarios a un reportero de la corte con licencia en la audiencia pública
- Correo electrónico: D12.SR91.project@dot.ca.gov
- Envíe una carta por correo a:

Kathleen Dove
Caltrans District 12
Division of Environmental Analysis
1750 E. 4th Street, Suite #100
Santa Ana, CA 92075

4.4.3 Electronic Notices





DEC
11

Public Hearing (Open House Format)

Public · Hosted by SR-91 Improvement Project

★ Interested | ✓ Going | ...

Tuesday, December 11, 2018 at 5:30 PM – 7:30 PM
about 3 months ago

Rio Vista Elementary School, 310 North Rio Vista Street, Anaheim, CA 92806 Show Map

Hosted by SR-91 Improvement Project Message Host

About Discussion

Details

Join the Orange County Transportation Authority and Caltrans District 12 at a public hearing (open house format) to learn about the State Route 91 (SR-91) Improvement Project, a proposed project to improve capacity and reduce congestion on both westbound and eastbound SR-91 between the SR-57 and SR-55 within the project area.

Caltrans has studied the effects this project may have on the environment and the studies show this project will not significantly affect the quality of the environment. All findings are compiled in the draft environmental document now available for review at: http://www.dot.ca.gov/d12/DEA/91/0K980. Let us know your comments by emailing D12.SR91.Project@dot.ca.gov. Comments will also be accepted at the public hearing.

This public hearing will provide an opportunity to learn about the proposed project and potential impacts before the project moves forward with a recommendation. There will be information stations with staff members and project experts present to address questions you may have.

See Less ▲

About SR-91 Improvement Project

SR-91 Improvement Project
Government Organization
The California Department of Transportation (Caltrans), in partnership with the Orange County Transportation Authority (OCTA), proposes to increase capacity (widen) and make operational improvements on SR-91 between SR-57 and SR-55 in north Orange County.

Share



Join us for a Public Hearing (Open House Format) on December 11

Come learn about the State Route 91 (SR-91) Improvement Project, a proposed project to increase capacity, improve operations and help relieve congestion on both westbound and eastbound SR-91 between the SR-57 and SR-55 within the project area.

The Orange County Transportation Authority (OCTA) and California Department of Transportation District 12 (Caltrans) have initiated a proposed project to address current and future mobility needs. As part of the project approval and environmental document process, a no-build and a potential build alternative are being considered, and potential effects the project may have on the environment have been studied.

Join us at the public hearing (open house format) to learn about the project, review the study results, view exhibit boards, receive one-on-one updates and submit comments before an alternative is recommended and approved.

Public Hearing (Open House Format):

Tuesday, Dec. 11
5:30 p.m. - 7:30 p.m.
Rio Vista Elementary School
310 North Rio Vista Street
Anaheim, CA 92806



Working in partnership, OCTA and Caltrans have worked on a series of six freeway improvement projects on the SR-91 in Orange County. Since 2010, more than 20 lane miles, and numerous capital and operational improvements, have been added to the SR-91 in Orange County.

Contact Information:
Fernando Chavarria
OCTA
714-560-5306
fchavarria@octa.net

Add to Calendar

Orange County Transportation Authority
OCTA

550 S. Main Street. PO Box 14184
Orange, CA 92863-1584, USA

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View the email as a web page.

Share



REMINDER: Join us for a Public Hearing (Open House Format) on December 11

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Orange County Transportation Authority
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Orange, CA 92863-1584, USA

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View the email as a web page.

Share



Don't forget to join the Public Hearing (Open House Format) tonight!

We invite you to stop by tonight beginning at 5:30 p.m. to learn about the State Route 91 (SR-91) Improvement Project, a proposed project to increase capacity, improve operations and help relieve congestion on both westbound and eastbound SR-91 between the SR-57 and SR-55 within the project area.

The Orange County Transportation Authority (OCTA) and California Department of Transportation District 12 (Caltrans) have initiated a proposed project to address current and future mobility needs. As part of the project approval and environmental document process, a no-build and a potential build alternative are being considered, and potential effects the project may have on the environment have been studied.

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View the email as a web page.

Share



Thank You for Joining Us!

We would like to thank everyone who joined us yesterday evening at the public hearing (open house format) we held to share information on the State Route 91 (SR-91) Improvement Project. We enjoyed speaking with the community and gathering your comments on the project.

If you did not have the opportunity to come out to the hearing, please feel free to view and download the Presentation Boards.

Additionally, if you have not had a chance to comment on the project, there is still time! Please submit your comments in writing no later than 5:00 p.m. on **Friday, December 21, 2018** to:

Kathleen Dove
Associate Environmental Planner
Caltrans District 12
Division of Environmental Analysis
1750 East 4th Street, Suite 100

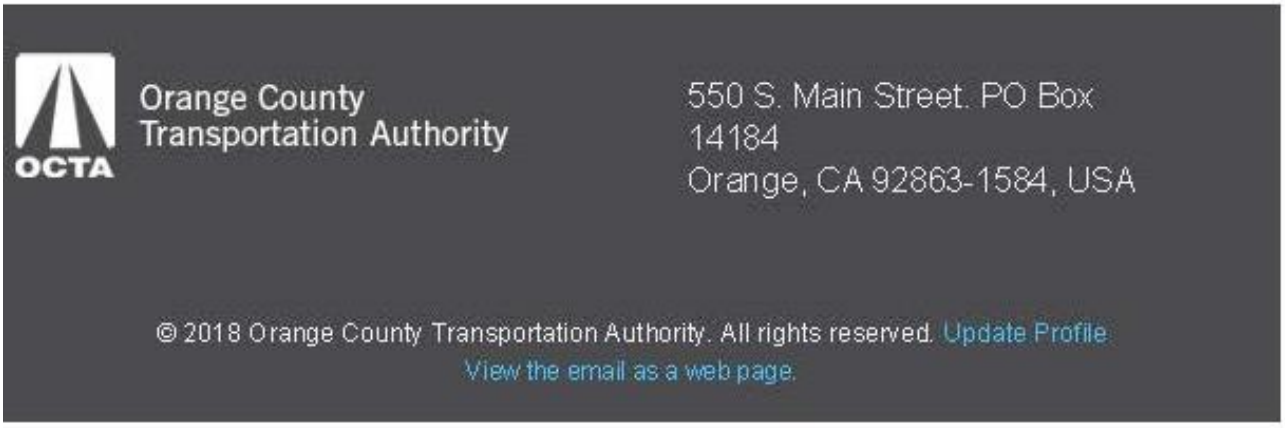
Santa Ana, CA 92705

You may also submit your comments via e-mail to D12.SR91.Project@dot.ca.gov. The Final Environmental Document, which will include responses to public comments, is estimated to be finalized in mid-2019. Provided that the build alternative is approved, OCTA and Caltrans will subsequently proceed with Final Design and Construction.

Thank you for your interest in this important transportation project.

Contact Information:
Fernando Chavarria
OCTA
714-560-5306
fchavarria@octa.net

Working in partnership, OCTA and Caltrans have worked on a series of six freeway improvement projects on the SR-91 in Orange County. Since 2010, more than 20 lane miles, and numerous capital and operational improvements, have been added to the SR-91 in Orange County.



Share



REMINDER: Submit Your Comments by Friday, December 21, 2018

We would like to remind you that you still have the opportunity to let us know your thoughts on the State Route 91 (SR-91) Improvement Project. The project proposes to increase capacity, improve operations and help relieve congestion on both westbound and eastbound SR-91 between the SR-57 and SR-55 within the project area. As part of the project approval and environmental document process, a no build and a potential build alternative are being considered, and potential effects the project may have on the environment have been studied.

Please submit your comments in writing no later than 5:00 p.m. on **Friday, December 21, 2018** to:

Kathleen Dove
Associate Environmental Planner
Caltrans District 12
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1750 East 4th Street, Suite 100
Santa Ana, CA 92705

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Thank you for your interest in this important transportation project.



Working in partnership, OCTA and Caltrans have worked on a series of six freeway improvement projects on the SR-91 in Orange County. Since 2010, more than 20 lane miles, and numerous capital and operational improvements, have been added to the SR-91 in Orange County.

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OCTA
714-560-5306
fchavarria@octa.net

Orange County Transportation Authority
OCTA

550 S. Main Street. PO Box 14184
Orange, CA 92863-1584, USA


Tweets 886
Following 1,049
Followers 1,057
Likes 5
91 Fwy Projects OC
@91fwy
Sharing tweets about 91 freeway improvement projects delivered in partnership by OCTA and Caltrans District 12. #91fwy #mobilitymatters #OCGO
Orange County, CA
octa.net/91fwy
Joined October 2009
Tweet to 91 Fwy Projects OC
128 Photos and videos
Tweets
Tweets & replies
Media
91 Fwy Projects OC @91fwy · 20 Dec 2018
Comments on the SR-91 Improvement Project's environmental document are being accepted through Friday, Dec. 21. #ABetter91 Details: octa.net/91PAED
Westbound Lane Addition
Eastbound Lane Addition
Overall Project Limits
Surface Streets
91 Fwy Projects OC @91fwy · 12 Dec 2018
Thank you for joining us at the SR-91 Improvement Project public hearing (open house format) yesterday. Comment submission deadline is Friday, December 21. Details: octa.net/91PAED

4.5 Agency Coordination

4.5.1 Native American Heritage Commission Consultation

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95501
(916) 373-3710
(916) 373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: SR 91 Widening between SR 57 and SR 55 Project
County: Orange

USGS Quadrangle
Name: Orange, Anaheim
Township: 4S Range: 9W, 10W Section(s): Unsectioned

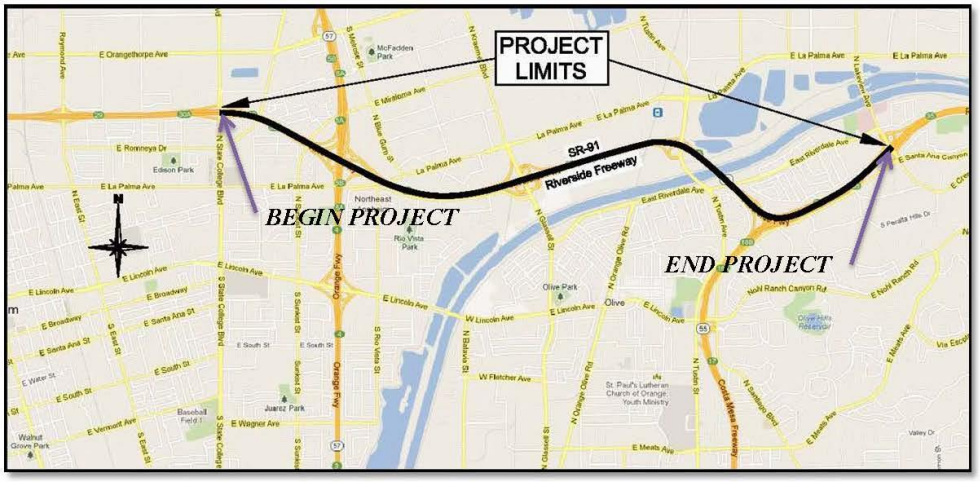
Company/Firm/Agency:
ICF International
Contact Person: Mark Robinson
Street Address: 630 K Street, Suite 400
City: Sacramento, CA Zip: 95814
Phone: (916) 231-7608 Extension:
Fax: (916) 737-3030
Email: Mark.Robinson@icfi.com

Project Description:
Widen existing freeway and improve 6 interchanges.

