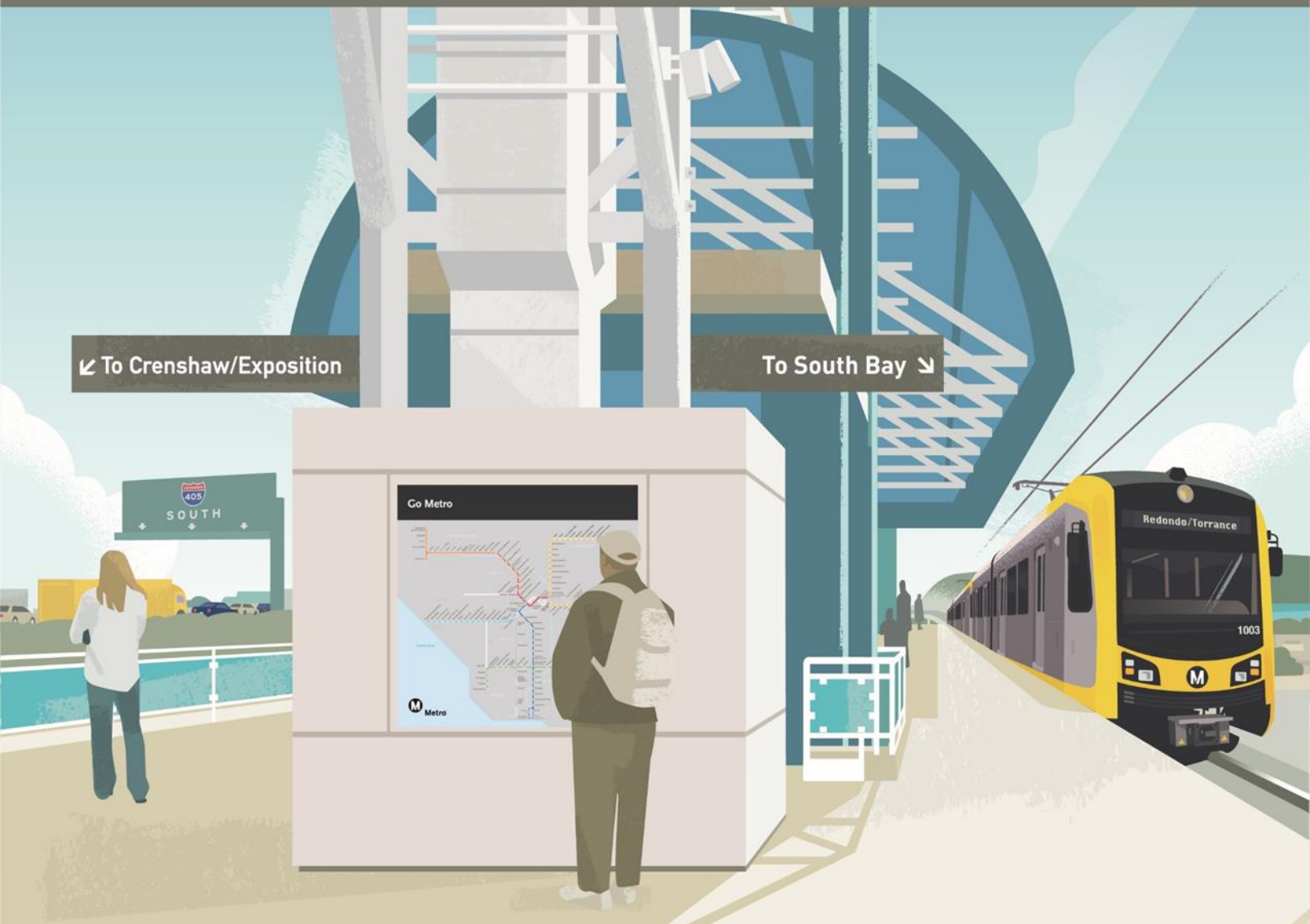
Los Angeles County
Metropolitan Transportation Authority

Draft Environmental Impact Report

January 2023

C LINE (GREEN) EXTENSION TO TORRANCE



Metro

C Line (Green) Extension to Torrance

Draft Environmental Impact Report

January 2023

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ES EXECUTIVE SUMMARY

ES.1 INTRODUCTION

The Executive Summary provides an overview of the of the Draft Environmental Impact Report (EIR) for the C Line (Green) Extension to Torrance project (Proposed Project), including project description, project objectives, environmental analysis, and comparison of alternatives.

The Los Angeles County Metropolitan Transportation Authority (Metro) prepared the Draft EIR to satisfy the requirements of the California Environmental Quality Act (CEQA) and the CEQA Guidelines, to inform public agency decision-makers and the public of the significant environmental effects of the Proposed Project, as well as possible ways to minimize those significant effects, and reasonable alternatives to the Proposed Project that would avoid or minimize those significant effects, and to enable the Metro Board to consider environmental consequences when deciding whether to approve the Proposed Project.

ES.2 PROJECT DESCRIPTION

ES.2-1 Overview and History

Figure ES-1 shows the project location within Los Angeles County. Figure ES-2 shows the Project Area, which follows the Metro-owned Harbor Subdivision railroad right-of-way (Metro ROW) along a 4.5-mile north-south corridor from the existing Redondo Beach (Marine) Metro C Line (Green) Station traveling southeast to the Torrance Transit Center (TC). The Project Area includes portions of the Cities of Hawthorne, Lawndale, Redondo Beach and Torrance. The boundaries of the Project Area form roughly a one-mile buffer around the Metro ROW, with the borders generally following city limits and/or major roadways. A one-mile buffer is generally the area in which potential benefits and ridership of a major transportation project are likely to be focused.

In 2017, Metro initiated a Supplemental Alternatives Analysis (SAA) for the Proposed Project, which assumed an opening year of 2030 and an analysis horizon year of 2042. The intent of the SAA was to build upon previous corridor studies, including an Alternatives Analysis in 2009 and environmental analysis in 2010, and to refine and recommend alternatives to be considered in a future environmental study. The SAA evaluated four light rail transit alternatives to extend the existing Metro C Line (Green) south to the Torrance TC. On September 27, 2018, the Metro Board voted to approve two of the four light rail alternatives to be carried forward for environmental analysis: the Metro ROW and Hawthorne Boulevard alignments (both primarily at-grade alignments).

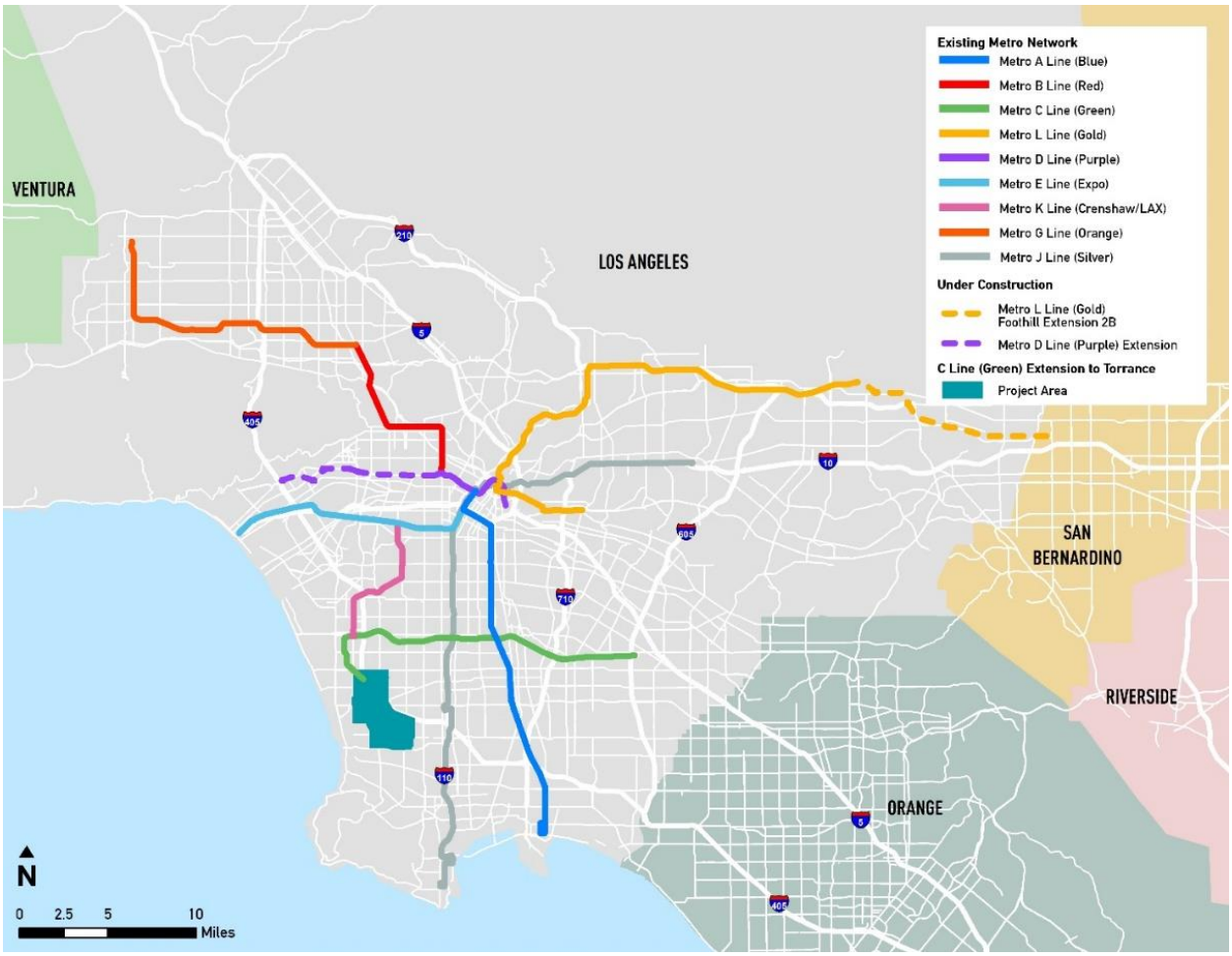
In February 2021, Metro conducted scoping for this EIR to evaluate the Metro ROW and Hawthorne Boulevard alignments. As a result of community input, the project team included an additional alignment along the Metro ROW be studied, which would travel below street level in an open-air trench. As part of the planning analysis, Metro determined that the Hawthorne Boulevard alignment would need to be elevated to address safety.