☑ Project Location Map is attached

SLF&Contactsform: rev: 05/07/14

12-ORA-091 - PM 5.3 to PM 10.4
Program Code 20.10.201.310/HBC
EA 12-0K980K
May, 2013



PROJECT LOCATION MAP

On State Route 91 (SR-91) from PM 5.3 to PM 10.4
Between SR-57 and SR-55 in Orange County

Stantec OCTA Caltrans

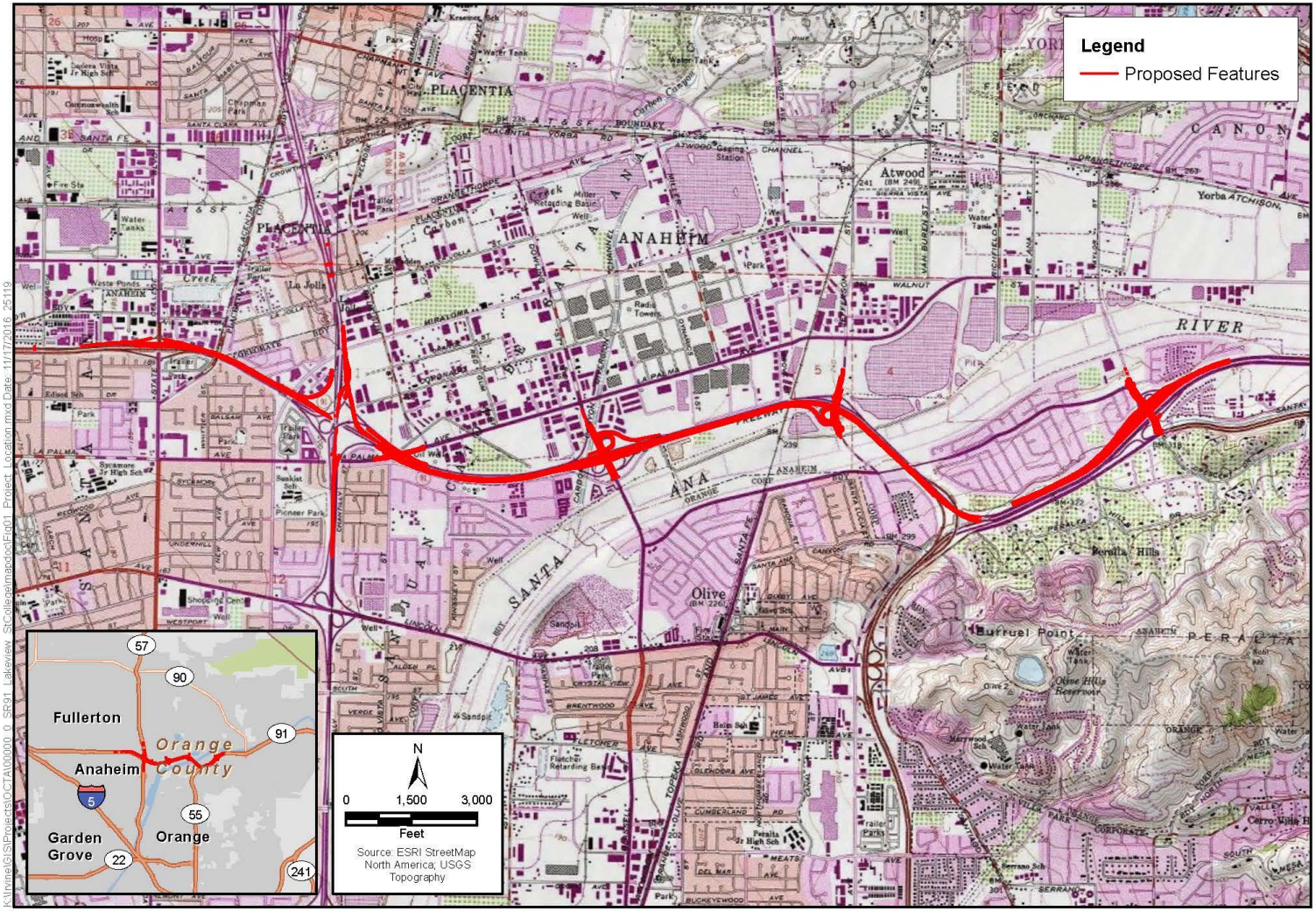


Figure 1
Project Location
SR-91 Lakeview to State College Project

STATE OF CALIFORNIA — Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION

1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 FAX

December 16, 2015

Mark Robinson
ICF International
630 K Street, Suite 400
Sacramento, CA 95814

Sent by Email: Mark.Robinson@ICFI.com
Number of Pages: 3

RE: SR 91 Widening Between SR 57 and SR 55 Project, Orange and Anaheim USGS Quadrangles, Orange County

Dear Mr. Robinson:

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced project. Government Code §65352.3 requires local governments to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose of protecting, and/or mitigating impacts to tribal cultural resources in creating or amending general plans, including specific plans. As of July 1, 2015, Public Resources Code Sections 21080.1, 21080.3.1 and 21080.3.2 require public agencies to consult with California Native American tribes identified by the NAHC for the purpose mitigating impacts to tribal cultural resources under the California Environmental Quality Act (CEQA). In accordance with Public Resources Code Section 21080.1(d):

> Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The law does not preclude agencies from initiating consultation with the tribes that are culturally and traditionally affiliated with their jurisdictions. The NAHC believes that in fact that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

In accordance with Public Resources Code Section 21080.1(d), formal notification must include a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation. The NAHC believes that agencies should also include with their notification letters information regarding any cultural resources assessment that has been completed on the APE, such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:
   - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE;
   - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
   - If the probability is low, moderate, or high that cultural resources are located in the APE.

- Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the potential APE; and
- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:
   - Any report that may contain site forms, site significance, and suggested mitigation measurers.

     All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure in accordance with Government Code Section 6254.10.
3. The results of any Sacred Lands File (SLF) check conducted through Native American Heritage Commission. A SLF search was completed with negative results.
4. Any ethnographic studies conducted for any area including all or part of the potential APE; and
5. Any geotechnical reports regarding all or part of the potential APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a cultural place. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the case that they do, having the information beforehand well help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance we are able to assure that our consultation list contains current information.

If you have any questions, please contact me at my email address: rw_nahc@pacbell.net.

Sincerely,

Rob Wood
Associate Environmental Planner

Native American Heritage Commission
Tribal Consultation List
Orange County
December 16, 2015

Juaneno Band of Mission Indians Acjachemen Nation
Chairperson, Matias Belardes
32161 Avenida Los Amigos Juaneno
San Juan Capisttrano , CA 92675
(949) 293-8522
(949) 444-4340 (Cell)

Juaneño Band of Mission Indians
Sonia Johnston, Tribal Chairperson
P.O. Box 25628
Santa Ana , CA 92799 Juaneno
sonia.johnston@sbcglobal.net

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693 Gabrielino Tongva
San Gabriel , CA 91778
GTTribalcouncil@aol.com
(626) 483-3564 Cell

Juaneno Band of Mission Indians Acjachemen Nation
Joyce Perry, Tribal Manager
4955 Paseo Segovia Juaneno
Irvine , CA 92612
kaamalam@gmail.com
(949) 293-8522

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., #231 Gabrielino Tongva
Los Angeles , CA 90012
sgoad@gabrielino-tongva.com
(951) 807-0479

Gabrielino-Tongva Tribe
Linda Candelaria, Co-Chairperson
1999 Avenue of the Stars, Suite 1100
Los Angeles , CA 90067
Gabrielino
(626) 676-1184 Cell

Juaneno Band of Mission Indians Acjachemen Nation
Teresa Romero, Chairwoman
31411-A La Matanza Street Juaneno
San Juan Capistrano , CA 92675
tromero@juaneno.com
(949) 488-3484
(530) 354-5876 Cell

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393
Covina , CA 91723
gabrielenoindians@yahoo.com Gabrielino
(626) 926-4131

Gabrielino Tongva Indians of California Tribal Council
Robert F. Dorame, Tribal Chair/Cultural Resources
P.O. Box 490 Gabrielino Tongva
Bellflower , CA 90707
gtongva@verizon.net
(562) 761-6417 Voice/Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.
This list applicable only for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed SR 91 Widening between SR 57 and SR 55 Project, Orange and Anaheim USGS Quadrangles, Orange County.

3 January 2017

Honorable Matias Belardes
Juaneno Band of Mission Indians Acjachemen Nation – Belardes
32161 Avenida Los Amigos
San Juan Capistrano, CA 92675

RE: Proposed Improvements to State Route 91, Federal Project # 6071096

Dear Chairperson Belardes:

The Orange County Transportation Authority (OCTA), in cooperation with the California Department of Transportation (Caltrans) District 12, is evaluating alternatives to increase freeway capacity and improve traffic operations on State Route 91 (SR-91) from Post Mile (PM) 4.2 (East of Raymond Avenue-East Street) to PM 11.0 (East of Lakeview Avenue), and on State Route 57 (SR-57) from PM 15.1 (North of Lincoln Avenue) to PM 16.4 (Orangethorpe Avenue) in the Cities of Anaheim and Orange in the County of Orange.

Proposed improvements include freeway mainline widening and modifications to various interchanges, ramps and intersections. The project will improve both traffic circulation of the mainline and access to the freeway from surrounding cities. Construction is estimated to begin in 2028 and completed in 2030. The project area is shown on the attached figure.

On behalf of the Federal Highway Administration (FHWA), and Caltrans, ICF is contacting interested parties, including Native American groups and individuals, to help identify any prehistoric sites, sacred sites, or traditional cultural properties located in the vicinity of the project area.

The records search for the project was completed on 6 December 2016 at the Southern Coastal Central Information Center (SCCIC). The record search included consultation of 7.5' topographic maps for the project location and the California Historic Resources Inventory (HRI). The results of the record search show that no cultural resources exist within the project's Area of Potential Effects (APE). A total of 16 resources exist within the 0.25-mile study area buffer. One additional prehistoric site (30-000277) is listed on the Orange 7.5' topographic map as just outside this study area; however, this site is included because other maps associated with resource records and reports included in the study area have mislabeled the location. The resource record for this prehistoric habitation site indicates that it has been destroyed during previous construction activities. In total, four prehistoric resources, one historic linear resource, ten historic built environment resources, and one set of human remains (30-000517) were identified in the study area buffer.

ICF requested that a Sacred Lands Files Search be performed by the Native American Heritage Commission (NAHC). The results of that search did not identify any known Sacred Lands or cultural resources in the project vicinity.

Section 106 Consultation

The studies required for this project include cultural resources investigations and consultation with interested parties. On behalf of FHWA, Caltrans is interested in receiving input from your community regarding any concerns related to the proposed project. If you know of any cultural resources that may be of religious or cultural significance to your community, please contact me at (213) 312-1777 or email at Stephen.Bryne@icf.com.

I look forward to your response. If I do not receive a response from you I will contact you by telephone or e-mail to ensure that any comments or concerns you may have are acknowledged. In return correspondence, please refer to this project by Federal Project # 6071096. Caltrans requests to receive your comments by 3 February 2017. Thank you for your time and assistance.

Sincerely,

Stephen Bryne, Senior Archaeologist

Encl: Project Location Map

3 January 2017

Honorable Linda Candelaria
Gabrielino-Tongva Tribe
1999 Avenue of the Stars, Suite 1100
Los Angeles, CA 90067

RE: Proposed Improvements to State Route 91, Federal Project # 6071096

Dear Co-Chairperson Candelaria:

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Stephen Bryne, Senior Archaeologist

Encl: Project Location Map

3 January 2017

Honorable Robert F. Dorame
Gabrielino Tongva Indians of California Tribal Council
P.O. Box 490
Bellflower, CA 90707

RE: Proposed Improvements to State Route 91, Federal Project # 6071096

Dear Chairperson Dorame:

The Orange County Transportation Authority (OCTA), in cooperation with the California Department of Transportation (Caltrans) District 12, is evaluating alternatives to increase freeway capacity and improve traffic operations on State Route 91 (SR-91) from Post Mile (PM) 4.2 (East of Raymond Avenue-East Street) to PM 11.0 (East of Lakeview Avenue), and on State Route 57 (SR-57) from PM 15.1 (North of Lincoln Avenue) to PM 16.4 (Orangethorpe Avenue) in the Cities of Anaheim and Orange in the County of Orange.

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Sincerely,

Stephen Bryne, RPA, Senior Archaeologist

Encl: Project Location Map

3 January 2017

Honorable Sandonne Goad
Gabrielino/Tongva Nation
106 ½ Judge John Aiso St. #231
Los Angeles, CA 90012

RE: Proposed Improvements to State Route 91, Federal Project # 6071096

Dear Chairperson Goad:

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Proposed improvements include freeway mainline widening and modifications to various interchanges, ramps and intersections. The project will improve both traffic circulation of the mainline and access to the freeway from surrounding cities. Construction is estimated to begin in 2028 and completed in 2030. The project area is shown on the attached figure.

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The records search for the project was completed on 6 December 2016 at the Southern Coastal Central Information Center (SCCIC). The record search included consultation of 7.5' topographic maps for the project location and the California Historic Resources Inventory (HRI). The results of the record search show that no cultural resources exist within the project's Area of Potential Effects (APE). A total of 16 resources exist within the 0.25-mile study area buffer. One additional prehistoric site (30-000277) is listed on the Orange 7.5' topographic map as just outside this study area; however, this site is included because other maps associated with resource records and reports included in the study area have mislabeled the location. The resource record for this prehistoric habitation site indicates that it has been destroyed during previous construction activities. In total, four prehistoric resources, one historic linear resource, ten historic built environment resources, and one set of human remains (30-000517) were identified in the study area buffer.