For purposes of defining the project under CEQA, the alignment options were renamed for this Draft EIR. This Draft EIR serves to evaluate the potential environmental impacts of the Proposed Project (Metro ROW elevated/at-grade alignment) and two Options in the northern portion of the alignment: the Trench Option (primarily below-grade) and the Hawthorne Option (entirely elevated). There is one alignment south of 190th Street for the Proposed Project without any options. An overview of the Proposed Project and Options is shown in Figure ES-2. The Metro ROW Elevated/Street-Level alignment is referred to as the Proposed Project in the Draft EIR because it is the alignment that has been historically studied and advanced for the extension of the C Line (Green) to the South Bay region. This

term does not, however, convey any preference or recommendation as to the alignment or Options. Metro staff will prepare a recommendation on its preferred alignment in Spring 2023 based on findings from the Draft EIR, public comments made during the comment period, technical analysis, stakeholder input, and other factors such as cost, ridership, and project objectives.

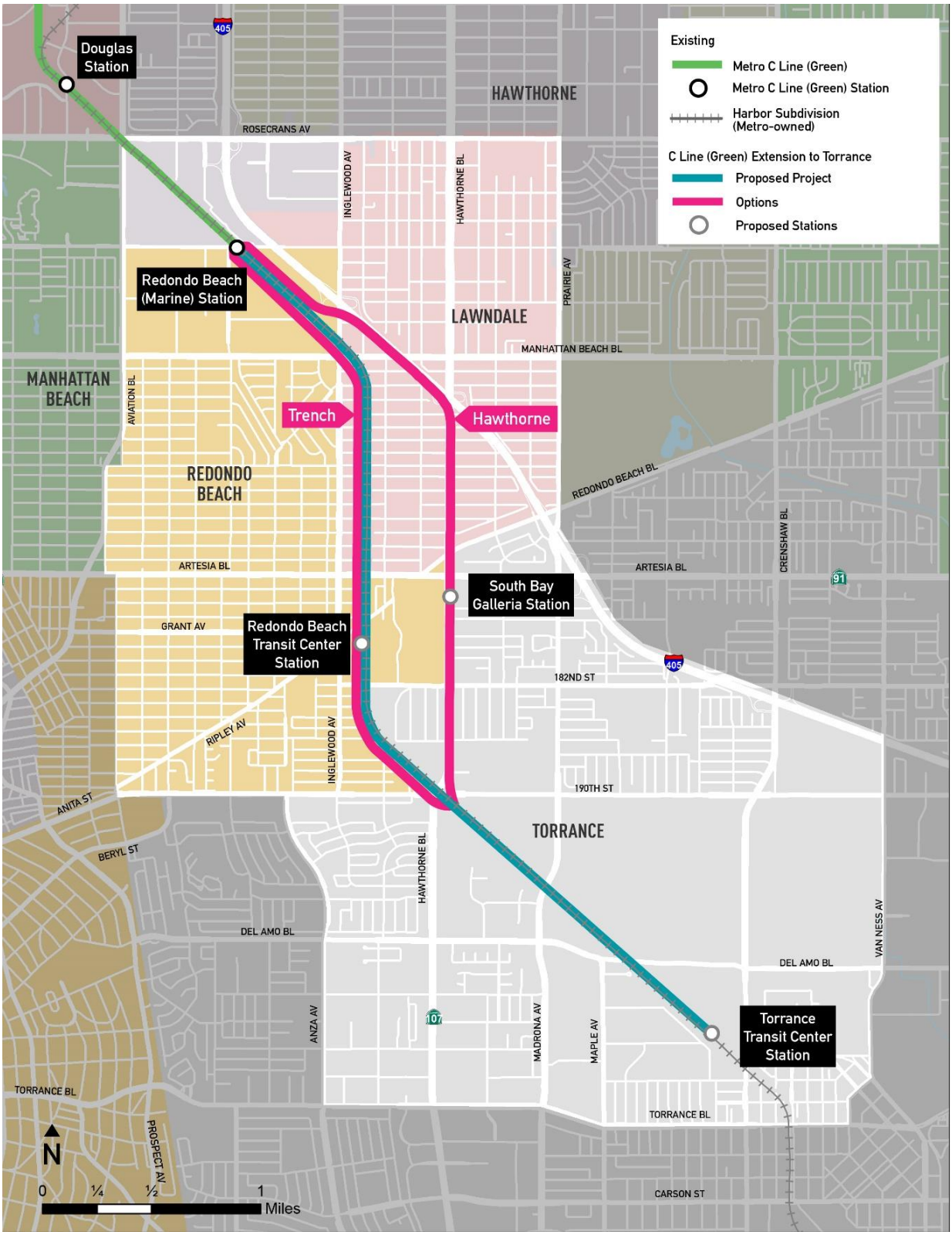
CEQA requires an analysis of a reasonable range of potentially feasible alternatives to the Proposed Project to substantially reduce or eliminate significant impacts associated with project development. As such, the Draft EIR evaluates three alternatives to the Proposed Project: No Project Alternative, High-Frequency Bus (HFB) Alternative, and 170th/182nd Grade-Separated Light Rail Transit Alternative, described in further detail in Chapter 4, Alternatives.

Figure ES-1. Project Location and Regional Vicinity



Source: Metro, STV, 2022

Figure ES-2. Metro C Line (Green) Extension to Torrance – Overview



Source: STV, 2022

ES.2-2 Project Objectives

The underlying purpose of the Proposed Project is to provide high-capacity transit service in the South Bay. Metro has identified the following project objectives:

- Improve mobility within the South Bay and encourage mode shift by:
    - Introducing high-frequency transit service options from the current C Line terminus south to Torrance.
    - Creating direct connections between the regional transit network and local transit hubs for convenient transfers.
    - Providing an alternative mode of transportation for commuters traveling along congested arterials and Interstate 405 (I-405).
    - Providing First-Last Mile facilities to connect to neighborhoods to station areas.
- Reduce air pollution and greenhouse gas emissions by making transit a more viable transportation choice.
- Avoid and minimize environmental impacts on environmental resources to the maximum extent feasible.
- Provide a cost-effective project.
- Provide more equitable access to regional destinations by improving connections to the Metro regional rail system.

ES.2-3 Project and Project Options Considered in the EIR

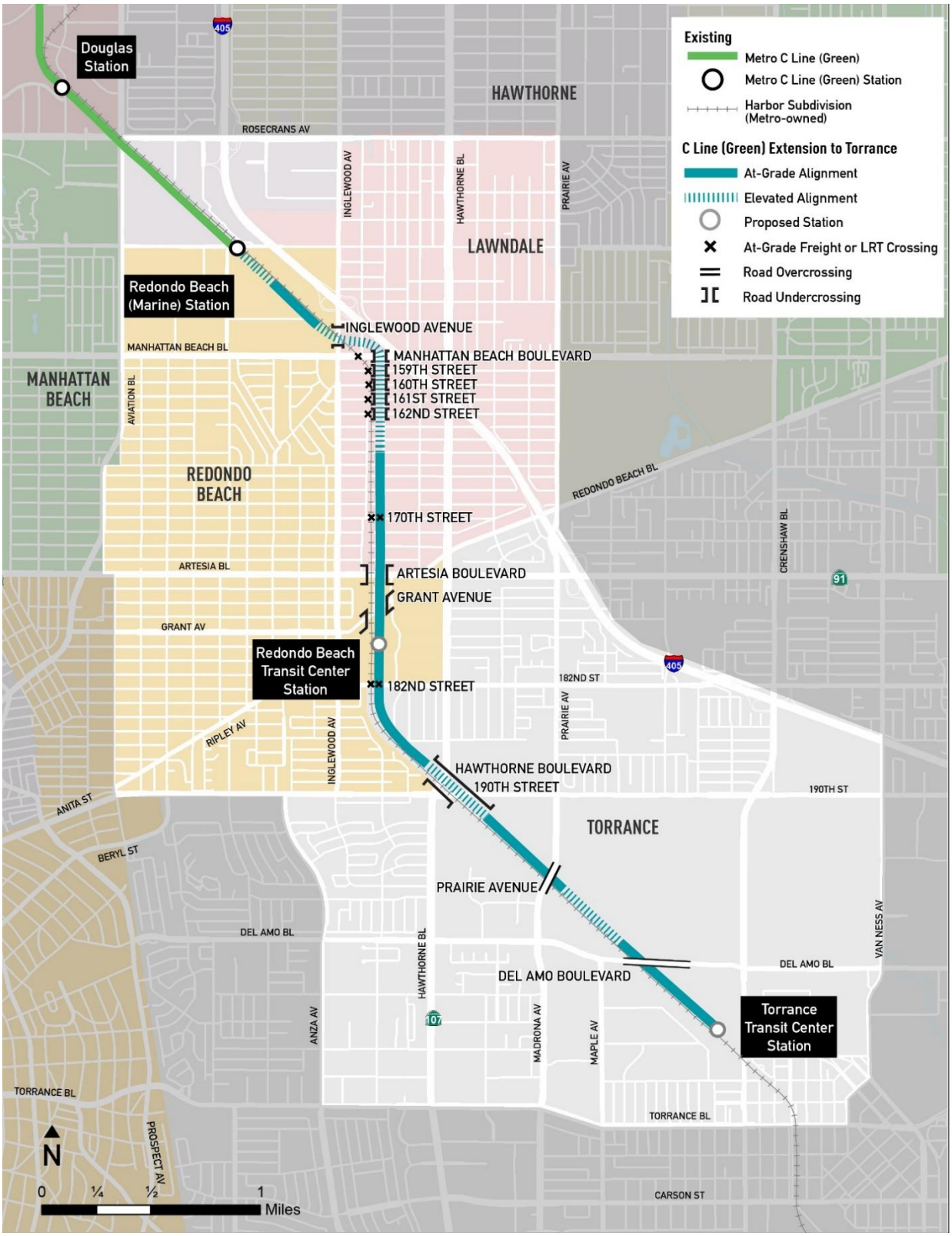
ES.2-3.1 Proposed Project

The Proposed Project follows the existing Metro ROW and would extend the Metro C Line (Green) approximately 4.5 miles, with a combination of elevated and at-grade segments between Redondo Beach (Marine) and the Torrance TC. Figure ES-4 shows an overview of the alignment. The light rail tracks would start on an elevated structure, as shown in an example cross-section in Figure ES-4, and run above street level to cross over six streets, for approximately 1.1 miles of elevated structure. The light rail tracks would then come down to street level for approximately 3.5 miles with two at-grade crossings (170th Street and 182nd Street). The existing freight track would be rebuilt and shifted in some areas within the Metro ROW and would remain at-grade throughout the length of the corridor. An example cross-section is shown in Figure ES-5.

Two stations are proposed: Redondo Beach TC Station and Torrance TC Station, both adjacent to the cities' new bus transit centers to provide easy transfers between bus and rail. The two-level Redondo Beach TC Station would be located south of Grant Avenue, west of the City of Redondo Beach's transit center. The at-grade Torrance TC Station would be located just west of Crenshaw Boulevard, west of the City of Torrance's transit center. Two multi-use paths are proposed along the Metro ROW where there is space (between 159th Street and Condon Ave and between Grant Ave and 182nd Street), to create recreational space for walking and cycling in the neighborhoods. The light rail tracks would be separated from all roadways, except for two at-grade crossings at 170th and 182nd Streets; Figure ES-6 shows the vertical profile of the Proposed Project and all the roadways that it would cross. To support light rail vehicle operations, six traction power substations (TPSS) would be needed for the Proposed Project. Access would be provided to each via maintenance access roads and shielded with landscaping where

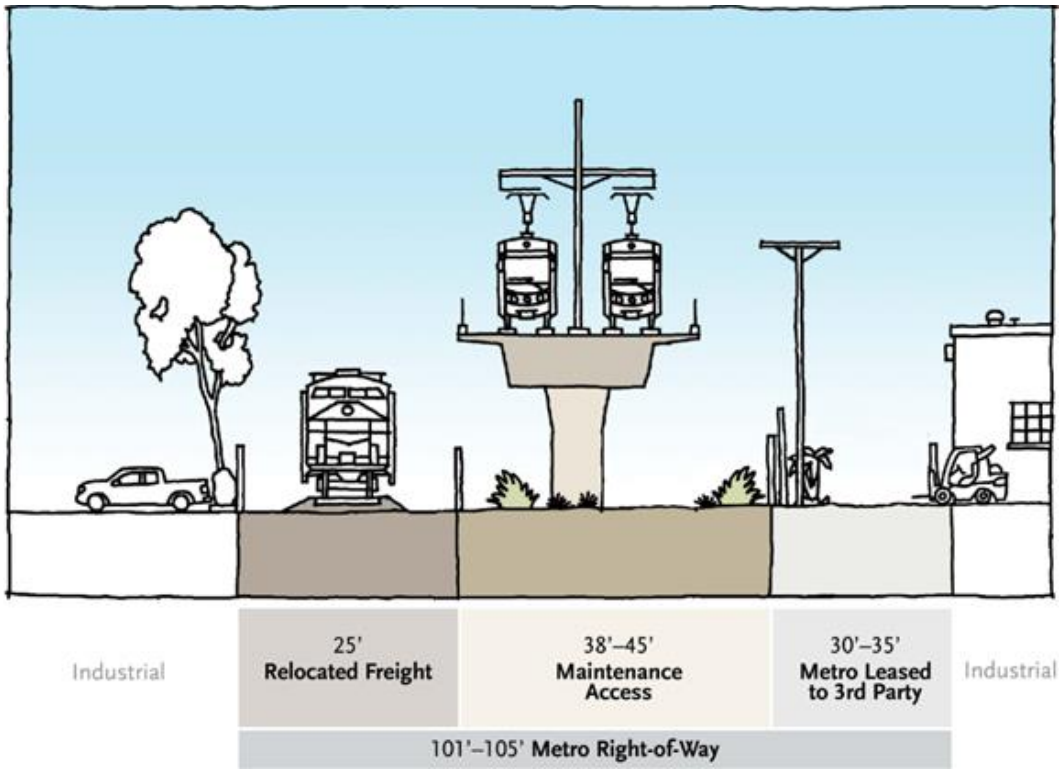
possible. The Proposed Project would not include a new or modified maintenance facility, as light rail vehicles would be maintained and stored at existing Metro facilities. The existing freight track would shift within the Metro ROW as part of the Proposed Project to accommodate the light rail tracks. The at-grade crossings (for both freight and light rail) would be designed and upgraded to be "quiet zone ready", which would allow local jurisdictions to implement a quiet zone policy for the corridor in the future from north of Inglewood Avenue to south of 182nd Street. A quiet zone would reduce noise along the corridor by allowing freight trains to eliminate the use of horns when approaching at-grade crossings, which would have safety gates and enhancements for trains, vehicles, and pedestrians.

Figure ES-3. Proposed Project – Overview



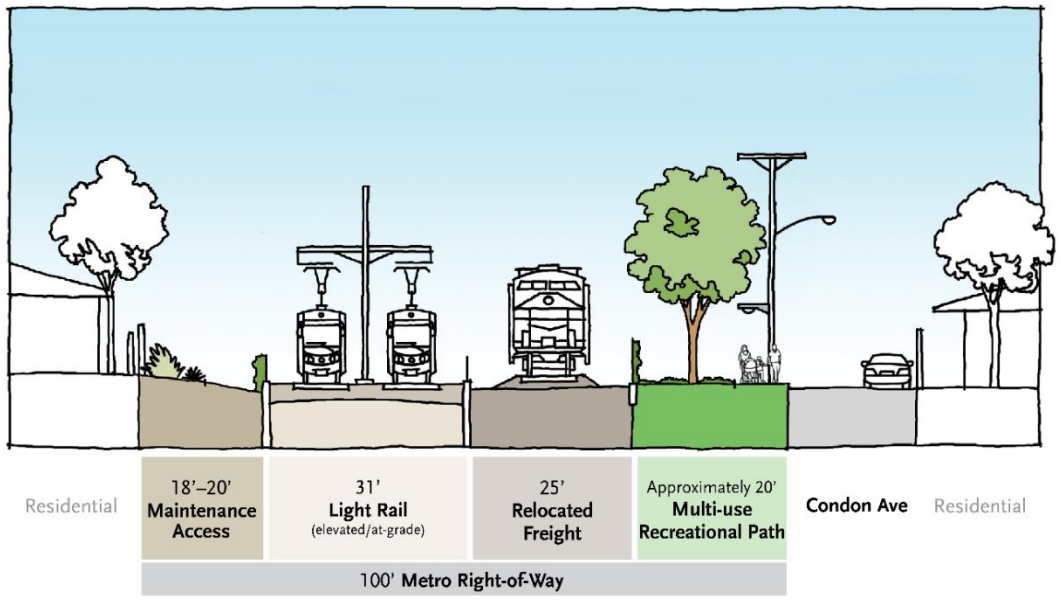
Source: STV, 2022

Figure ES-4. Proposed Project – Looking South Between Inglewood Avenue and Manhattan Beach Boulevard



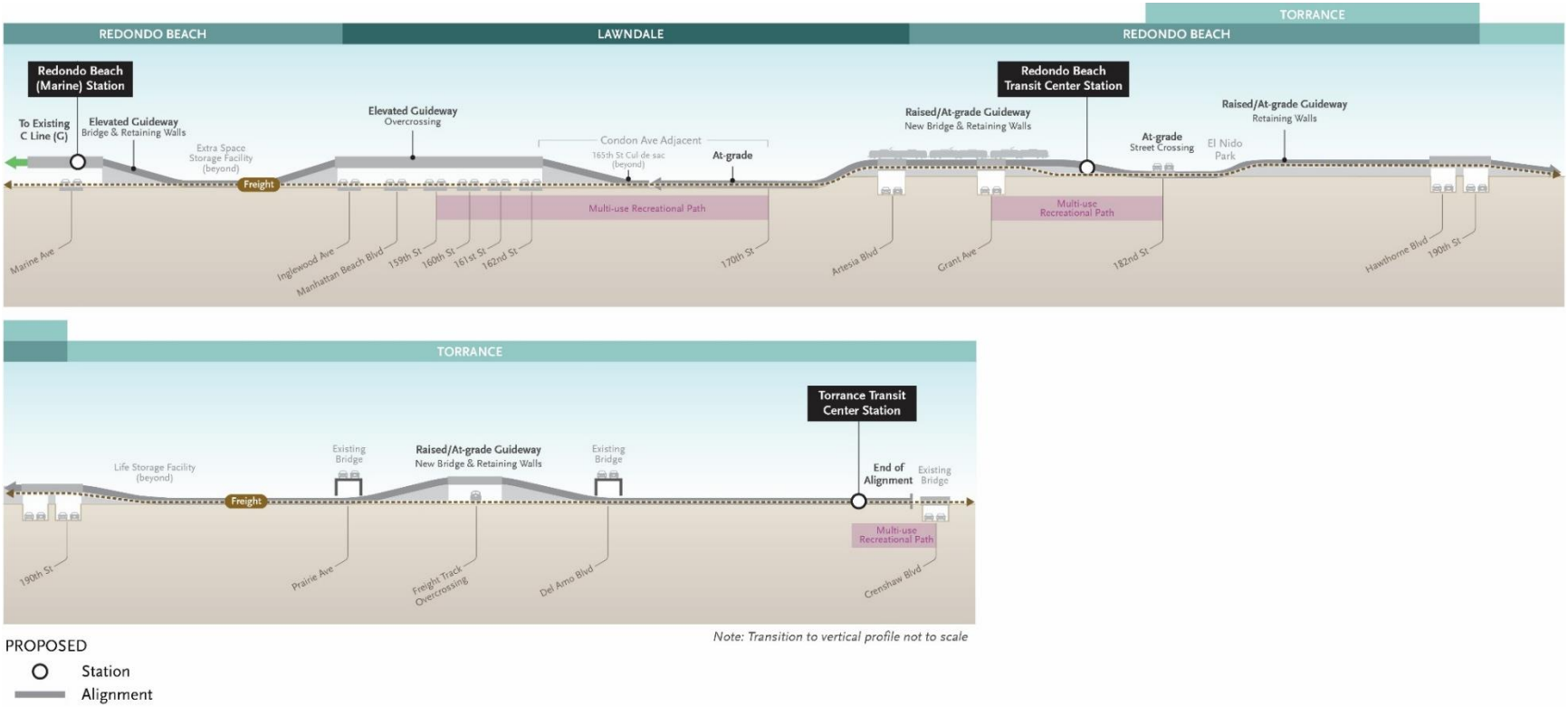
Source: Cityworks Design, 2022
Dimensions and ROW boundaries are preliminary and subject to confirmation in future phases of design.

Figure ES-5. Proposed Project – Looking South Between 165th Street and 170th Street



Source: Cityworks Design, 2022
Note: Dimensions and ROW boundaries are preliminary and subject to confirmation in future phases of design.