ICF requested that a Sacred Lands Files Search be performed by the Native American Heritage Commission (NAHC). The results of that search did not identify any known Sacred Lands or cultural resources in the project vicinity.

Section 106 Consultation

The studies required for this project include cultural resources investigations and consultation with interested parties. On behalf of FHWA, Caltrans is interested in receiving input from your community regarding any concerns related to the proposed project. If you know of any cultural resources that may be of religious or cultural significance to your community, please contact me at (213) 312-1777 or email at Stephen.Bryne@icf.com.

I look forward to your response. If I do not receive a response from you I will contact you by telephone or e-mail to ensure that any comments or concerns you may have are acknowledged. In return correspondence, please refer to this project by Federal Project # 6071096. Caltrans requests to receive your comments by 3 February 2017. Thank you for your time and assistance.

Sincerely,

Stephen Bryne

Stephen Bryne, RPA, Senior Archaeologist

Encl: Project Location Map

3 January 2017

Honorable Sonia Johnston
Juaneno Band of Mission Indians
P.O. Box 25628
Santa Ana, CA 92799

RE: Proposed Improvements to State Route 91, Federal Project # 6071096

Dear Chairperson Johnston:

The Orange County Transportation Authority (OCTA), in cooperation with the California Department of Transportation (Caltrans) District 12, is evaluating alternatives to increase freeway capacity and improve traffic operations on State Route 91 (SR-91) from Post Mile (PM) 4.2 (East of Raymond Avenue-East Street) to PM 11.0 (East of Lakeview Avenue), and on State Route 57 (SR-57) from PM 15.1 (North of Lincoln Avenue) to PM 16.4 (Orangethorpe Avenue) in the Cities of Anaheim and Orange in the County of Orange.

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Sincerely,

Stephen Bryne, Senior Archaeologist

Encl: Project Location Map

3 January 2017

Honorable Anthony Morales
Gabrieleno/Tongva San Gabriel Band of Mission Indians
P.O. Box 693
San Gabriel, CA 91778

RE: Proposed Improvements to State Route 91, Federal Project # 6071096

Dear Chairperson Morales:

The Orange County Transportation Authority (OCTA), in cooperation with the California Department of Transportation (Caltrans) District 12, is evaluating alternatives to increase freeway capacity and improve traffic operations on State Route 91 (SR-91) from Post Mile (PM) 4.2 (East of Raymond Avenue-East Street) to PM 11.0 (East of Lakeview Avenue), and on State Route 57 (SR-57) from PM 15.1 (North of Lincoln Avenue) to PM 16.4 (Orangethorpe Avenue) in the Cities of Anaheim and Orange in the County of Orange.

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Sincerely,

Stephen Bryne

Stephen Bryne, Senior Archaeologist

Encl: Project Location Map

3 January 2017

Honorable Joyce Perry
Juaneno Band of Mission Indians Acjachemen Nation
4955 Paseo Segovia
Irvine, CA 92603

RE: Proposed Improvements to State Route 91, Federal Project # 6071096

Dear Tribal Manager Perry:

The Orange County Transportation Authority (OCTA), in cooperation with the California Department of Transportation (Caltrans) District 12, is evaluating alternatives to increase freeway capacity and improve traffic operations on State Route 91 (SR-91) from Post Mile (PM) 4.2 (East of Raymond Avenue-East Street) to PM 11.0 (East of Lakeview Avenue), and on State Route 57 (SR-57) from PM 15.1 (North of Lincoln Avenue) to PM 16.4 (Orangethorpe Avenue) in the Cities of Anaheim and Orange in the County of Orange.

Proposed improvements include freeway mainline widening and modifications to various interchanges, ramps and intersections. The project will improve both traffic circulation of the mainline and access to the freeway from surrounding cities. Construction is estimated to begin in 2028 and completed in 2030.
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I look forward to your response. If I do not receive a response from you I will contact you by telephone or e-mail to ensure that any comments or concerns you may have are acknowledged. In return correspondence, please refer to this project by Federal Project # 6071096 . Caltrans requests to receive your comments by 3 February 2017. Thank you for your time and assistance.

Sincerely,

Stephen Bryne

Stephen Bryne, Senior Archaeologist

Encl: Project Location Map

3 January 2017

Honorable Teresa Romero
Juaneno Band of Mission Indians Achachemen Nation – Romero
31411-A La Matanza Street
San Juan Capistrano, CA 92675

RE: Proposed Improvements to State Route 91, Federal Project # 6071096

Dear Chairwoman Romero:

The Orange County Transportation Authority (OCTA), in cooperation with the California Department of Transportation (Caltrans) District 12, is evaluating alternatives to increase freeway capacity and improve traffic operations on State Route 91 (SR-91) from Post Mile (PM) 4.2 (East of Raymond Avenue-East Street) to PM 11.0 (East of Lakeview Avenue), and on State Route 57 (SR-57) from PM 15.1 (North of Lincoln Avenue) to PM 16.4 (Orangethorpe Avenue) in the Cities of Anaheim and Orange in the County of Orange.

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Sincerely,

Stephen Bryne

Stephen Bryne, Senior Archaeologist

Encl: Project Location Map

3 January 2017

Honorable Andrew Salas
Gabrieleno Band of Mission Indians – Kizh Nation
P.O. Box 393
Covina, California 91723

RE: Proposed Improvements to State Route 91, Federal Project # 6071096

Dear Chairperson Salas:

The Orange County Transportation Authority (OCTA), in cooperation with the California Department of Transportation (Caltrans) District 12, is evaluating alternatives to increase freeway capacity and improve traffic operations on State Route 91 (SR-91) from Post Mile (PM) 4.2 (East of Raymond Avenue-East Street) to PM 11.0 (East of Lakeview Avenue), and on State Route 57 (SR-57) from PM 15.1 (North of Lincoln Avenue) to PM 16.4 (Orangethorpe Avenue) in the Cities of Anaheim and Orange in the County of Orange.

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I look forward to your response. If I do not receive a response from you I will contact you by telephone or e-mail to ensure that any comments or concerns you may have are acknowledged. In return correspondence, please refer to this Project by Federal Project # 6071096. Caltrans requests to receive your comments by 3 February 2017. Thank you for your time and assistance.

Sincerely,

Stephen Bryne

Stephen Bryne, Senior Archaeologist

Encl: Project Location Map

GABRIELENO BAND OF MISSION INDIANS - KIZH NATION
Historically known as The San Gabriel Band of Mission Indians
Recognized by the State of California as the aboriginal tribe of the Los Angeles basin

Dear Stephen Bryne
Senior Archaeoligist,

Subject: Proposed Improvements to State Route 91, Federal Project # 6071096 in the cities of Anaheim and Orange County of Orange

"The project locale lies in an area where the Ancestral & traditional territories of the Kizh(Kitc) Gabrieleño villages, adjoined and overlapped with each other, at least during the Late Prehistoric and Protohistoric Periods. The homeland of the Kizh (Kitc) Gabrieleños , probably the most influential Native American group in aboriginal southern California (Bean and Smith 1978a:538), was centered in the Los Angeles Basin, and reached as far east as the San Bernardino-Riverside area. The homeland of the Serranos was primarily the San Bernardino Mountains, including the slopes and lowlands on the north and south flanks. Whatever the linguistic affiliation, Native Americans in and around the project area exhibited similar organization and resource procurement strategies. Villages were based on clan or lineage groups. Their home/ base sites are marked by midden deposits, often with bedrock mortars. During their seasonal rounds to exploit plant resources, small groups would migrate within their traditional territory in search of specific plants and animals. Their gathering strategies often left behind signs of special use sites, usually grinding slicks on bedrock boulders, at the locations of the resources. Therefore, in order to protect our resources we're requesting one of our experienced & certified Native American monitor as well as a Archeo- Monitor to be on site during any & all ground disturbances (this includes but is not limited to pavement removal, pot-holing, or grubbing, auguring, boring, grading, excavation and trenching).

In all cases, when the NAHC states there are "No" records of sacred sites" in the subject area; they always refer the contractors back to the Native American Tribes whose tribal territory the project area is in. This is due to the fact, that the NAHC is only aware of general information on each California NA Tribe they are "NOT " the "experts" on our Tribe. Our Elder Committee & Tribal Historians are the experts and is the reason why the NAHC will always refer contractors to the local tribes.

In addition, we are also often told that an area has been previously developed or disturbed and thus there are no concerns for cultural resources and thus minimal impacts would be expected. I have two major recent examples of how similar statements on other projects were proven very inadequate. An archaeological study claimed there would be no impacts to an area adjacent to the Plaza Church at Olvera Street, the original Spanish settlement of Los Angeles, now in downtown Los Angeles. In fact, this site was the Gabrieleno village of Yangna long before it became what it is now today. The new development wrongfully began their construction and they, in the process, dug up and desecrated 118 burials. The area that was dismissed as culturally sensitive was in fact the First Cemetery of Los Angeles where it had been well documented at the Huntington Library that 400 of our Tribe's ancestors were buried there along with the founding families of Los Angeles (Pico's, Sepulveda's, and Alvarado's to name a few). In addition, there was another inappropriate study for the development of a new sports complex at Fedde Middle School in the City of Hawaiian Gardens could commence. Again, a village and burial site were desecrated despite their mitigation measures. Thankfully, we were able to work alongside the school district to quickly and respectfully mitigate a mutually beneficial resolution.

Given all the above, the proper thing to do for your project would be for our Tribe to monitor ground disturbing construction work. Native American monitors and/or consultant can see that cultural resources are treated appropriately from the Native American point of view. Because we are the lineal descendants of the vast area of Los Angeles and Orange Counties, we hold sacred the ability to protect what little of our culture remains. We thank you for taking seriously your role and responsibility in assisting us in preserving our culture.

With respect,

Please contact our office regarding this project to coordinate a Native American Monitor to be present. Thank You

Andrew Salas, Chairman

Andrew Salas, Chairman
Albert Perez, treasurer I
Nadine Salas, Vice-Chairman
Martha Gonzalez Lemos, treasurer II
Christina Swindall Martinez, secretary
Richard Gradias, Chairman of the council of Elders

POBox 393 Covina, CA 91723
www.gabrielenoindians@yahoo.com
gabrielenoindians@yahoo.com

Cell (626) 926-4131

Addendum: clarification regarding some confusions regarding consultation under AB52:

AB52 clearly states that consultation must occur with tribes that claim traditional and cultural affiliation with a project site. Unfortunately, this statement has been left open to interpretation so much that neighboring tribes are claiming affiliation with projects well outside their traditional tribal territory. The territories of our surrounding Native American tribes such as the Luiseno, Chumash, and Cahuilla tribal entities. Each of our tribal territories has been well defined by historians, ethnographers, archaeologists, and ethnographers – a list of resources we can provide upon request. Often, each Tribe as well educates the public on their very own website as to the definition of their tribal boundaries. You may have received a consultation request from another Tribe. However we are responding because your project site lies within our Ancestral tribal territory, which, again, has been well documented. What does Ancestrally or Ancestral mean? The people who were in your family in past times, Of, belonging to, inherited from, or denoting an ancestor or ancestors http://www.thefreedictionary.com/ancestral. . If you have questions regarding the validity of the "traditional and cultural affiliation" of another Tribe, we urge you to contact the Native American Heritage Commission directly. Section 5 section 21080.3.1 (c) states "…the Native American Heritage Commission shall assist the lead agency in identifying the California Native American tribes that are traditionally and culturally affiliated with the project area." In addition, ***please see the map below.***

CC: NAHC

APPENDIX 1: Map 1-2; Bean and Smith 1978 map.

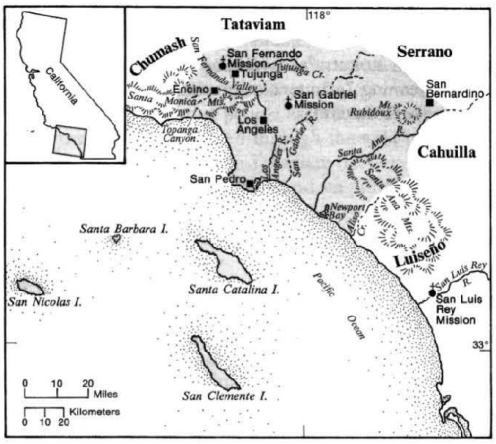


Fig. 1. Tribal territory.