Figure ES-6. Proposed Project – Vertical Profile Diagram



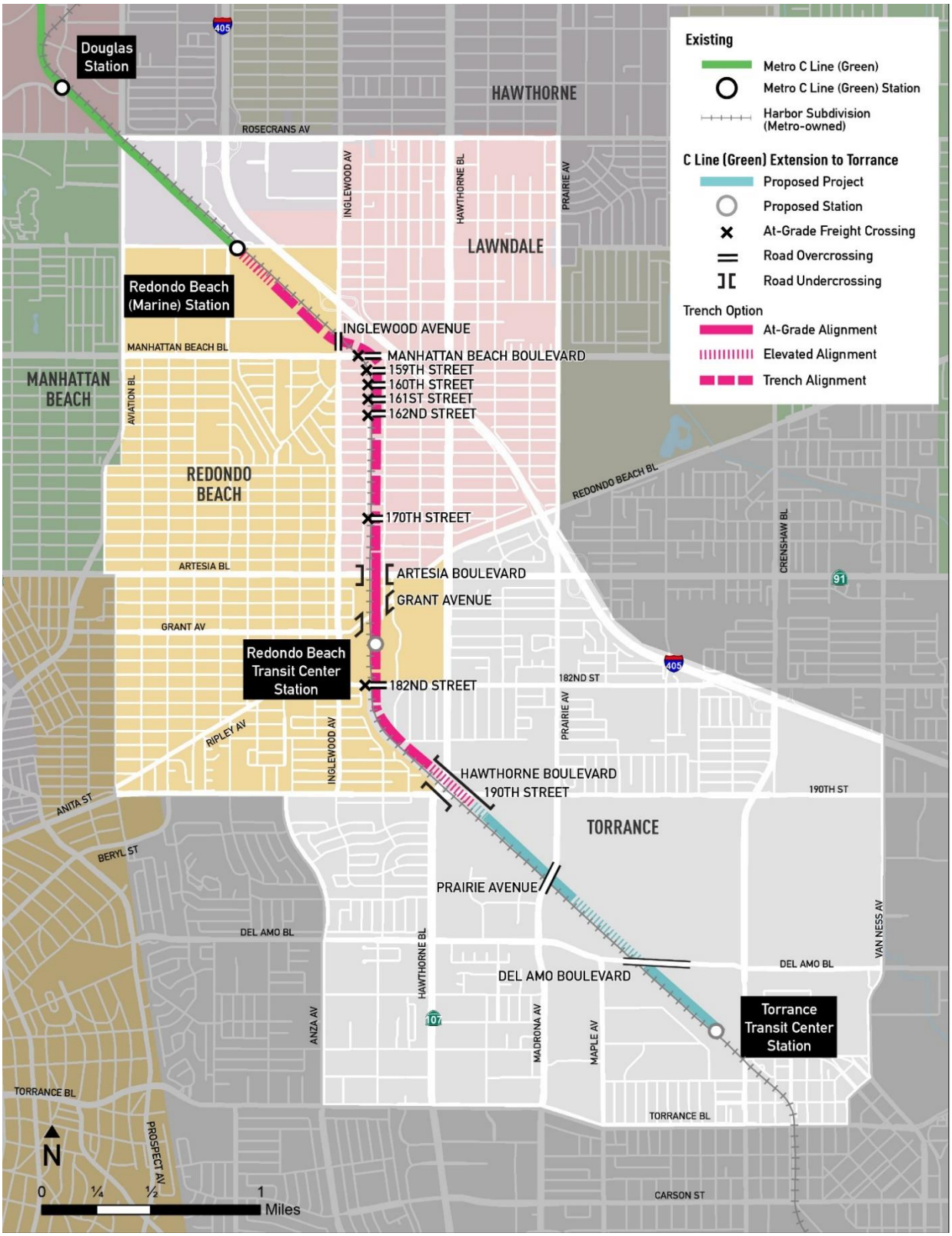
Source: Cityworks Design, 2022
Not to scale.

ES.2-3.2 Trench Option

The Trench Option follows the existing Metro ROW between the Redondo Beach (Marine) Station and 190th Street, with a combination of below grade (trench) and at-grade segments. In the northern part of the alignment, the light rail would travel in an open-air trench for approximately two miles, crossing under eight streets between Inglewood Avenue and 182nd Street. At-grade segments are proposed between 173rd Street and Grant Avenue and south of 182nd Street, where the light rail would cross over bridges at Artesia Boulevard, Grant Avenue, Hawthorne Boulevard, and 190th Street. South of 190th Street, the alignment and Torrance TC Station would be identical to the Proposed Project. Figure ES-7 shows an overview of the alignment. An example cross section is shown in Figure ES-8.

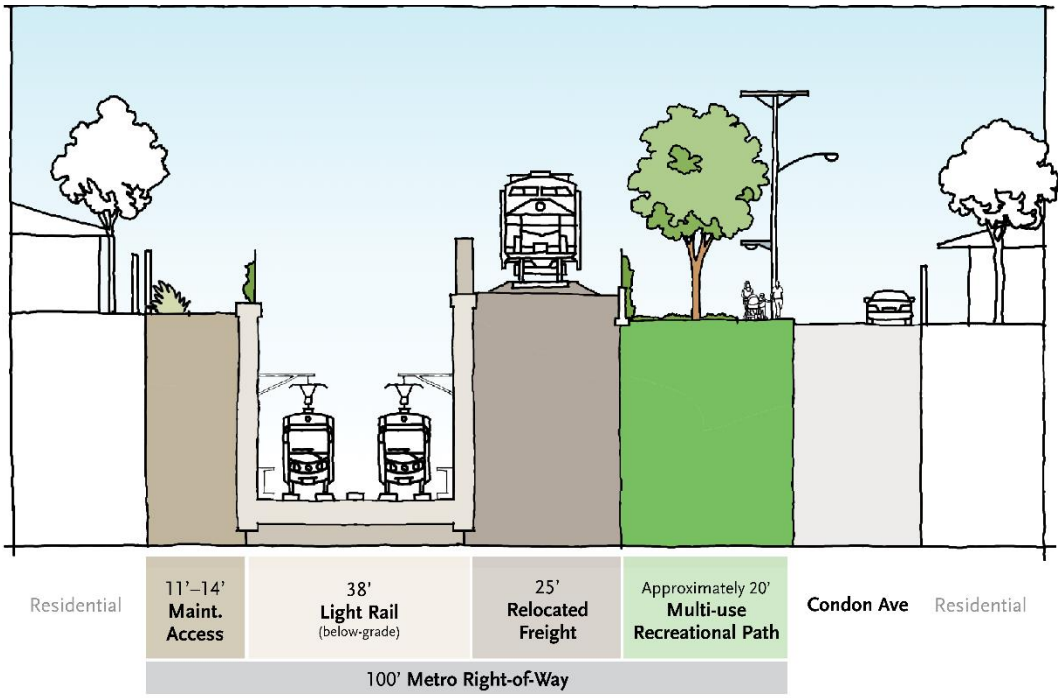
One station is proposed in the Trench Option segment: Redondo Beach TC Station. Similar to the Proposed Project, the Redondo Beach TC Station would be located south of Grant Avenue, but as a one-level station approximately 10 feet below existing ground level, which is needed to allow the light rail tracks to cross under 182nd Street. The Trench Option also includes two multi-use paths in the Metro ROW where there is room, similar to the Proposed Project. The Trench Option would be entirely grade-separated with no rail crossings at street level; Figure ES-9 shows the vertical profile of the Trench Option and all the roadways that it would cross. The depth of the trench varies based on underground utilities, ground conditions, and topography with a deeper trench in the north (between 30 to 40 feet) and a shallower trench around 170th Street and 182nd Street (approximately 20 feet). There would be four TPSSs needed for the Trench Option north of 190th Street that would be accessible via maintenance roads and would be shielded with landscaping where possible. Similar to the Proposed Project, the Trench Option would shift the existing freight track in some locations and rebuild freight crossings to be quiet zone ready.

Figure ES-7. Trench Option – Overview



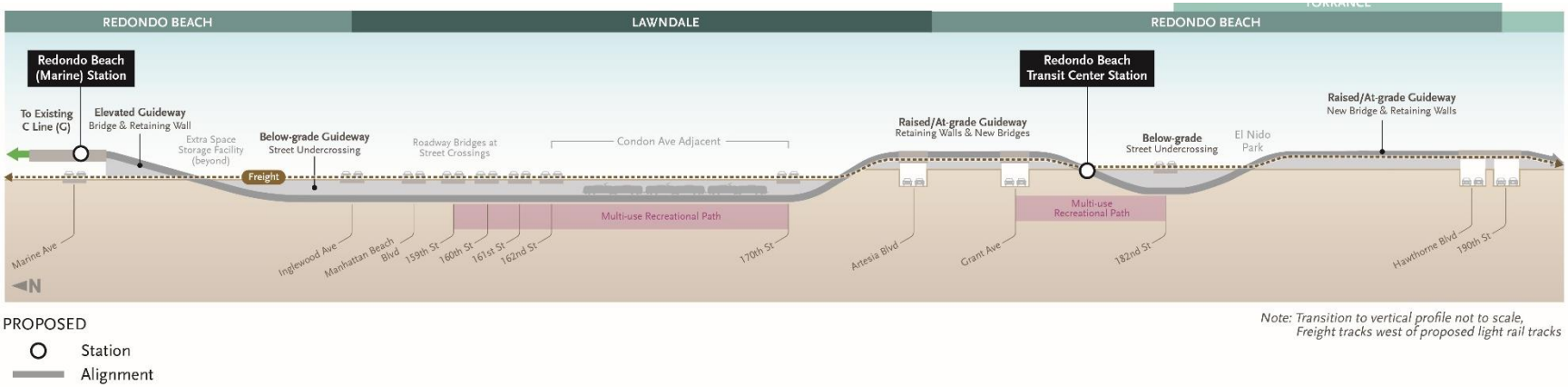
Source: STV, 2022

Figure ES-8. Trench Option - Looking South Between 162nd Street and 168th Street



Source: Cityworks Design, 2022
Note: Dimensions and ROW boundaries are preliminary and subject to confirmation in future phases of design.

Figure ES-9. Trench Option – Vertical Profile Diagram



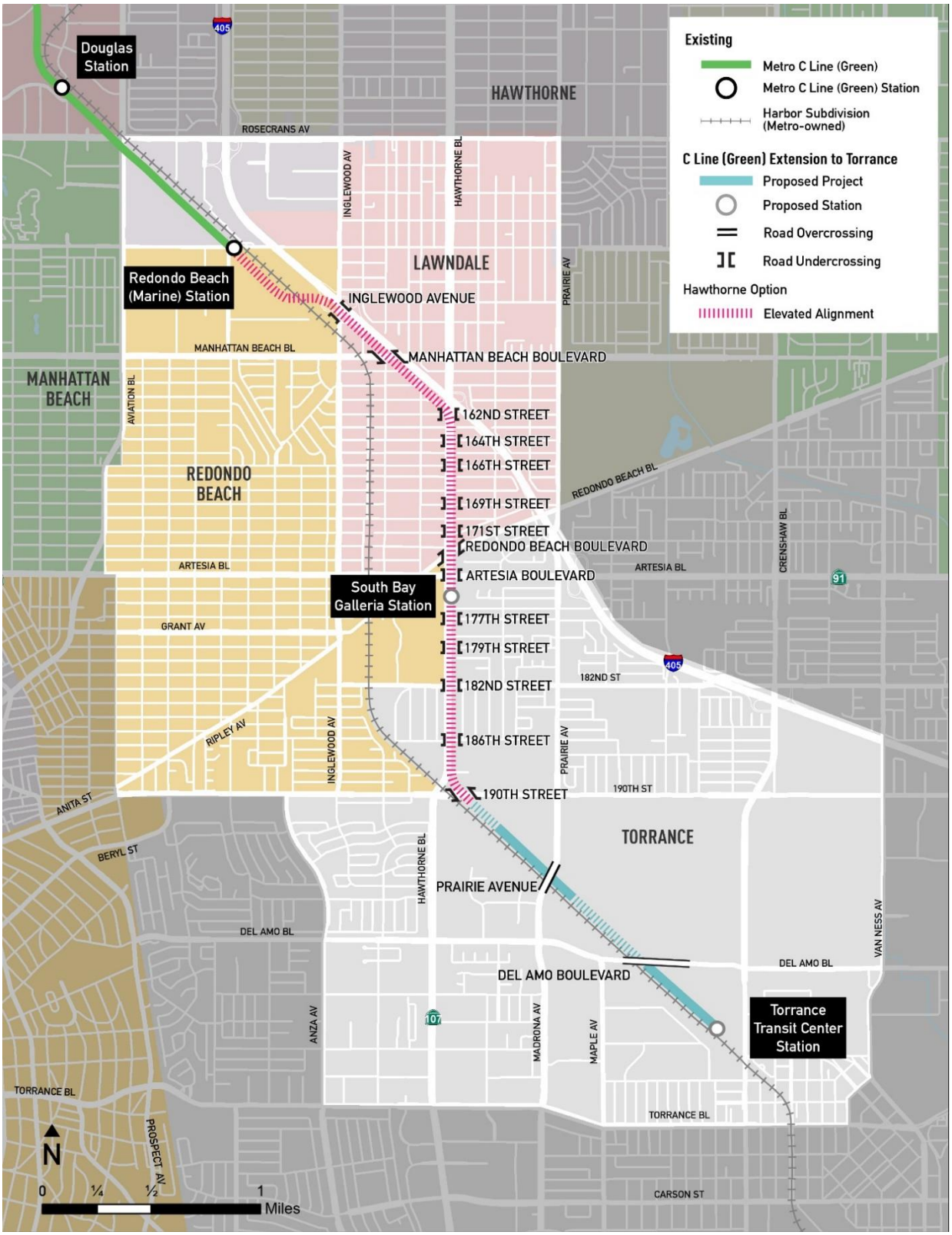
Source: Cityworks Design, 2022
Note: South of 190th Street, the alignment is the same as the Proposed Project.
Not to scale.

ES.2-3.3 Hawthorne Option

The Hawthorne Option would start within the existing Metro ROW, leave the Metro ROW to parallel I-405 between Inglewood Avenue and Hawthorne Boulevard, and follow Hawthorne Boulevard south between 162nd Street and 190th Street. The entire alignment within the Hawthorne Option segment would be elevated, for approximately 2.7 miles. South of 190th Street, the alignment and Torrance TC Station would be identical to the Proposed Project. Figure ES-10 shows an overview of the alignment. Example cross-section are shown in Figure ES-11 and Figure ES-12.

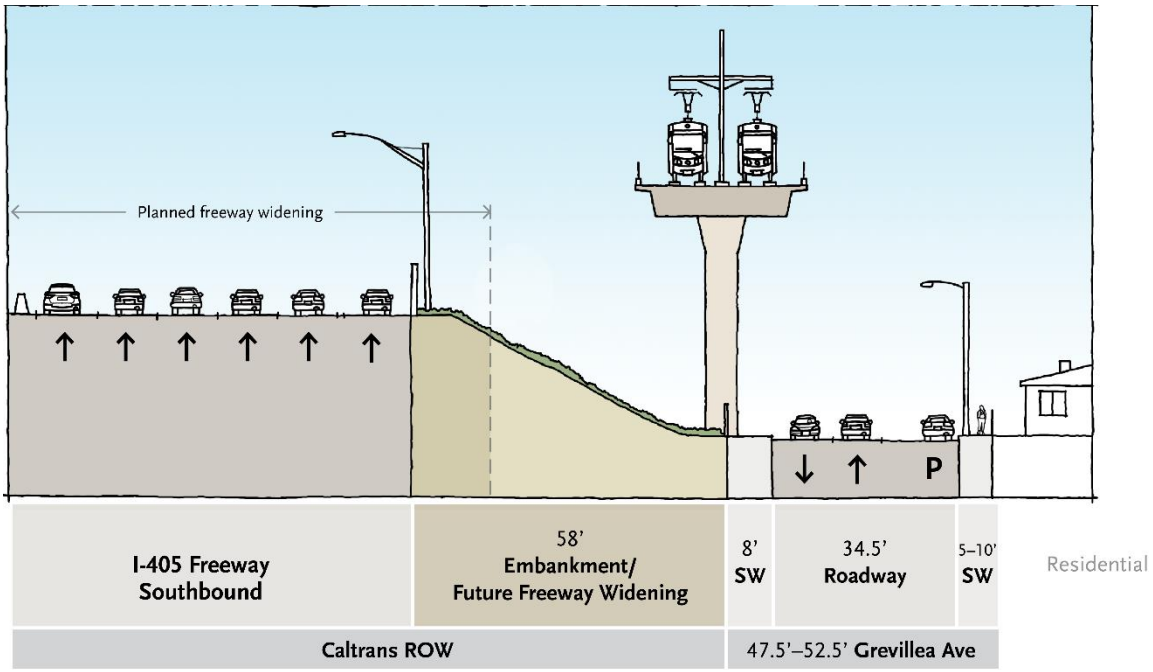
One station is proposed in this segment: South Bay Galleria Station. The South Bay Galleria Station would be located in the median of Hawthorne Boulevard between Artesia Boulevard and 177th Street. The Hawthorne Option light rail tracks would be elevated and not cross any roadways at-grade. While some travel lanes would be realigned on Hawthorne Boulevard to accommodate the light rail structure, there would be no loss in the number of travel lanes. The configuration of the median and left turn lanes would be modified in some areas to allow for the placement of columns, resulting in some signalization changes and a loss of approximately 20 parking spaces in the median between 162nd Street to 171st Street. Figure ES-13 shows the vertical profile of the Hawthorne Option and all the roadways that it would cross over. There would be four TPSSs needed for the Hawthorne Option north of 190th Street that would be accessible via maintenance roads and shielded with landscaping where possible.

Figure ES-10. Hawthorne Option – Overview



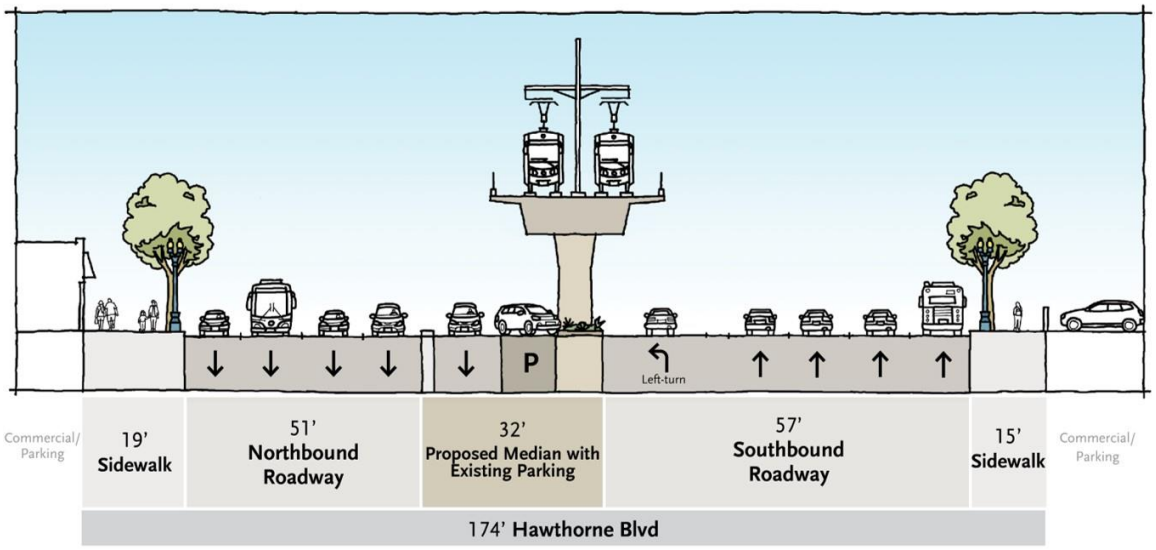
Source: STV, 2022

Figure ES-11. Hawthorne Option – Looking South of 159th Street



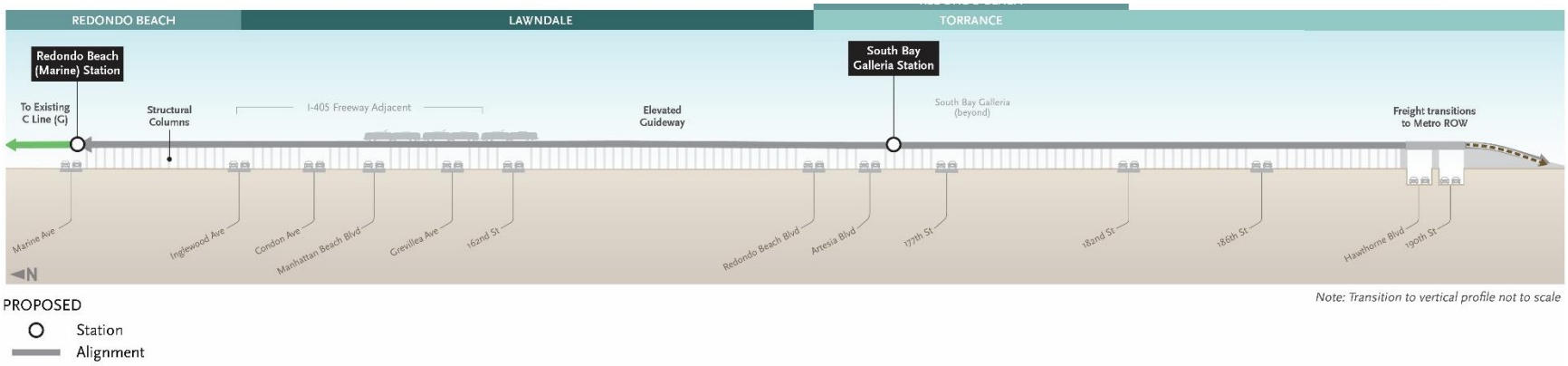
Source: Cityworks Design, 2022
Dimensions and ROW boundaries are preliminary and subject to confirmation in future phases of design.
SW = sidewalk

Figure ES-12. Hawthorne Option - Looking South of 170th Street



Source: Cityworks Design, 2022
Note: Dimensions and ROW boundaries are preliminary and subject to confirmation in future phases of design.

Figure ES-13. Hawthorne Option – Vertical Profile Diagram



Source: Cityworks Design, 2022
Note: South of 190th Street, the alignment is the same as the Proposed Project.
Not to scale.