The United States National Museum's Map of Gabrielino Territory:

Bean, Lowell John and Charles R. Smith
1978 Gabrielino IN *Handbook of North American Indians, California*, Vol. 8, edited by R.F. Heizer, Smithsonian Institution Press, Washington, D.C., pp. 538-549

Andrew Salas, Chairman
Nadine Salas, Vice-Chairman
Christina Swindall Martinez, secretary
Albert Perez, treasurer I
Martha Gonzalez Lemos, treasurer II
Richard Gradias, Chairman of the council of Elders

POBox 393 Covina, CA 91723
www.gabrielenoindians@yahoo.com
gabrielenoindians@yahoo.com

Local Government Tribal Consultation List Request

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
916-373-3710
916-373-5471 – Fax
nahc@nahc.ca.gov

Type of List Requested

☐ **X-CEQA Tribal Consultation List (AB 52)** – *Per Public Resources Code § 21080.3.1, subs. (b), (d), (e) and 21080.3.2*

☐ **General Plan (SB 18)** - *Per Government Code § 65352.3.*
Local Action Type:
___ General Plan ___ General Plan Element ___ General Plan Amendment
___ Specific Plan ___ Specific Plan Amendment ___ Pre-planning Outreach Activity

Required Information

Project Title: SR-91 Improvements Project

Local Government/Lead Agency: Caltrans, District 12

Contact Person: Jonathan Wright

Street Address: 1750 East 4th Street, Suite 100

City: Santa Ana

Zip: 92705 Phone: (657) 328-6167

Fax: (657) 328-6522

Email: jonathan.wright@dot.ca.gov

Specific Area Subject to Proposed Action
County: Orange City/Community: Orange and Anaheim

Project Description: Road improvements along SR-91 including mainline widening, primarily in the eastbound direction, and modifications to various interchanges, ramps, and intersections. Attached figures show project location. The project is located in unsectioned Rancho San Juan Cajon de Santa Ana lands on the United States Geological Survey (USGS) Anaheim 7.5-minute quadrangle (1965/revised 1981); and in Township 4 South, Range 9 West, Sections 4 and 5; and unsectioned rancho lands of Rancho San Juan Cajon de Santa Ana and Rancho Santiago de Santa Ana on the USGS Orange 7.5-minute quadrangle (1964/ revised 1981) .

Additional Request

☐ **Sacred Lands File Search** - ***Required Information:***

USGS Quadrangle Name(s):

Township: Range: Section(s):

STATE OF CALIFORNIA — Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION

Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710

November 22, 2017

Jonathan Wright
Caltrans

Sent by E-mail: jonathan.wright@dot.ca.gov

RE: SR-91 Improvements Project, Orange County

Dear Mr. Wright:

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties. Please note that the intent of the reference codes below is to avoid or mitigate impacts to tribal cultural resources, as defined, for California Environmental Quality Act (CEQA) projects under AB-52.

As of July 1, 2015, Public Resources Code Sections 21080.3.1 and 21080.3.2 **require public agencies** to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose mitigating impacts to tribal cultural resources:

> **Within 14 days** of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section. (Public Resources Code Section 21080.3.1(d))

The law does not preclude agencies from initiating consultation with the tribes that are culturally and traditionally affiliated with their jurisdictions. The NAHC believes that in fact that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

In accordance with Public Resources Code Section 21080.3.1(d), formal notification must include a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation. The NAHC believes that agencies should also include with their notification letters information regarding any cultural resources assessment that has been completed on the APE, such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:
   - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE;
   - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
   - If the probability is low, moderate, or high that cultural resources are located in the APE.
   - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the potential APE; and
   - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.
2. The results of any archaeological inventory survey that was conducted, including:

- Any report that may contain site forms, site significance, and suggested mitigation measurers.

  All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure in accordance with Government Code Section 6254.10.

3. The results of any Sacred Lands File (SFL) check conducted through Native American Heritage Commission. The request form can be found at http://nahc.ca.gov/wp-content/uploads/2015/04/Sacred-Lands-File-NA-Contact-Form.pdf.

4. Any ethnographic studies conducted for any area including all or part of the potential APE; and

5. Any geotechnical reports regarding all or part of the potential APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a cultural place. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the case that they do, having the information beforehand well help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance we are able to assure that our consultation list contains current information.

If you have any questions, please contact me at my email address: steven.quinn@nahc.ca.gov.

Sincerely,

Steven Quinn
Staff Services Analyst

Native American Heritage Commission
Tribal Consultation List
Orange County
11/22/2017

Campo Band of Mission Indians
Ralph Goff, Chairperson
36190 Church Road, Suite 1 — Kumeyaay
Campo, CA, 91906
Phone: (619) 478 - 9046
Fax: (619) 478-5818
rgoff@campo-nsn.gov

Ewiiaapaayp Tribal Office
Robert Pinto, Chairperson
4054 Willows Road — Kumeyaay
Alpine, CA, 91901
Phone: (619) 445 - 6315
Fax: (619) 445-9126

Ewiiaapaayp Tribal Office
Michael Garcia, Vice Chairperson
4054 Willows Road — Kumeyaay
Alpine, CA, 91901
Phone: (619) 445 - 6315
Fax: (619) 445-9126
michaelg@leaningrock.net

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chariperson
P.O. Box 393 — Gabrieleno
Covina, CA, 91723
Phone: (626) 926 - 4131
gabrielenoindians@yahoo.com

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693 — Gabrieleno
San Gabriel, CA, 91778
Phone: (626) 483 - 3564
Fax: (626) 286-1262
GTTribalcouncil@aol.com

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., #231 — Gabrielino
Los Angeles, CA, 90012
Phone: (951) 807 - 0479
sgoad@gabrielino-tongva.com

Gabrielino Tongva Indians of California Tribal Council
Robert Dorame, Chairperson
P.O. Box 490 — Gabrielino
Bellflower, CA, 90707
Phone: (562) 761 - 6417
Fax: (562) 761-6417
gtongva@gmail.com

Gabrielino-Tongva Tribe
Charles Alvarez,
23454 Vanowen Street — Gabrielino
West Hills, CA, 91307
Phone: (310) 403 - 6048
roadkingcharles@aol.com

Jamul Indian Village
Erica Pinto, Chairperson
P.O. Box 612 — Kumeyaay
Jamul, CA, 91935
Phone: (619) 669 - 4785
Fax: (619) 669-4817

La Posta Band of Mission Indians
Javaughn Miller, Tribal Administrator
8 Crestwood Road — Kumeyaay
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
jmiller@LPtribe.net

La Posta Band of Mission Indians
Gwendolyn Parada, Chairperson
8 Crestwood Road — Kumeyaay
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
LP13boots@aol.com

Manzanita Band of Kumeyaay Nation
Angela Elliott Santos, Chairperson
P.O. Box 1302 — Kumeyaay
Boulevard, CA, 91905
Phone: (619) 766 - 4930
Fax: (619) 766-4957

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 6097.98 of the Public Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed SR-91 Improvements Project, Orange County.

PROJ-2017-006310 — 11/22/2017 09:34 AM — 1 of 2

Native American Heritage Commission
Tribal Consultation List
Orange County
11/22/2017

San Pasqual Band of Mission Indians
Allen E. Lawson, Chairperson
P.O. Box 365 Kumeyaay
Valley Center, CA, 92082
Phone: (760) 749 - 3200
Fax: (760) 749-3876
allenl@sanpasqualtribe.org

Sycuan Band of the Kumeyaay Nation
Cody J. Martinez, Chairperson
1 Kwaaypaay Court Kumeyaay
El Cajon, CA, 92019
Phone: (619) 445 - 2613
Fax: (619) 445-1927
ssilva@sycuan-nsn.gov

Viejas Band of Kumeyaay Indians
Robert Welch, Chairperson
1 Viejas Grade Road Kumeyaay
Alpine, CA, 91901
Phone: (619) 445 - 3810
Fax: (619) 445-5337
jhagen@viejas-nsn.gov

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PROJ-2017-006310 11/22/2017 09:34 AM 2 of 2

Mr. Charles Alvarez
November 29, 2017
Page 2

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Sincerely,

Charles Baker
District Environmental Branch Chief
Charles.baker@dot.ca.gov (657) 328-6139

Attachments: Figures 1-3
Cc: J. Wright

"Provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability"

Mr. Robert Dorame, Chairperson
November 29, 2017
Page 2

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Mr. Michael Garcia, Vice Chairperson
November 29, 2017
Page 2

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Ms. Sandonne Goad, Chairperson
November 29, 2017
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Mr. Ralph Goff, Chairperson
November 29, 2017
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November 29, 2017
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Mr. Anthony Morales, Chairperson
November 29, 2017
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Ms. Erica Pinto, Chairperson
November 29, 2017
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"Provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability"

Mr. Andrew Salas, Chairperson
November 29, 2017
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Charles.baker@dot.ca.gov (657) 328-6139

Attachments: Figures 1-3
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"Provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability"

4.5.2 State Historic Preservation Officer Concurrence

State of California • Natural Resources Agency
Edmund G. Brown Jr., *Governor*

DEPARTMENT OF PARKS AND RECREATION
OFFICE OF HISTORIC PRESERVATION
Lisa Ann L. Mangat, *Director*

Julianne Polanco, State Historic Preservation Officer
1725 23rd Street, Suite 100, Sacramento, CA 95816-7100
Telephone: (916) 445-7000 FAX: (916) 445-7053
calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

August 30, 2018

VIA EMAIL

In reply refer to: FHWA_2018_0806_001

Mr. Charles Baker
Environmental Analysis – Specialist Branch Chief
Caltrans District 12, Santa Ana
1750 East Fourth Street, Suite 100
Santa Ana, CA 92705

Subject: Determinations of Eligibility for the Proposed Orange County Transportation Authority State Route 91 Improvement Project, Orange County, CA

Dear Mr. Baker:

Caltrans is initiating consultation for the above project in accordance with the January 1, 2014 *First Amended Programmatic Agreement Among the Federal Highway Administration (FHWA), the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California* (PA). As part of your documentation, Caltrans submitted a Historic Property Survey Report (HPSR), Historical Resources Evaluation Report and an Archaeological Survey Report for the project.

Orange County Transportation Authority (OCTA), in cooperation with Caltrans District 12, proposes to improve traffic operations on State Route 91 from PM 4.8 to PM 10.4, on SR-57 from PM 15.6 to PM 16.1, and on SR-55 from PM 17.5 to PM 17.9 in the cities of Anaheim, Fullerton, Orange, and Placentia in Orange County, California. A complete project description is on page 1 on the HPSR.

Pursuant to Stipulation VIII.C.2 of the PA, Caltrans is requesting SHPO concurrence that the following resources are not eligible for the National Register of Historic Places:

- Alpha Jet, 1400 N Baxter Street, Anaheim, CA
- Bekins Moving and Storage, 1415 N Burton Place, Anaheim, CA
- 1400 N Burton Place, Anaheim, CA
- 1423 N State College Boulevard, Anaheim, CA
- 2500 E Miraloma Way, Anaheim, CA

Mr. Baker FHWA_2018_0806_001
August 30, 2018
Page 2

- 1311-1347 N Blue Gum Street, Anaheim, CA
- 2727 E Coronado Street, Anaheim, CA
- Casa La Palma, 2701 E La Palma Avenue, Anaheim, CA
- Village Green, Bound by Frontera Street to the north, N Armando Street to the east, the Santa Ana River to the south, and North Via Porto to the west
- 2950 E Frontera Street, Anaheim, CA

Based on my review of the submitted documentation, I concur.

Thank you for considering historic properties during project planning. If you have any questions, please contact Natalie Lindquist at (916) 445-7014 with e-mail at natalie.lindquist@parks.ca.gov or Alicia Perez at (916) 445-7020 with e-mail at alicia.perez@parks.ca.gov .