ES.3 SUMMARY OF ENVIRONMENTAL IMPACT ANALYSIS

The Draft EIR identifies potential environmental impacts due to the construction and operation of the Proposed Project and Options and analyzes any significant impacts and implementation of feasible mitigation measures. Project features are incorporated as part of the Project and consist of design features, best management practices, or other measures required by law and/or permit approvals that avoid or minimize potential effects. Mitigation measures are additional actions, not otherwise part of the Project, that are designed to avoid, minimize, or compensate for significant impacts.

Table ES-1 below provides a high-level overview of the topic areas where environmental impacts have been identified for the Proposed Project or for the Options.

Table ES-1. Summary of Environmental Impacts

Level of Impact	Environmental Topic Areas
No Impact/Less than Significant Impact	Transportation Greenhouse Gas Emissions Hazards and Hazardous Materials Hydrology and Water Quality Utilities and Service Systems Energy Public Services
Less than Significant Impact with Mitigation	Land Use and Planning Aesthetics Biological Resources Geology, Soils, and Paleontological Resources Cultural Resources Tribal Cultural Resources
Significant and Unavoidable Impact	Air Quality Noise and Vibration

Table ES-2 shows a summary identifying the environmental impacts, mitigation measures, and level of significance after mitigation if applicable. Detailed analyses of these topics are provided in Chapter 3, Environmental Impacts.

Table ES-2. Summary of Impacts Evaluation

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Transportation				
A. Will the Project conflict with a program, plan ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
B. Will the Project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
C. Will the Project substantially increase hazards due to a geometric design feature or incompatible uses?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
D. Will the Project result in inadequate emergency access?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Land Use				
A. Would the Project physically divide an established community?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
B. Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	**Construction: Significant** Operations: Less than Significant	Construction: MM-LU-1: Temporary Crossings	Construction: Less than Significant Operations: Less than Significant
Visual & Aesthetics				
A. Would the Project have a substantial effect on a scenic vista?	Proposed Project	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Trench Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Hawthorne Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
B. Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	Proposed Project	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Trench Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Hawthorne Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Visual & Aesthetics				
C. In non-urbanized areas, would the Project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point such as a sidewalk). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
D. Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	Proposed Project	**Construction: Significant** Operations: Less than Significant	Construction: MM-AES-1: Construction Lighting	Construction: Less than Significant Operations: Less than Significant
	Trench Option	**Construction: Significant** Operations: Less than Significant	Construction: MM-AES-1: Construction Lighting	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	**Construction: Significant** Operations: Less than Significant	Construction: MM-AES-1: Construction Lighting	Construction: Less than Significant Operations: Less than Significant
Air Quality				
A. Would the Project conflict with or obstruct implementation of the applicable air quality plan?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Air Quality				
B. Would the Project 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?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	**Construction: Significant** Operations: Less than Significant	Construction: MM-AQ-1: Cleaner Haul Trucks	**Construction: Significant and Unavoidable** Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
C. Would the Project expose sensitive receptors to substantial pollutant concentrations?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
D. Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
Greenhouse Gas Emissions				
A. Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Greenhouse Gas Emissions				
B. Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
Noise and Vibration				
A. Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established by the FTA, in the local general plan or noise ordinance, or applicable standards of other agencies?	Proposed Project	**Construction: Significant** **Operations: Significant**	Construction: MM-NOI-1: Noise Control Plan Operation: MM-NOI-2: Soundwalls MM-NOI-3: Low Impact Frogs MM-NOI-4: Quiet Zone Establishment	**Construction: Significant and Unavoidable** **Operations: Significant and Unavoidable**
	Trench Option	**Construction: Significant** **Operations: Significant**	Construction: MM-NOI-1: Noise Control Plan Operations: MM-NOI-2: Soundwalls MM-NOI-3: Low Impact Frogs MM-NOI-4: Quiet Zone Establishment	**Construction: Significant and Unavoidable** Operations: Less than Significant*

* With establishment of quiet zones by the Cities of Lawndale, Redondo Beach, and Torrance (MM-NOI-4), the Trench Option would have a less than significant impact with mitigation for operational noise.

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Noise and Vibration				
A. Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established by the FTA, in the local general plan or noise ordinance, or applicable standards of other agencies?	Hawthorne Option	**Construction: Significant** **Operations: Significant**	Construction: MM-NOI-1: Noise Control Plan Operations: MM-NOI-2: Soundwalls MM-NOI-3: Low Impact Frogs MM-NOI-5: Wheel Squeal Noise Monitoring	**Construction: Significant and Unavoidable** Operations: Less than Significant
B. For a project located within the vicinity of a private airstrip or 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?	Proposed Project	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Trench Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Hawthorne Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Noise and Vibration				
C. Would the Project result in generation of excessive ground-borne vibration?	Proposed Project	**Construction: Significant** **Operations: Significant**	Construction: MM-VIB-1: Vibration Control Plan MM-VIB-2: Construction Equipment Location MM-VIB-3: Pre- and Post-Construction Surveys Operations: MM-VIB-4: Low-Impact Frogs MM-VIB-5: Resilient Fasteners MM-VIB-6: Ballast Mats	**Construction: Significant and Unavoidable** Operations: Less than Significant
	Trench Option	**Construction: Significant** **Operations: Significant**	Construction: MM-VIB-1: Vibration Control Plan MM-VIB-2: Construction Equipment Location Operations: MM-VIB-4: Low-Impact Frogs MM-VIB-5: Resilient Fasteners MM-VIB-6: Ballast Mats	**Construction: Significant and Unavoidable** Operations: Less than Significant

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Noise and Vibration				
C. Would the Project result in generation of excessive ground-borne vibration?	Hawthorne Option	**Construction: Significant** Operations: Less than Significant	Construction: MM-VIB-1: Vibration Control Plan MM-VIB-2: Construction Equipment Location	**Construction: Significant and Unavoidable** Operations: Less than Significant
Biological Resources				
A. Would the Project 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 Wildlife or U.S. Fish and Wildlife Service?	Proposed Project	**Construction: Significant** **Operations: Significant**	Construction: MM-BIO-1: General Protection Measures to Avoid and Minimize Impacts on Sensitive Biological Resources MM-BIO-2: Nesting Bird Season Restrictions and Pre-Construction Surveys MM-BIO-3: Roosting Bat Restrictions and Survey Requirements MM-BIO-4: Pre-construction Rare Plant Survey Operations: MM-BIO-1: General Protection Measures to Avoid and Minimize Impacts on Sensitive Biological Resources	Construction: Less than Significant Operations: Less than Significant

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Biological Resources				
A. Would the Project 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 Wildlife or U.S. Fish and Wildlife Service?	Trench Option	**Construction: Significant** **Operations: Significant**	Construction: MM-BIO-1: General Protection Measures to Avoid and Minimize Impacts on Sensitive Biological Resources MM-BIO-2: Nesting Bird Season Restrictions and Pre-Construction Surveys MM-BIO-3: Roosting Bat Restrictions and Survey Requirements MM-BIO-4: Pre-construction Rare Plant Survey Operations: MM-BIO-1: General Protection Measures to Avoid and Minimize Impacts on Sensitive Biological Resources	Construction: Less than Significant Operations: Less than Significant

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Biological Resources				
A. Would the Project 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 Wildlife or U.S. Fish and Wildlife Service?	Hawthorne Option	**Construction: Significant** **Operations: Significant**	Construction: MM-BIO-1: General Protection Measures to Avoid and Minimize Impacts on Sensitive Biological Resources MM-BIO-2: Nesting Bird Season Restrictions and Pre-Construction Surveys MM-BIO-3: Roosting Bat Restrictions and Survey Requirements MM-BIO-4: Pre-construction Rare Plant Survey Operations: MM-BIO-1: General Protection Measures to Avoid and Minimize Impacts on Sensitive Biological Resources	Construction: Less than Significant Operations: Less than Significant
B. Would the Project 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 Wildlife or U.S. Fish and Wildlife Service?	Proposed Project	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Trench Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Hawthorne Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Biological Resources				
C. Would the Proposed Project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	Proposed Project	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Trench Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Hawthorne Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
D. Would the Project 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?	Proposed Project	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Trench Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Hawthorne Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
E. Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	Proposed Project	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Trench Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Hawthorne Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
F. Would the Project conflict with the provisions of an adopted HCP, Natural Community Conservation Plan (NCCP), or other approved local, regional, or state HCP?	Proposed Project	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Trench Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Hawthorne Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Geology, Soils, and Paleontological Resources				
A. Would the Project directly or indirectly cause 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 (AP) Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? ii. Strong seismic ground shaking iii. Seismic-related ground failure, including liquefaction iv. Landslides	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
B. Would the Project result in substantial soil erosion or the loss of topsoil?	Proposed Project	Construction: Less than Significant Operations: No Impact	None	Construction: Less than Significant Operations: No Impact
	Trench Option	Construction: Less than Significant Operations: No Impact	None	Construction: Less than Significant Operations: No Impact
	Hawthorne Option	Construction: Less than Significant Operations: No Impact	None	Construction: Less than Significant Operations: No Impact

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Geology, Soils, and Paleontological Resources				
C. Would the Project 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?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
D. Would the Project be located on expansive soil, as defined in Section 1803.5.3 of the California Building Code, creating substantial direct or indirect risks to life or property?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
E. Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	Proposed Project	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Trench Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Hawthorne Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Geology, Soils, and Paleontological Resources				
F. Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	Proposed Project	**Construction: Significant** Operations: No Impact	Construction: MM-GEO-1: Engage a Qualified Paleontological Resources Specialist	Construction: Less than Significant Operations: No Impact
	Trench Option	**Construction: Significant** Operations: No Impact	Construction: MM-GEO-1: Engage a Qualified Paleontological Resources Specialist	Construction: Less than Significant Operations: No Impact
	Hawthorne Option	**Construction: Significant** Operations: No Impact	Construction: MM-GEO-1: Engage a Qualified Paleontological Resources Specialist	Construction: Less than Significant Operations: No Impact
Hazards and Hazardous Materials				
A. Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
B. Would the Project 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?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Hazards and Hazardous Materials				
C. Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
D. Would the Project 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?	Proposed Project	Construction: Less than Significant Operations: No Impact	None	Construction: Less than Significant Operations: No Impact
	Trench Option	Construction: Less than Significant Operations: No Impact	None	Construction: Less than Significant Operations: No Impact
	Hawthorne Option	Construction: Less than Significant Operations: No Impact	None	Construction: Less than Significant Operations: No Impact
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 or excessive noise for people residing or working in the Project Area?	Proposed Project	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Trench Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Hawthorne Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Hazards and Hazardous Materials				
F. For a project located within the vicinity of a private airstrip, as a result, create a safety hazard for people residing or working in the project area.	Proposed Project	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Trench Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Hawthorne Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
G. Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
H. Would the Project expose people or structures to a significant risk of loss, injury or death involving wildfires, including where wildland fires are adjacent to urbanized areas or where residences are intermixed with wildlands?	Proposed Project	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Trench Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Hawthorne Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
Hydrology and Water Quality				
A. Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Hydrology and Water Quality				
B. Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
C. Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
D. Would the Project, in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
E. Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Utilities and Service Systems				
A. Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
B. Would the Project have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
C. Would the Project 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?	Proposed Project	Construction: Less than Significant Operations: No Impact	None	Construction: Less than Significant Operations: No Impact
	Trench Option	Construction: Less than Significant Operations: No Impact	None	Construction: Less than Significant Operations: No Impact
	Hawthorne Option	Construction: Less than Significant Operations: No Impact	None	Construction: Less than Significant Operations: No Impact