Sincerely,

Julianne Polanco
State Historic Preservation Officer

4.5.3 U.S. Fish and Wildlife Service Species List



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
Phone: (760) 431-9440 Fax: (760) 431-5901
http://www.fws.gov/carlsbad/

In Reply Refer To: April 21, 2020
Consultation Code: 08ECAR00-2020-SLI-0979
Event Code: 08ECAR00-2020-E-02287
Project Name: SR-91 Improvement Project Between SR-57 and SR-55 (EA 0K9800)

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

Project Summary

Consultation Code: 08ECAR00-2020-SLI-0979

Event Code: 08ECAR00-2020-E-02287

Project Name: SR-91 Improvement Project Between SR-57 and SR-55 (EA 0K9800)

Project Type: TRANSPORTATION

Project Description: The California Department of Transportation (Caltrans) District 12, in cooperation with the Orange County Transportation Authority (OCTA), is proposing to improve traffic operations on State Route (SR-) 91 from post mile (PM) 4.7 to PM R10.8 (from west of State College Boulevard to east of Lakeview Avenue), SR-57 from PM 15.5 to PM 16.2 (from just south of SR-91 to just north of SR-91), and SR-55 from PM 17.4 to PM R17.9 (from south of SR-91 to SR-91) in the cities of Anaheim, Fullerton, Orange, and Placentia in Orange County, California, a distance of approximately six miles. The proposed improvements would include SR-91 freeway mainline widening, primarily in the eastbound direction, and modifications to various interchanges, connectors, ramps, and intersections.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/33.851085449598685N117.84681532931052W



4.5.4 National Marine Fisheries Services Species List

From: Hoisington, Greg
To: "nmfswcrca.specieslist@noaa.gov"
Subject: NMFS Species List
Date: Tuesday, April 21, 2020 3:46:00 PM
Attachments: image001.png

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(SR-) 91 from post mile (PM) 4.7 to PM R10.8 (from west of State College Boulevard to east of
Lakeview Avenue), SR-57 from PM 15.5 to PM 16.2 (from just south of SR-91 to just north of SR-
91), and SR-55 from PM 17.4 to PM R17.9 (from south of SR-91 to SR-91) in the cities of Anaheim, Fullerton, Orange, and Placentia in Orange County, California, a distance of approximately six miles. The proposed improvements would include SR-91 freeway mainline
widening, primarily in the eastbound direction, and modifications to various interchanges, connectors, ramps, and intersections.

I would like to request a species list for SR-91 Improvement Project Between SR-57 and SR-55 (EA 0K9800) for the following quads:

Quad Name **Anaheim**
Quad Number **33117-G8**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) - **X**
CCV Steelhead DPS (T) -
Eulachon (T) -
sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat -
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) -
Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH -
Chinook Salmon EFH -
Groundfish EFH -
Coastal Pelagics EFH -
Highly Migratory Species EFH -

MMPA Species (See list at left)
ESA and MMPA Cetaceans/Pinnipeds
See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -

Quad Name **Orange**
Quad Number **33117-G7**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) - **X**
CCV Steelhead DPS (T) -
Eulachon (T) -
sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat -
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) -

Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -

Olive Ridley Sea Turtle (T/E) -

Leatherback Sea Turtle (E) -

North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -

Fin Whale (E) -

Humpback Whale (E) -

Southern Resident Killer Whale (E) -

North Pacific Right Whale (E) -

Sei Whale (E) -

Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -

Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH -

Chinook Salmon EFH -

Groundfish EFH -

Coastal Pelagics EFH -

Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office

562-980-4000

MMPA Cetaceans -

MMPA Pinnipeds -

GREG HOISINGTON | Principal, Southern California Natural Resources
714.501.2907 mobile | greg.hoisington@icf.com
ICF INTERNATIONAL | 49 Discovery, Suite 250, Irvine, CA 92618
ICF icf.com

From: NMFSWCRCA Specieslist - NOAA Service Account
To: Hoisington, Greg
Subject: Re: NMFS Species List
Date: Tuesday, April 21, 2020 3:46:47 PM

Receipt of this message confirms that NMFS has received your email to nmfswcrca.specieslist@noaa.gov. If you are a federal agency (or representative) and have followed the steps outlined on the California Species List Tools web page (http://www.westcoast.fisheries.noaa.gov/maps_data/california_species_list_tools.html), you have generated an official Endangered Species Act species list.

Messages sent to this email address are not responded to directly. For project specific questions, please contact your local NMFS office.

Northern California/Klamath (Arcata) 707-822-7201

North-Central Coast (Santa Rosa) 707-387-0737

Southern California (Long Beach) 562-980-4000

California Central Valley (Sacramento) 916-930-3600

4.5.5 Federal Highway Administration – Air Quality Conformity Determination Letter

STATE OF CALIFORNIA—CALIFORNIA STATE TRANSPORTATION AGENCY GAVIN NEWSOM, Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 12
ENVIRONMENTAL ANALYSIS DIVISION
1750 E., 4TH ST., SUITE 100
SANTA ANA, CA 92705
PHONE: (657) 328-6000
www.dot.ca.gov

Making Conservation a California Way of Life.

July 16, 2019

File: 12-ORA-91- PM 4.7-R10.8
12-ORA-57- PM 15.5-16.2
12-ORA-55- PM 17.4-R17.9
EFIS: 12-0002-0098
FTIPS ID: ORA150110
EA: 0K980
Improve Freeway Interchanges and Arterial Connection

Mr. Joseph Vaughn
Federal Highway Administration
650 Capitol Mall, Suite 4-100
Sacramento, CA 95814

Dear Mr. Vaughn:

The California Department of Transportation (the Department) requests that the Federal Highway Administration issue a project-level conformity determination for the Improve Freeway Interchanges and Arterial Connection Project (FTIPS ID# ORA150110, RTP ID# 2M0736, EA 0K9800, EFIS Project Number 1200020098). The project would improve traffic operations on SR-91 from PM 4.7 to PM R10.8 (from west of State College Boulevard to east of Lakeview Avenue), SR-57 from PM 15.5 to PM 16.2 (from just south of SR-91 to just north of SR-91), and SR-55 from PM 17.4 to PM R17.9 (from south of SR-91 to SR-91) in the cities of Anaheim, Fullerton, Orange, and Placentia in Orange County, California, a distance of approximately six miles. The proposed improvements under the Build Alternative would include SR-91 freeway mainline widening, primarily in the eastbound direction, and modifications to various interchanges, connectors, ramps, and intersections. The proposed project falls under the jurisdictions of the South Coast Air Basin. The Basin is in an area that is designated as moderate nonattainment for federal particulate matter less than 2.5 microns in size (PM2.5) and extreme attainment for Ozone (O_3) 8- hours standards. The Basin is also designated as attainment/serious maintenance for federal carbon monoxide (CO), particulate matter less than 10 microns in size (PM10), and attainment/maintenance for Nitrogen Dioxide (NO_2) standards. Details of the analysis are contained in the enclosed Air Quality Conformity Analysis report and related materials.

The project area is subject to regional conformity analysis requirements. The project's design concept and scope have not changed significantly from what was analyzed in the regional emission analysis. The attached conformity analysis demonstrates that the project is listed in the Southern California Association of Governments (SCAG) *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy Final Amendment*

#3 (RTP/SCS) (RTP ID 2M0736). The 2016 RTP/SCS was found to conform to the State Implementation Plan (SIP) by the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) on June 1, and June 2, 2016. The project is also included in the Southern California Association of Government's financially constrained *2019 Federal Transportation Improvement Program* (FTIP). The project is included in the FTIP, and the conformity and associated analysis is part of the FTIP approval process. The SCAG 2019 FTIP (State Highway Amendments 1-5; FTIP ID ORA150110) was determined to conform by FHWA and FTA on December 17, 2018. The design concept and scope of the proposed project is consistent with the project description in the 2019 FTIP.

Interagency Consultation and public involvement requirements related to PM10 and/or PM2.5 have been completed in accordance with the *Transportation Conformity Guidance for Qualitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (U.S. EPA, 3/29/2006). The proposed project would not be considered a project of air quality concern (POAQC) under 40 CFR 93.123(b)(1). The proposed project was submitted to stakeholders at a Transportation Conformity Working Group (TCWG) meeting on February 28, 2017, pursuant to the interagency consultation requirement of 40 CFR 93.105 (c)(1)(i). The members of the TCWG confirmed that the proposed project would not be a POAQC. Therefore, the proposed project would not be considered a POAQC under 40 CFR 93.126 (b)(1), as it would not create a new or worsen an existing PM2.5 violation. As such, an explicit, detailed PM10 and/or PM2.5 hot-spot analysis is not required.

The Draft Initial Study/Environmental Assessment was circulated for public review for a period of 30 days, from November 20, 2018 to December 21, 2018. A public hearing was held on December 11, 2018. No conformity-related comments were received during the public review period. This project has been assigned to the Department under 23 USC 327 (NEPA Assignment) and the proposed approval date of the final NEPA document is expected on or about April 21, 2020.

We would appreciate your assistance with providing a conformity determination prior to September 30, 2019. If you have any questions regarding this conformity analysis, please contact me at reza.aurasteh@dot.ca.gov, or Hoang Pham of my staff at hoang.b.pham@dot.ca.gov.

Sincerely,

Reza Aurasteh

Reza Aurasteh, Ph.D., PE
Branch Chief, Environmental Engineering

c: Ryan Chiene, Air Quality Specialist, Michael Baker International.
Brian Santos, Project Manager, Caltrans
Smita Deshpande, Senior Environmental Planner, Caltrans
Kathleen Dove, Associate Environmental Planner, Caltrans

4.5.6 Federal Highway Administration – Air Quality Conformity Determination Letter

U.S. Department of Transportation
Federal Highway Administration

Federal Highway Administration
California Division

650 Capitol Mall, Suite 4-100
Sacramento, CA 95814
(916) 498-5001
(916) 498-5008 (fax)

August 8, 2019

In Reply Refer To:
HDA-CA

Ryan Chamberlain, District Director
California Department of Transportation
District 12
1750 E., 4th St., Suite 100
Santa Ana, CA 92705

Attention: Arman Behtash

Dear Mr. Chamberlain:

SUBJECT: Project Level Conformity Determination for the SR-91 Improvement Project (FTIP ID ORA150110)

On July 16, 2019, the California Department of Transportation (Caltrans) submitted to the Federal Highway Administration (FHWA) a complete request for a project level conformity determination for the SR-91 Improvement Project. The project is in an area that is designated Non-Attainment or Maintenance for Nitrogen Dioxide (NO_2), Carbon Monoxide (CO), Ozone and Particulate Matter (PM_{10}, $PM_{2.5}$).

The project level conformity analysis submitted by Caltrans indicates that the project-level transportation conformity requirements of 40 CFR Part 93 have been met. The project is included in the Southern California Association of Governments' (SCAG) current Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP), as amended. The design concept and scope of the preferred alternative have not changed significantly from those assumed in the regional emissions analysis.

As required by 40 CFR 93.116 and 93.123, the localized $PM_{2.5}$ and PM_{10} analyses are included in the documentation. The analyses demonstrate that the project will not create any new violations of the standards or increase the severity or number of existing violations.

Based on the information provided, FHWA finds that the SR-91Improvement Project conforms with the State Implementation Plan (SIP) in accordance with 40 CFR Part 93.

If you have any questions pertaining to this conformity finding, please contact Joseph Vaughn at (916) 498-5346 or by email at Joseph.Vaughn@dot.gov.

Sincerely,

Tashia J. Clemons
Director, Planning and Environment

4.5.7 California Department of Fish and Wildlife

Czaban, Emily

Subject: FW: 0K980 M2 Project on SR-91

From: Lesley Hill <lhill@octa.net>
Sent: Friday, May 15, 2020 11:14 AM
To: Altman, Simona@Wildlife <Simona.Altman@wildlife.ca.gov>; Sato, Lisa@DOT <Lisa.Sato@dot.ca.gov>
Cc: Baker, Charles A@DOT <charles.baker@dot.ca.gov>; Mayer, David@Wildlife <David.Mayer@wildlife.ca.gov>; Turner, Jennifer@Wildlife <Jennifer.Turner@wildlife.ca.gov>; Macala, Rick@Wildlife <Rick.Macala@Wildlife.ca.gov>; Jeannie Lee <jlee@octa.net>
Subject: RE: 0K980 M2 Project on SR-91

Thank you to both Simona and Lisa for your help on this!

Lesley Hill
Orange County Transportation Authority
Environmental Mitigation Program Project Manager
(714) 560-5759
lhill@octa.net

From: Altman, Simona@Wildlife <Simona.Altman@wildlife.ca.gov>
Sent: Friday, May 15, 2020 11:11 AM
To: Sato, Lisa@DOT <Lisa.Sato@dot.ca.gov>
Cc: Baker, Charles A@DOT <charles.baker@dot.ca.gov>; Lesley Hill <lhill@octa.net>; Mayer, David@Wildlife <David.Mayer@wildlife.ca.gov>; Turner, Jennifer@Wildlife <Jennifer.Turner@wildlife.ca.gov>; Macala, Rick@Wildlife <Rick.Macala@Wildlife.ca.gov>; Lee, Jeanie C@DOT <jeanie.lee@dot.ca.gov>; Deshpande, Smita R@DOT <smita.deshpande@dot.ca.gov>
Subject: RE: 0K980 M2 Project on SR-91

Hi Lisa,

Our Fish Passage Engineer reviewed the documents provided by Caltrans, performed a desk top site analysis using Google Earth, and performed a hydraulic analysis over a range of fish passable flows, using the US Army Corps of Engineers' (USACE) in-house designed HEC-RAS hydraulic model for the Santa Ana River Watershed (beginning at Yorba Linda Blvd and ending at the Pacific Ocean). He concluded that the Santa Ana River Channel is experiencing both velocity barriers (at the high design fish passage flows) and depth barriers (at the low design fish passage flows) throughout the channel section with the existing bridge. He said the conditions are expected because of the wide-flat channel invert (approx. 310-feet wide), a lack of a low flow channel, and lack of hydraulic roughness and diversity.

His professional opinion is that the bridge is not producing adverse hydraulic conditions that would affect fish passage, rather it is the channel conditions, and that the widening would not contribute to a fish passage barrier. Thank you for giving us this opportunity to review the design and hydraulic report early in the design process. We encourage this type of collaboration in future projects and we hope that it results in efficient and successful permitting and project implementation. Please let me know if you have any questions. Thanks,

Simona Altman

1

Senior Environmental Scientist (Specialist)
California Department of Fish and Wildlife
South Coast – Region 5
3883 Ruffin Road
San Diego, CA 92123
Office: (858) 467-4283
Mobile: (805) 338-0474

From: Sato, Lisa@DOT <Lisa.Sato@dot.ca.gov>
Sent: Thursday, April 30, 2020 2:30 PM
To: Altman, Simona@Wildlife <Simona.Altman@wildlife.ca.gov>
Cc: Baker, Charles A@DOT <charles.baker@dot.ca.gov>; Lesley Hill <lhill@octa.net>; Mayer, David@Wildlife <David.Mayer@wildlife.ca.gov>; Turner, Jennifer@Wildlife <Jennifer.Turner@wildlife.ca.gov>; Macala, Rick@Wildlife <Rick.Macala@Wildlife.ca.gov>; Lee, Jeanie C@DOT <jeanie.lee@dot.ca.gov>; Deshpande, Smita R@DOT <smita.deshpande@dot.ca.gov>
Subject: RE: 0K980 M2 Project on SR-91

Warning: This email originated from outside of CDFW and should be treated with extra caution.

Hi Simona,

Please find the attached plans for the Santa Ana River location. I have the Location Hydraulic Report, which has the hydrology analysis and preliminary hydraulic modeling. The file is too large to send via email, so I'm going to see if I can send it using FILR. I'm hoping to send that to you next.

Thanks,
Lisa

From: Altman, Simona@Wildlife <Simona.Altman@wildlife.ca.gov>
Sent: Monday, April 27, 2020 9:22 AM
To: Sato, Lisa@DOT <Lisa.Sato@dot.ca.gov>
Cc: Baker, Charles A@DOT <charles.baker@dot.ca.gov>; Lesley Hill <lhill@octa.net>; Mayer, David@Wildlife <David.Mayer@wildlife.ca.gov>; Turner, Jennifer@Wildlife <Jennifer.Turner@wildlife.ca.gov>; Macala, Rick@Wildlife <Rick.Macala@Wildlife.ca.gov>
Subject: RE: 0K980 M2 Project on SR-91

EXTERNAL EMAIL. Links/attachments may not be safe.

Good Morning Lisa,

Thank you for the NES Amendment. As we discussed last week, the Santa Ana River is a NMFS Core 2 stream for steelhead recovery and it is important to ensure no barriers are created during the bridge widening. To that end, we would like to be closely engaged with the design of the bridge expansion. Please see the attached email from our Senior Hydraulic Engineer, Rik Macala, who I have copied on this email, along with my supervisor and lead. He requests some analyses and design plans. Please feel free to contact me or Rick with any questions or concerns. Thank you!

Simona Altman
Senior Environmental Scientist (Specialist)
California Department of Fish and Wildlife
South Coast – Region 5
3883 Ruffin Road
San Diego, CA 92123
Office: (858) 467-4283
Mobile: (805) 338-0474

From: Sato, Lisa@DOT <Lisa.Sato@dot.ca.gov>
Sent: Wednesday, April 22, 2020 10:56 AM
To: Altman, Simona@Wildlife <Simona.Altman@wildlife.ca.gov>
Cc: Baker, Charles A@DOT <charles.baker@dot.ca.gov>; Lesley Hill <lhill@octa.net>
Subject: Fw: 0K980 M2 Project on SR-91

Warning: This email originated from outside of CDFW and should be treated with extra caution.

Hi Simona,

Recently, I was informed that the M2 SR-91 Project EA 0K980 is not going to be delayed. I don't recall any issues for fish passage/SB 857 on this project, nor do I remember any comments from CDFW on this issue. However, I wanted to follow up with you and include the attached NES Amendment that addresses fish passage for this project.

Please let me know if you concur with our determination that this project has no issues regarding SB 857. If you have any questions or comments, please let me know.

Thanks,
Lisa

The information in this e-mail and any attachments are for the sole use of the intended recipient and may contain privileged and confidential information. If you are not the intended recipient, any use, disclosure, copying or distribution of this message or attachment is strictly prohibited. If you believe that you have received this e-mail in error, please contact the sender immediately and delete the e-mail and all of its attachments.

Chapter 5 List of Preparers

The Caltrans personnel and consultants below contributed to preparation of this IS/EA.

5.1 California Department of Transportation, District 12

Deshpande, Smita, Senior Environmental Planner. B.A. in Geography, University of Pune, India; M.S. in Regional Planning, Indiana University of Pennsylvania, Indiana, Pennsylvania; 29 years of experience in Environmental Planning. Contribution: Senior review of the IS/EA.

Dove, Kathleen, Associate Environmental Planner. B.S, Journalism, Northern Arizona University, M.S., Political Communications, Arizona State University, Ph.D., candidate, Marine Sciences, University of Alaska Fairbanks; 20 years of experience in Environmental Planning. Contribution: Environmental Coordinator IS/EA and NEPA QC Review.

Aurasteh, Reza, Senior Environmental Engineer. P.E., Ph.D. in Engineering, Utah State University; 28 years of experience in consulting engineering, academics, transportation engineering, and environmental engineering. Contribution: Senior review of the Noise Study Reports & Noise Abatement Decision Reports, Noise Barrier Survey Report, Air Quality Report, Initial Site Assessment & Phase II Site Investigation Workplan.

Baker, Charles, Senior Environmental Planner, B.A. in Anthropology, Cal State University, Fullerton. MA in History, Cal State University, Fullerton; 19 years of experience in environmental planning. Contribution: Senior review for Cultural and Paleontological Resources.

Battaglia, Melody, Associate Right of Way Agent, Right of Way Branch, B.S., Cal Poly Pomona; 14 years Right of Way experience, Right of Way Local Public Agency Oversight. Contribution: Draft/Final Relocation Impact Memo review.

Caraig, Ricardo, Transportation Engineer. P.E., B.S. in Civil Engineering, California State University Fullerton; 28 years of experience in Design and Environmental Engineering. Contribution: Noise Reviewer.

Chiou, Wayne, Transportation/Environmental Engineer. P.E., M.S. in Civil and Environmental Engineering, Utah State University. 30 years of experience in consulting engineering and environmental engineering. Contribution: Hazardous Waste review.

Chungkeun Lee, DES-Geotechnical Design South, MSCE in Civil Engineering from University of California at Los Angeles; 20 years of experience in Civil Engineering. Contribution: review of Geotechnical Section in the Environmental Document.

Dickson, Eric, Senior Landscape Architect. B.S. in Landscape Architecture, California State Polytechnic University, Pomona; 16 years of experience in Visual Impact Assessments and aesthetic master plans. Contribution: Senior review of the Visual Impact Assessment.

Dinh, Phi, Senior Transportation Engineer. MSCE, University of California, Los Angeles; 20 years if experience in Caltrans Hydraulics, Design and Construction, 3.5 years in Environmental Engineering with the Department of Navy. Contribution: Floodplain Reviewer.

Dolan, Edward, Associate Environmental Planner. Master of Urban/Regional Planning, California Polytechnic State University, Pomona. 20 years of experience in Environmental Analysis. Contribution: Technical Editor.

Godett, Jared, District 12 Landscape Associate, B.S. Landscape Architecture, California State Polytechnic University, Pomona. Contribution: Visual Impact Assessment review.

Heydari, Bahar, Associate Environmental Planner. B.S. in Geography with emphasis in Environmental Analysis, California State Polytechnic University, Pomona; 10 years of experience with Caltrans in environmental planning. Contribution: Section 4(f) Peer Reviewer.

Jassim, Ali, Transportation Engineer/Civil. 19 years of experience in Traffic Operations in Caltrans District D-8 & D-12. M.S.C.E: California State University/Fullerton. B.S.C.E: California State University/Long Beach. Registered Civil Engineer with the State of California. Contribution: Reviewed the Traffic Section.

Kim, Manuan, District 12, SR-91 Corridor Manager (Acting), M.S. in Traffic Engineering, University of California, Irvine; 25 years of experience in Traffic Operations. Contribution: review of Traffic Study Report.

Kristopher Barker, DES-Geotechnical Design South, BS in Geology from University of Southern California; 20 years of experience in Engineering Geology. Contribution: review of Geotechnical Section in the Environmental Document.

Liu, Brian, Associate Environmental Planner. B.A. in Geography, California State University, Long Beach, CA. 14 years of experience in Environmental Analysis. Contribution: NEPA Quality Control review of the IS/EA.

Lundblad, Linda, Senior Right of Way Agent, Right of Way Branch, B.A. University of California Los Angeles; 27 years Right of Way experience, Right of Way Local Public Agency Oversight. Contribution: Draft/Final Relocation Impact Memo review.

Maksoudian, Charles, District 12 Professional Engineer, B.S. in Civil Engineering, Walla Walla University, Washington; 27 years of experience in Transportation Engineering. Contribution: Review for TMP (temporary traffic conditions, delays and detours).

Oshrin, Andrew, Senior Transportation Engineer, Design Branch “D”, B.S. in Civil Engineering, California State University, Long Beach; 25years of experience in transportation engineering. Contribution: Senior review of the Project Report.

Patel, Hitesh, Transportation Engineer Civil, MS in Civil Engineering, California State University, Fullerton; 22 years of experience in Hydraulics. Contribution: Review Hydrology and Floodplain Section.

Pham, Hoang, District 12 Transportation Engineer/Civil, B.S. in Civil Engineering, University of California at Berkeley. Ten years of experience in Environmental Engineering. Contribution: review of Air Quality studies and environmental document Air Quality Section.

Pham, Steve, Acting Senior Transportation Engineer – 20 years with Caltrans, and 4 years in private sector. Master in Science, Civil Engineering, California State University, Long Beach. Licensed Professional Engineer in both Civil and Traffic in the State of California. Contribution: Review of Traffic Section.

Piña-Garrett, Grace, Senior Transportation Engineer, National Pollutant Discharge Elimination System Unit. B.S. in Civil Engineering, California State University, Long Beach; 21 years of experience in Engineering and Water Quality. Contribution: Senior review of the Water Quality Report.

Ridley Johnston, Robin, Associate Environmental Planner. Juris Doctorate, Southwestern Law School, Los Angeles, CA, Project Management Professional. 11 years of experience in Environmental Analysis. Contribution: NEPA Peer reviewer.

Salas, Hector, Associate Environmental Planner, National Pollutant Discharge Elimination System Unit. B.A. Environmental Analysis and Design, University of California, Irvine; 19 years' experience. Contribution: Review of Water Quality Assessment Report.

Santos, Brian, District 12 Project Manager, B.S. in Civil Engineering, California Polytechnic State University, San Luis Obispo; 10 years of experience in Project Delivery. Contribution: Project Management.

Sato, Lisa, Associate Environmental Planner (Natural Sciences). 8 years of experience. B.S. in Biology (Biodiversity, Ecology, and Conservation) from California State University, Fullerton. Contribution: Natural Environment Study reviewer.

Wright, Jonathan, Associate Environmental Planner, B.A. in Anthropology, San Diego State University; 10 years of experience in Environmental Planning. Contribution: Cultural and Paleontological Resources reviewer.

Yaghoubi, Rahmatolah (David), B.S in Civil Engineering, California State University of Los Angeles, with 20 years of Geotechnical Experience in private sector, including a variety of projects such as commercial, industrial, and residential, and 20 years of experience in Environmental Engineering. Contribution: Review of Initial Site Assessment and Hazardous Waste Study.

5.2 Orange County Transportation Authority

Chavarria, Fernando – Community Relations Officer. B.A. in Political Science, San Diego State University. Over 20 years of experience in communication and public affairs. Contribution: Public communications and community outreach programs and review of the IS/EA.