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Utilities and Service Systems				
D. Would the Project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	Proposed Project	Construction: Less than Significant Operations: No Impact	None	Construction: Less than Significant Operations: No Impact
	Trench Option	Construction: Less than Significant Operations: No Impact	None	Construction: Less than Significant Operations: No Impact
	Hawthorne Option	Construction: Less than Significant Operations: No Impact	None	Construction: Less than Significant Operations: No Impact
E. Would the Project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	Proposed Project	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Trench Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Hawthorne Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
Energy				
A. Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
B. Would the Project conflict with or obstruct a State or local plan for renewable energy or energy efficiency	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Cultural Resources				
A. Would the Proposed Project cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?	Proposed Project	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Trench Option	Construction: No Impact Operations: No Impact	None	Construction: No Impact Operations: No Impact
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
B. Would the Project cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	Proposed Project	**Construction: Significant** Operations: No Impact	Construction: MM-CUL-1: Cultural Resources Identification Training MM-CUL-2: Archaeologist Consultation	Construction: Less than Significant Operations: No Impact
	Trench Option	**Construction: Significant** Operations: No Impact	Construction: MM-CUL-1: Cultural Resources Identification Training MM-CUL-2: Archaeologist Consultation	Construction: Less than Significant Operations: No Impact
	Hawthorne Option	**Construction: Significant** Operations: No Impact	Construction: MM-CUL-1: Cultural Resources Identification Training MM-CUL-2: Archaeologist Consultation	Construction: Less than Significant Operations: No Impact

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Cultural Resources				
C. Would the Project disturb any human remains, including those interred outside of formal cemeteries?	Proposed Project	**Construction: Significant** Operations: No Impact	Construction: MM-CUL-3: Unanticipated Discovery of Human Remains Associated with Known Cemeteries	Construction: Less than Significant Operations: No Impact
	Trench Option	**Construction: Significant** Operations: No Impact	Construction: MM-CUL-3: Unanticipated Discovery of Human Remains Associated with Known Cemeteries	Construction: Less than Significant Operations: No Impact
	Hawthorne Option	Construction: Less than Significant Operations: No Impact	None	Construction: Less than Significant Operations: No Impact

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Tribal Cultural Resources				
A. 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 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)?	Proposed Project	**Construction: Significant** Operations: Less than Significant	Construction MM-CUL-1: Cultural Resources Identification Training MM-CUL-2: Archaeologist Consultation MM-CUL-3: Unanticipated Discovery of Human Remains Associated with Known Cemeteries	Construction: Less than Significant Operations: Less than Significant
	Trench Option	**Construction: Significant** Operations: Less than Significant	Construction MM-CUL-1: Cultural Resources Identification Training MM-CUL-2: Archaeologist Consultation MM-CUL-3: Unanticipated Discovery of Human Remains Associated with Known Cemeteries	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	**Construction: Significant** Operations: Less than Significant	Construction: MM-CUL-1: Cultural Resources Identification Training MM-CUL-2: Archaeologist Consultation MM-CUL-3: Unanticipated Discovery of Human Remains Associated with Known Cemeteries	Construction: Less than Significant Operations: Less than Significant

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Tribal Cultural Resources				
B. 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 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 Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	Proposed Project	**Construction: Significant** Operations: Less than Significant	Construction: MM-CUL-1: Cultural Resources Identification Training MM-CUL-2: Archaeologist Consultation MM-CUL-3: Unanticipated Discovery of Human Remains Associated with Known Cemeteries	Construction: Less than Significant Operations: Less than Significant
	Trench Option	**Construction: Significant** Operations: Less than Significant	Construction: MM-CUL-1: Cultural Resources Identification Training MM-CUL-2: Archaeologist Consultation MM-CUL-3: Unanticipated Discovery of Human Remains Associated with Known Cemeteries	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	**Construction: Significant** Operations: Less than Significant	Construction: MM-CUL-1: Cultural Resources Identification Training MM-CUL-2: Archaeologist Consultation MM-CUL-3: Unanticipated Discovery of Human Remains Associated with Known Cemeteries	Construction: Less than Significant Operations: Less than Significant

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
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: i. fire protection; ii. police protection; iii. schools; iv. parks; v. libraries?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
B. 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?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant

Environmental Impact	Proposed Project/Option	Impact Before Mitigation	Proposed Mitigation Measures	Impact After Mitigation
Public Services				
C. 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?	Proposed Project	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Trench Option	Construction: Less than Significant Operations: Less than Significant	None	Construction: Less than Significant Operations: Less than Significant
	Hawthorne Option	Construction: Less than Significant Operations: No Impact	None	Construction: Less than Significant Operations: No Impact

ES.4 SIGNIFICANT AND UNAVOIDABLE IMPACTS

CEQA Guidelines under Section 15216(b) requires EIRs to include a discussion of any significant environmental impacts that cannot be avoided if the project is implemented. The Draft EIR identifies environmental resources with significant and unavoidable impacts and presents feasible mitigation measures to reduce impacts to a less than significant level. If a specific impact cannot be reduced to a less than significant level, it is considered a significant and unavoidable impact. As concluded in the Draft EIR and shown in Table ES-2, the following impacts would be significant and unavoidable, even after implementation of mitigation measures:

- Proposed Project
  - Noise (construction and operation)
  - Vibration (construction)
- Trench Option
  - Air quality (construction)
  - Noise (construction)
  - Vibration (construction)
- Hawthorne Option
  - Noise (construction)
  - Vibration (construction)

ES.5 PROJECT ALTERNATIVES

CEQA requires that a range of reasonable project alternatives to the Proposed Project is considered that could meet most of the basic project objectives and substantially reduce or eliminate significant impacts associated with the project. CEQA Guidelines Section 15126.6(a) states, in part:

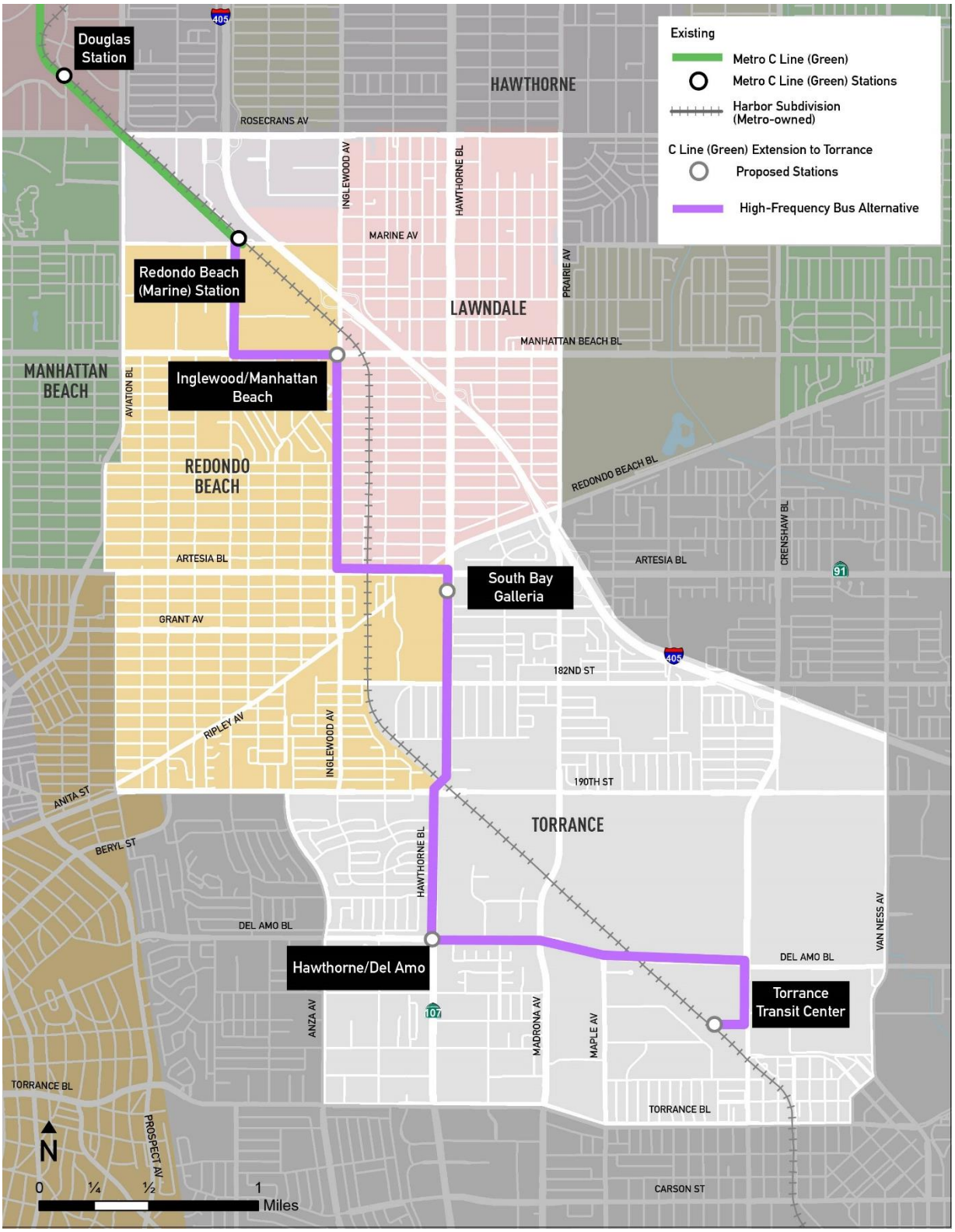
> *"An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation."*

A description of the Project Alternatives is summarized below, and described in more detail in Chapter 4, Alternatives.

- **No Project Alternative**: The No Project Alternative is required by CEQA Guidelines Section 15126.6(e) and assumes that Metro would not implement the Proposed Project. The No Project Alternative allows decision-makers to compare the impacts of approving the Proposed Project with the impacts of not approving the Proposed Project. The No Project Alternative is evaluated in the context of the existing transportation facilities in the Project Area and other capital transportation improvements and/or transit and highway operational enhancements that are reasonably foreseeable. Such projects include the Metro K Line (Crenshaw), the LAX Automated People Mover (APM), LAX/Metro Transit Center Station, Metro's NextGen Bus Improvements, and all projects included in Section 3.0, Introduction of the EIR that are evaluated under the cumulative analysis.