Gallardo, Joe – Real Property Manager. B.S. in Business Administration, University of Southern California. Over 25 years of experience in right-of-way for transportation projects. Contribution: Review of the Project Report and associated technical studies.

Hill, Lesley – Project Manager. B.A. in Environmental Analysis and Design, University of California, Irvine. Over 15 years of experience in transportation and natural resource/biological assessments and permitting. Contribution: Review of biological technical documents and the IS/EA.

Kulkarni, Anup – Section Manager. B.S. in Civil Engineering, University of California, Irvine; M.S. in Civil Engineering, University of California, Irvine; Ph.D. in Transportation Science, University of California, Irvine. Over 25 years of experience in traffic engineering and transportation planning. Contribution: Traffic analysis and review of the IS/EA and Project Report.

Lee, Jeannie – Senior Project Manager. B.S. in Structural Engineering, University of California, San Diego; M.S. in Civil Engineering, California State University, Long Beach. Over 18 years of experience in transportation management, planning, design, and construction. Contribution: Project management and review of the IS/EA and Project Report.

Lew, Ross – Program Manager. B.S. in Civil Engineering, University of California, Irvine. 28 years of experience in transportation management, planning, design, and construction. Contribution: Project management.

Phu, Dan – Environmental Programs Manager. B.A. in Environmental Analysis and Design, University of California, Irvine; M.S. in Environmental Studies, California State University, Fullerton. Over 19 years of experience in environmental and transportation planning. Contribution: Environmental peer review of the IS/EA and associated technical studies.

Sarris, Delia – Senior Real Property Agent. B.A. in Business Administration, California State University, San Bernardino. Over 26 years of experience in right-of-way for transportation projects. Contribution: Review of the Project Report and associated technical studies.

5.3 Advanced Civil Technologies

Karen Cohoe, P.E., Project Coordinator. Contribution: Assisted in review of environmental document sections.

5.4 ICF

Brian Calvert, Principal. M.E.P., Environmental Planning. Arizona State University; B.A., Geography and Regional Science, The George Washington University. Experience: 24 years in transportation planning and environmental compliance. Contribution: Document QA/QC review.

Brittany Buscombe, Senior GIS Analyst. B.A. Environmental Analysis and Design, University of California at Irvine; 16 years' experience performing environmental analysis and document preparation. Contribution: GIS analysis and figure development for the Environmental Document.

Christy Corzine, Principal Environmental Planner. M.S., Natural Resource Economics, University of California, Davis; B.S., Environmental Science, University of California, Riverside. Experience: 38 years in transportation planning and environmental compliance. Contribution: Document QA/QC review.

Claudia Watts, Environmental Planner. B.S. Environmental Studies, Shepherd University; 2 years' experience in environmental document preparation. Contribution: Environmental document preparation.

Elliott Wezerek, Research Assistant. B.S., Environmental Studies, University of Southern California. Experience: 1 year in environmental planning. Contribution: Environmental document preparation.

Emily Czaban, Senior Environmental Planner. Master of Urban and Regional Planning, California State Polytechnic University, Pomona; B.A., Urban Studies, Loyola Marymount University. Experience: 7 years in environmental planning. Contribution: Led completion of draft and final environmental document.

Emily Pacholski, Environmental Planner. B.A., Environmental Studies, University of San Diego. Experience: 3 years in environmental planning. Contribution: Preparation of distribution list and QC.

Greg Hoisington, Southern California Natural Resource Manager. B.S. Ecology and Environmental Biology, California State University, Long Beach; M.S., Biology, California State University, Long Beach; 14 years' experience specializing in all phases of transportation projects. Contribution: Biological Resource Section review.

John D. Mathias, Senior Lead Editor. B.A., Communications, California State University, Northridge. Experience: 14 years in editing environmental documents and checking text, table, and figure formatting for consistency with company style guide. Contribution: Environmental document preparation.

Johnnie Garcia, GIS Analyst. B.A. Geography, University of California, Santa Barbara; 12 years' experience in Geographical Information Systems (GIS). Contribution: GIS analysis and figure development for the Environmental Document.

Ken Cherry, Senior Lead Technical Editor. B.A. English, San Diego State University. Experience: 31 years. Contribution: Environmental document editing, formatting, and production.

Elizabeth Irvin, Senior Lead Technical Editor. B.A. English, University of California, Irvine. Experience: 21 years in formatting and editing environmental documents. Contribution: Environmental document editing, formatting, and production.

Laura Rocha, CPSWQ, QSD/QSP, Senior Water Resources Specialist/Project Manager. M.S., Environmental Studies, California State University, Fullerton; B.A., Environmental Studies, University of California, Santa Barbara. Experience: 13 years in water resources analyses as well as project management, environmental document preparation, and regulatory permitting. Contribution: Hydrology and water quality QA/QC.

Mary Bilse, Senior Environmental Planner. B.A., Social Ecology, University of California, Irvine. Experience: 25 years in environmental studies and document preparation. Contribution: Senior review of Land Use, Growth, and Community Impact Assessment Sections.

Meagan Flacy, Environmental Planner. B.S., Environmental Management and Protection, California Polytechnic State University, San Luis Obispo. Experience: 3 years in environmental planning. Contribution: Community Impact and Environmental Justice analysis; draft environmental document preparation; final environmental document preparation.

Monica Corpuz, Senior Environmental Planner. M.A., Anthropology-Public Archaeology, California State University, Northridge; B.A., Anthropology, University of California, Berkeley. Experience: 8 years in environmental planning. Contribution: Section 4(f) author; draft environmental document preparation.

Peter Hardie, Senior Noise Manager. B.A., Environmental Science, Rollins College, Orlando Fl; Master's Environmental Science and Management, University California, Santa Barbara, CA Experience: 15 years in acoustical analysis. Contribution: Noise Study Report(s) and Noise Abatement Decision Report(s); draft environmental document preparation; final environmental document preparation.

Rusty Whisman, Environmental Planner. B.A., Social Ecology, University of California, Irvine; M.A., Urban Planning, University of California, Los Angeles. Experience: 8 years in preparing technical studies and environmental documents. Contribution: Environmental document preparation.

Ryan Winkleman, Senior Biologist. B.S. Ecology and Evolutionary Biology, University of California at Irvine; 13 years of experience in biological field work and document preparation, 4 years of experience in regulatory field work and document preparation. Contribution: Natural Communities, Wetlands, Plants, Animals, Threated & Endangered Species, Invasive Species, CEQA Checklist.

Saadia Byram, Senior Lead Technical Editor. Experience: 25 years. Contribution: Environmental document editing, formatting, and production.

5.5 Kleinfelder

Lizanne Simmons, P.G., Senior Principal Geologist. B.S. Geology, Brigham Young University; Graduate Studies, Petroleum Geology and Geophysics, California State University Long Beach; 35 years' experience performing environmental hazardous materials/waste, geotechnical studies, and document preparation. Contribution: Initial Site Assessment report preparation.

Margaret Carroll, Senior Project Professional. Kleinfelder. University of California at Los Angeles; 18 years of experience performing environmental studies and documents. Contribution: Initial Site Assessment Report.

Mark Peabody, P.E., Senior Principal Engineer, B.S. Civil Engineering, University of Notre Dame; 29 years' experience performing environmental hazardous materials/waste studies and document preparation as well as civil engineering design. Contribution: Initial Site Assessment consultation.

5.6 Michael Baker, International

Alan Ashimine, Senior Environmental Planner, B.A. Environmental Analysis and Design, University of California, Irvine; 18 years of experience working in environmental analysis and documentation. Contribution: QC Manager.

Bradley M. Losey, P.E., Drainage Manager, B.S. Civil Engineering, University of California, Irvine; 19 years of drainage design experience. Contribution: Location Hydraulic Study and Summary Floodplain Evaluation Report.

Carrie Davis, Transportation Department Manager (Project Manager), B.S. Civil Engineering, California State University, Sacramento; 22 years of transportation planning, documentation, and project management experience. Contribution: Project Description QA/QC.

Danielle Regimbal, Air Quality Specialist, B.S. Environmental Studies, University of California, Santa Barbara; 5 years of experience working in the environmental sector; 2 years performing environmental studies and preparing CEQA/NEPA documentation. Contribution: Air Quality Assessment, QA/QC of Section 2.2.6, Air Quality.

Kristen Bogue, Senior Environmental Analyst. B.A. Environmental Analysis and Design, University of California, Irvine; 14 years' experience performing environmental studies and preparing document preparation. Contribution: Visual Impact Assessment preparation.

Dacheng Lee, Project Engineer, M.E. Civil Engineering, State University of New York at Buffalo; 18 years of experience working in roadway design. Contribution: Engineering Project Engineer

Nora Jans, Associate. B.A. Environmental Studies, University of California, Santa Cruz; 17 years of experience in Storm Water Program Implementation and Analysis. Contribution: Water Quality Assessment Report.

Ryan Chiene, Environmental Associate, B.S. City and Regional Planning, California Polytechnic State University, San Luis Obispo; 6 years of experience preparing environmental studies and preparing CEQA/NEPA documentation. Contribution: Visual Impact Assessment.

5.7 TranSystems

Tom Choe, P.E., Traffic (Project Manager), B.S. Civil Engineering, University of California, Davis, M.B.A. California State University, Sacramento; 30 years of transportation planning and engineering experience. Contribution: Traffic Study Report.

Chapter 6 Distribution List

The Draft Initial Study/Environmental Assessment (IS/EA) was distributed to the federal, state, regional, and local agencies; interested parties; and utilities, services, and businesses listed in this section. In addition, all property owners and occupants within a 0.25-mile radius of the project limits were provided with the Notice of Availability for the IS/EA. The distribution list for the following parties is provided below:

- Federal Agencies
- State Agencies
- Regional Agencies
- County Agencies
- Local Agencies (Anaheim)
- Local Agencies (Fullerton)
- Local Agencies (Orange)
- Local Agencies (Placentia)
- Federal Legislators
- State Legislators
- Local Elected Officials
- Interested Groups, Organizations, and Individuals
- Utilities, Services, and Businesses

6.1 Federal Agencies

Colonel Kirk E. Gibbs, Chief of Staff
U.S. Army Corps of Engineers
915 Wilshire Blvd., Suite 1101
Los Angeles, CA 90017

G. Mendel Stewart, Field Supervisor
U.S. Fish and Wildlife Service
Carlsbad Field Office
2177 Salk Avenue, Suite 250
Carlsbad, CA 92008

Morgan Griffin, Deputy Regional Environmental Manager
Federal Emergency Management Agency
Environment and Historic Preservation, Region IX
1111 Broadway, Suite 1200
Oakland, CA 94607

US Environmental Protection Agency
Office of Federal Activities, Mail Code 2251-A
EIS Filing Section
1200 Pennsylvania Avenue
Washington, DC 20460

6.2 State Agencies

David Shabazian, Director
California Department of Conservation
801 K Street, MS 24-01
Sacramento, CA 95814

Karla Nemeth, Director
California Department of Water Resources
1416 9th Street
Sacramento, CA 95814

Richard Corey, Executive Officer
California Air Resources Board
1001 I Street
Sacramento, CA 95812

Darrin Polhemus, Deputy Director
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Joshua W. Shaw, Executive Director
California Transit Association
1415 L Street, Suite 1000
Sacramento, CA 95814

Eric Gillies, Acting Chief, Env Planning and Mgmt Division
State Lands Commission, Sacramento Office
100 Howe Avenue, Suite 100 South
Sacramento, CA 95825-8202

Ed Pert, Regional Manager
CA Department of Fish and Wildlife, Region 5
3883 Ruffin Road
San Diego, CA 92123

Chief Jim Abele, California Highway Patrol
Border Division (601)
9330 Farnham Street
San Diego, CA 92123-1216

Commissioner Laura Y. Miranda, Chairperson
Native American Heritage Commission
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691

State Clearinghouse
Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814

Paul Van Konynenburg, Chair
California Transportation Commission
1120 N Street, Room 2221, MS-52
Sacramento, CA 95814

California Energy Commission
Attn: Executive Director, Environmental Protection Office
1516 9th Street
Sacramento, CA 95814

Alice Stebbins, Executive Director
California Public Utilities Commission
320 West 4th Street, Suite 500
Los Angeles, CA 90013

Barbara Lee, Director
California Department of Toxic Substances Control
P.O. Box 806
Sacramento, CA 95812-0806

Michelle Boehm, Southern California Regional Director
California High-Speed Rail Authority
355 S. Grand Avenue
Los Angeles, CA 90071

6.3 Regional Agencies

Southern California Association of Governments
Attn: Intergovernmental Review
818 West 7th Street, 12th Floor
Los Angeles, CA 90017-3435

Hope Smythe, Executive Officer
Water Quality Control Board,
Santa Ana Region
3737 Main Street, Suite 500
Riverside, CA 92501

Wayne Nastri, Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

6.4 County Agencies

Nardy Khan, Deputy Director, OC Infrastructure Programs Manager
OC Infrastructure
300 North Flower Street, 7th Floor
Santa Ana, CA 92703

Brian Fennessy, Fire Chief
Orange County Fire Authority
1 Fire Authority Road
Irvine, CA 92602

Jim Herberg, General Manager
Orange County Sanitation District
10844 Ellis Avenue
Fountain Valley, CA 92708

Paul A. Cook, General Manager
Irvine Ranch Water District
P.O. Box 57000
Irvine, CA 92619

Dylan Wright, Director, Community Resources
County of Orange
333 West Santa Ana Blvd.
Santa Ana, CA 92701

Don Barnes, Sheriff-Coroner
Orange County Sheriff's Department
1071 West Santa Ana Blvd.
Santa Ana, CA 92703

Khalid Bazmi, Interim Director
OC Public Works
300 North Flower Street
Santa Ana, CA 92703

Fernando Chavarria, Manager of Community Outreach
Orange County Transportation Authority
550 South Main Street
Orange, CA 92863

Stacy Blackwood, Director
Orange County Parks
13042 Old Myford Road
Irvine, CA 92602

6.5 Local Agencies

6.5.1 Anaheim

Rudy Emami, Director
Public Works Department
City of Anaheim
200 South Anaheim Blvd., Suite 276
Anaheim, CA 92805

Planning Services Division
City of Anaheim
201 South Anaheim Blvd.
Anaheim, CA 92805

Jorge Cisneros, Chief of Police
Anaheim Police Department
425 South Harbor Boulevard
Anaheim, CA 92805

Christopher Downing, Superintendent
Anaheim Elementary School District
1001 South East Street
Anaheim, CA 92805

Emily Otis, Branch Manager
Anaheim Public Library: Sunkist Branch
901 S. Sunkist Street
Anaheim, CA 92806

Community and Economic Development
Department
City of Anaheim
201 South Anaheim Blvd., Suite 1003
Anaheim, CA 92805

Public Utilities Department
City of Anaheim
201 South Anaheim Blvd.
Anaheim, CA 92805

Michael B. Matsuda, Superintendent
Anaheim Union High School District
501 North Crescent Way
Anaheim, CA 92801

Anaheim Public Library: Central Library
500 W. Broadway
Anaheim, CA 92805

6.5.2 Fullerton

Meg McWade, Director,
Public Works Department
City of Fullerton
303 West Commonwealth Avenue
Fullerton, CA 92832

Robert Dunn, Interim Chief of Police
Fullerton Police Department
237 West Commonwealth Avenue
Fullerton, CA 92832

Dr. Robert Pletka, Superintendent
Fullerton School District
1401 West Valencia Drive
Fullerton, CA 92833

Matt Foulkes, Community and Economic
Development Director
Planning Division
City of Fullerton
303 West Commonwealth Avenue
Fullerton, CA 92832

Judy Booth, Library Director
Fullerton Public Library
353 West Commonwealth Avenue
Fullerton, CA 92832

6.5.3 Orange

Christopher Cash, Director
Department of Public Works
City of Orange
300 East Chapman Avenue
Orange, CA 92866

William Crouch, Director
Community Development Department
City of Orange
300 East Chapman Avenue
Orange, CA 92866

Chad Ortlieb, Senior Planner
Planning Division
City of Orange
300 East Chapman Avenue
Orange, CA 92866

Thomas C. Kisela, Chief of Police
Orange Police Department
1107 North Batavia Street
Orange, CA 92866

Dr. Gunn Marie Hansen, Superintendent
Orange Unified School District
300 Centennial Way
Tustin, CA 92780

Dave Curtis, Library Director
Orange Public Library
407 East Chapman Avenue
Orange, CA 92866

Taft Branch Library
740 E. Taft Avenue
Orange, CA 92865

6.5.4 Placentia

Luis Estevez, Director
Department of Public Works
City of Placentia
401 East Chapman Avenue
Placentia, CA 92870

Joseph Lambert, Director
Department of Development Services
City of Placentia
401 East Chapman Avenue
Placentia, CA 92870

Andrew Gonzales, Senior Planner
Planning Division
City of Placentia
401 East Chapman Avenue
Placentia, CA 92870

Dr. Greg Plutko, Superintendent
Placentia-Yorba Linda Unified School District
1301 East Orangethorpe Avenue
Placentia, CA 92870

Darin Lenyi, Chief of Police
Placentia Police Department
401 East Chapman Avenue
Placentia, CA 92870

Jeanette Contreras, Library Director
Placentia Library
411 E. Chapman Avenue,
Placentia, CA 92870

6.6 Federal Legislators

Hon. Dianne Feinstein, Member
United States Senate
11111 Santa Monica Blvd., Suite 915
Los Angeles, CA 90025-3343

Hon. Kamala Harris, Member
United States Senate
11845 W Olympic Boulevard, Suite 1250W
Los Angeles, CA 90064

Hon. Gil Cisneros
39th Congressional District
United States House of Representatives
1440 N. Harbor Blvd., Suite 601
Fullerton, CA 92835

Hon. Luis Correa
46th Congressional District
United States House of Representatives
2323 North Broadway, Suite 319
Santa Ana, CA 92821

6.7 State Legislators

Hon. Phillip Chen, Member
55th Assembly District
3 Pointe Drive, Suite 313
Brea, CA 92821

Hon. Tom Daly, Member
69th Assembly District
2400 East Katella Avenue, Suite 40
Anaheim, CA 92806

Steven Choi, Member
68th Assembly District, State of California
3240 El Camino Real, Suite 110
Irvine, CA 92602

Hon. Sharon Quirk-Silva
65th Assembly District
P.O. Box 6256
Buena Park, CA 90622

6.8 Local Elected Officials

Hon. Doug Chaffee
OC Board of Supervisors
4th District Supervisor
333 West Santa Ana Blvd.
Santa Ana, CA 92701

Hon. Donald P. Wagner,
OC Board of Supervisors
3rd District Supervisor
333 West Santa Ana Blvd.
Santa Ana, CA 92701

Harry Sidhu
Mayor, City of Anaheim
200 South Anaheim Blvd.
Anaheim, CA, 92805

Jennifer Fitzgerald
Mayor, City of Fullerton
303 West Commonwealth Avenue
Fullerton, CA 92832

Jan M. Flory
Mayor Pro Tem, City of Fullerton
303 West Commonwealth Avenue
Fullerton, CA 92832

Ken Domer
City Manager, City of Fullerton
303 West Commonwealth Avenue
Fullerton, CA 92832

Jesus Silva
Councilmember, District 3, City of Fullerton
303 West Commonwealth Avenue
Fullerton, CA 92832

Ahmad Zahra
Councilmember, District 5, City of Fullerton
303 West Commonwealth Avenue
Fullerton, CA 92832

Bruce Whitaker
Councilmember, City of Fullerton
303 West Commonwealth Avenue
Fullerton, CA 92832

Mike Alvarez
Mayor Pro Tem, City of Orange
300 East Chapman Avenue
Orange, CA, 92866

Mark A. Murphy
Mayor, City of Orange
300 East Chapman Avenue
Orange, CA, 92866

Ward Smith
Mayor, City of Placentia
401 East Chapman Avenue
Placentia, CA 92870

Craig Green
Councilmember, City of Placentia
401 East Chapman Avenue
Placentia, CA 92870

Rhonda Shader
Councilmember, City of Placentia
401 East Chapman Avenue
Placentia, CA 92870

Kim Nichols
Councilmember, City of Orange
300 East Chapman Avenue
Orange, CA, 92866

Jeremy B. Yamaguchi
Mayor Pro Tem, City of Placentia
401 East Chapman Avenue
Placentia, CA 92870

Chad P. Wanke
Councilmember, City of Placentia
401 East Chapman Avenue
Placentia, CA 92870

Chip Monaco
Councilmember, City of Orange
300 East Chapman Avenue
Orange, CA, 92866

Stephen Faessel
Mayor Pro Tem, District 5, City of Anaheim
200 South Anaheim Blvd.
Anaheim, CA, 92805

6.9 Interested Groups, Organizations, and Individuals

Helen Myers, Chair
Orange County Historical Commission Office
OC Parks Headquarters
13042 Old Myford Road
Irvine, CA 92602

John Christman, Chairperson
Viejas Band of Kumeyaay Indians
1 Viejas Grade Road
Alpine, CA 91901

Anthony Vaughn, Vice Chairperson
Juaneño Band of Mission Indians
Acjachemen Nation
31411 La Matanza Street, Suite A
San Juan Capistrano, CA 92675

Dana Minor, Secretary
Juaneño Band of Mission Indians
Acjachemen Nation
31411 La Matanza Street, Suite A
San Juan Capistrano, CA 92675

Sandonne Goad, Chairperson
Gabrielino/Tongva Nation
106½ Judge John Aiso Street, Suite 231
Los Angeles, CA 90012

Teresa M. Romero, Chairwoman
Juaneño Band of Mission Indians
Acjachemen Nation
31411 La Matanza Street, Suite A
San Juan Capistrano, CA 92675

Anthony Morales, Chairperson
Gabrieleno Tongva San Gabriel Band of
Mission Indians
P.O. Box 693
San Gabriel, CA 91778

Linda Candelaria, Tribal Councilwoman
Gabrielino-Tongva Tribe
P.O. Box 693
San Gabriel, CA 91778

Ruthie A. Stoffel, Member at Large
Juaneño Band of Mission Indians
Acjachemen Nation
31411 La Matanza Street, Suite A
San Juan Capistrano, CA 92675

Vincent Holguin, Tribal Councilman
Gabrielino-Tongva Tribe, San Gabriel Band of Mission Indians
P.O. Box 693
San Gabriel, CA 91778

Andrew Salas, Tribal Chairman
Gabrieleno Band of Mission Indians
Kizh Nation
P.O. Box 393
Covina, California 91723

Robert Pinto, Sr., Chairperson
Ewiiaapaayp Band of Kumeyaay Indians
4054 Willows Road
Alpine, CA 91901

Soboba Band of Luiseño Indians
Joseph Ontiveros, Director
Cultural Resource Department
23906 Soboba Road
P.O. Box 487
San Jacinto, CA 92583

Gabrielino-Tongva Indians of California Tribal Council
Robert F. Dorame, Tribal Chair/Cultural Resources
P.O. Box 490
Bellflower, CA 90707

Erica Pinto, Chairperson
Jamul Indian Village
P.O. Box 612
Jamul, CA 91935

Angela Elliott Santos, Acting Chairperson
Manzanita Band of Kumeyaay Nation
P.O. Box 1302
Boulevard, CA 91905

Michael Garcia, Chairperson
Ewiiaapaayp Tribal Office
4054 Willows Road
Alpine, CA 91901

Ralph Goff, Chairperson
Campo Band of Kumeyaay Indians
36190 Church Road, Suite 1
Campo, CA 91906

Stephen W. Cope, Chairperson
San Pasqual Band of Mission Indians
P.O. Box 365
Valley Center, CA 92082

Cody J. Martinez, Chairperson
Sycuan Band of the Kumeyaay Nation
1 Kwaaypaay Court
El Cajon, CA 92019

Javaughn Miller, Tribal Administrator
La Posta Band of Mission Indians
8 Crestwood Road
Boulevard, CA 91905

Gwendolyn Parada, Chairperson
La Posta Band of Mission Indians
8 Crestwood Road
Boulevard, CA 91905

James Weddell
2850 E Frontera Street, Unit A
Anaheim, CA 92806

DeeDee Poole
House of Cards
3148 East La Palma Avenue, Suite R
Anaheim, CA 92806

6.10 Utilities, Services, and Businesses

Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, CA 90012-2944

Southern California Edison
1241 South Grand Avenue
Santa Ana, CA 92705

AT&T California
1265 North Van Buren Street, Room 180
Anaheim, CA 92807

James Vanderbuilt
Orange County Water District
18700 Ward Street
Fountain Valley, CA 92708

Waste Management
1800 South Grand Avenue
Santa Ana, CA 92705

Southern California Gas
1919 State College Blvd.
Anaheim, CA 92806

Jim Herberg
Orange County Sanitation District
10844 Ellis Avenue
Fountain Valley, CA 92708

Southern California Gas – Transmission
9400 Oakdale Avenue
Chatsworth, CA 91311

Time Warner Cable – Orange County
1500 Auto Center Drive
Ontario, CA 92841

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