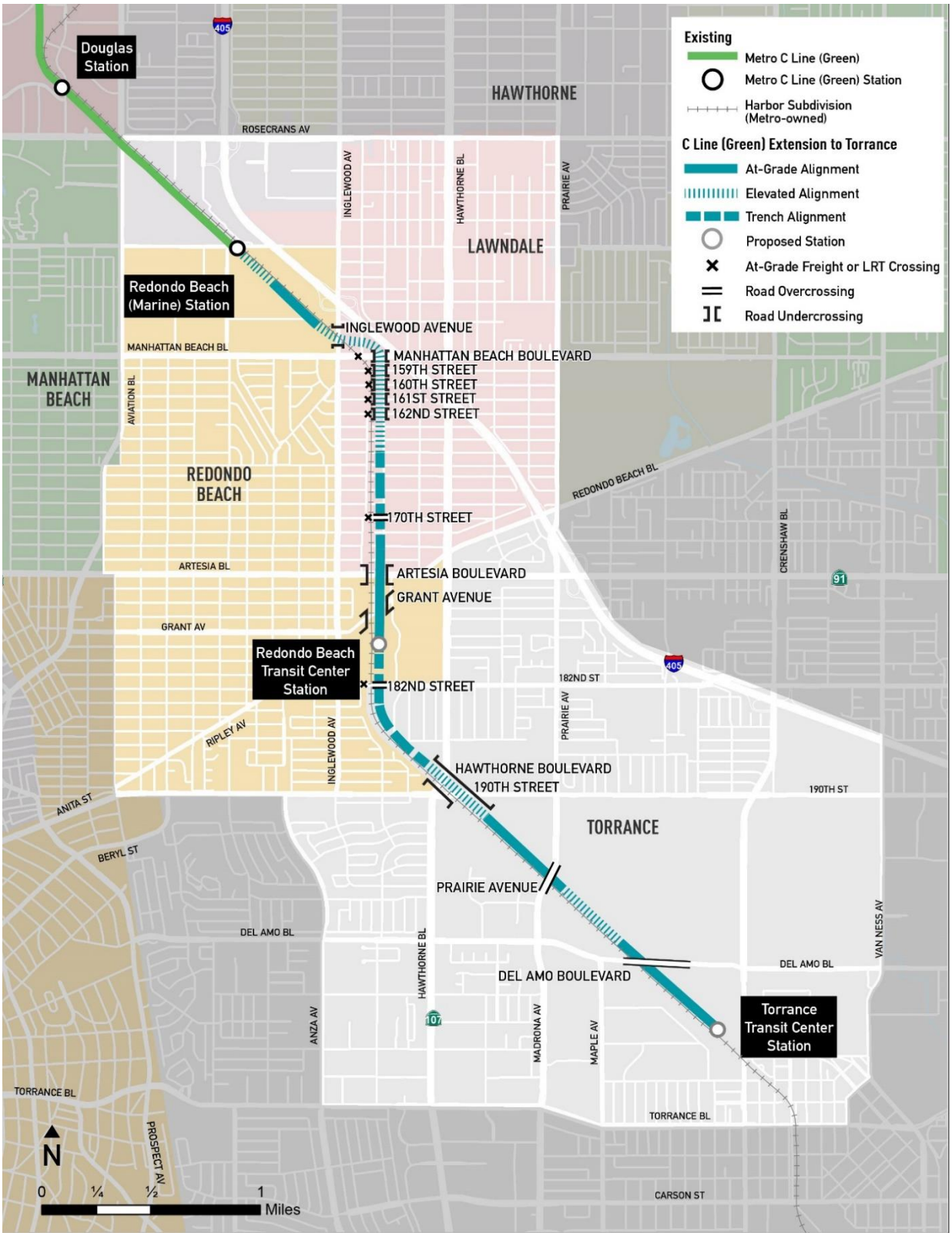
- **High Frequency Bus (HFB) Alternative:** The HFB Alternative would implement a rapid bus service instead of a light rail extension. The bus line would be a local express service with some bus rapid transit characteristics. The service may be as frequent as that proposed for light rail, though its ability to attract ridership would be less due to less travel time savings and fewer amenities. The buses would operate in mixed-flow traffic with transit signal priority systems, which give priority to transit vehicles at signalized intersections by giving an early green signal or holding a green signal. There would be a total of four bus stops between the existing Redondo Beach (Marine) Station and Torrance TC, compared to two light rail stations in the Proposed Project (not including the existing Redondo Beach (Marine) Station and Torrance TC Station). Travel times from end to end would be about 25 minutes, which is faster than local bus service (approximately one hour, with a transfer), but slower than the travel times expected from the Proposed Project (approximately seven minutes). Stops would be located at existing bus stops or improved relocated stops. Physical improvements would be limited to new signs at bus stops, shelters as well with solar lighting, benches, and trash receptacles, as a minimum level of bus stop amenities. Where practical, the HFB Alternative may include curb extensions, elimination of parking, or other improvements to the sidewalk area near new bus stops. Construction of the HFB Alternative would be limited to existing roadways and sidewalks, to implement potential minor improvements such as restriping, curb extensions, or bus stop amenities. Like the Proposed Project, this Alternative would not require a new maintenance facility, as buses would be maintained at existing Metro facilities. Buses would have low-floor design to allow for faster and easier boarding and alighting. A potential route for the HFB alternative is shown in Figure ES-14.
- **170th/182nd Grade-Separated Light Rail Transit Alternative:** The 170th/182nd Grade-Separated Light Rail Transit Alternative would be identical to Proposed Project in the north with an elevated segment of light rail between Inglewood Ave and 162nd Street. In the south, the light rail would be grade separated from the roadways at 170th Street and 182nd Street, with the light rail tracks located below street level in a trench to reduce significant noise impacts during operations and significant vibration impacts during construction. Between 170th Street and 182nd Street, the Alternative would be identical to the Trench Option, including the Redondo Beach TC Station configuration. All other aspects of the project, including ancillary facilities, track geometry, and vertical configuration would be the same as the Proposed Project. This Alternative would be entirely grade-separated with six over-crossings in the north (between Inglewood Ave and 162nd Street) and two below-grade crossings at 170th and 182nd Streets. Freight crossings would remain at-grade as they are today, and PF-NV-1 (described in more detail in Section 3.6, Noise and Vibration) would be implemented to include all the safety infrastructure and improvements that are anticipated to be needed to allow for the local jurisdictions to establish a quiet zone. Construction activities for the 170th/182nd Grade-Separated Light Rail Transit Alternative would be generally the same as the Proposed Project, except more excavation would be required to construct the trench areas and the construction schedule would be slightly longer. Figure ES-15 shows an overview of the alignment.

Figure ES-14. Potential Route and Stops for the High Frequency Bus Alternative



Source: STV, 2022

Figure ES-15. Overview of 170th/182nd Grade-Separated Light Rail Transit Alternative



Source: STV, 2022

ES.5-1 Comparison of Alternatives

Table ES-3 summarizes the impacts of the No Project Alternative, HFB Alternative, and 170th/182nd Grade-Separated Light Rail Transit Alternative relative to the Proposed Project and Options' impacts. As shown in the table and described in more detail in Chapter 4, Alternatives, the No Project Alternative has significant and unavoidable impacts for transportation, land use, air quality, greenhouse gas emissions, and energy related to potential inconsistency with the 2020-2045 Southern California Association of Governments Regional Transportation Plan/Sustainable Communities Strategy. Otherwise, the No Project Alternative would avoid or reduce all significant impacts associated with the Proposed Project. The HFB Alternative would have less than significant impacts for all topics.

For most of the 170th/182nd Grade-Separated Light Rail Transit Alternative, the impacts would be the same as the Proposed Project, except in the area between 170th and 182nd Streets, where the impacts would be similar to the Trench Option. Notably, the 170th/182nd Grade-Separated Light Rail Transit Alternative would have a less than significant impact with mitigation for noise during operation, compared to significant and unavoidable for the Proposed Project. As the Alternative would be located in a trench to cross under 170th and 182nd Streets, it would have reduced operational noise impacts associated with at-grade crossings, and implementation of MM-NOI-2 through MM-NOI-4 would result in a less than significant impact. However, if the local jurisdictions do not establish a quiet zone(s), the 170th/182nd Grade-Separated Light Rail Transit Alternative would have a significant and unavoidable impact without MM-NOI-4 during operation.

Additionally, the 170th/182nd Grade-Separated Light Rail Transit Alternative would have a less than significant impact with mitigation for vibration damage during construction, compared to significant and unavoidable impact for the Proposed Project (however, the significant and unavoidable vibration annoyance impact would be the same during construction). The Alternative would not require relocating the freight bridge at Grant Avenue, and therefore would have reduced potential for building damage in that vicinity. Mitigation measures would be able to reduce the potential damage impacts of the 170th/182nd Grade-Separated Light Rail Transit Alternative to less than significant with mitigation.

Table ES-3. Comparison of Alternatives' Environmental Impacts to the Proposed Project

		Proposed Project	Trench Option	Hawthorne Option	No Project Alternative	HFB Alternative	170th/182nd Grade-Separated Alternative
Transportation	Construction	LTS	LTS	LTS	LTS	LTS	LTS
	Operation	LTS	LTS	LTS	SUI	LTS	LTS
Land Use and Planning	Construction	LTS	LTS	LTSM	LTS	LTS	LTS
	Operation	LTS	LTS	LTS	SUI	LTS	LTS
Aesthetics	Construction	LTSM	LTSM	LTSM	LTS	LTS	LTSM
	Operation	LTS	LTS	LTS	LTS	LTS	LTS
Air Quality	Construction	LTS	SUI	LTS	LTS	LTS	LTS
	Operation	LTS	LTS	LTS	SUI	LTS	LTS
Greenhouse Gas Emissions	Construction	LTS	LTS	LTS	LTS	LTS	LTS
	Operation	LTS	LTS	LTS	SUI	LTS	LTS
Noise	Construction	SUI	SUI	SUI	LTS	LTS	SUI
	Operation	SUI	SUI/LTSM[1]	LTS	LTS	LTS	SUI/LTSM[1]
Vibration	Construction	SUI	SUI	SUI	LTS	LTS	SUI
	Operation	LTSM	LTSM	LTSM	LTS	LTS	LTSM
Biological Resources	Construction	LTSM	LTSM	LTSM	LTS	LTS	LTSM
	Operation	LTS	LTS	LTS	LTS	LTS	LTS
Geology, Soils, and Paleontological Resources	Construction	LTSM	LTSM	LTSM	LTS	LTS	LTSM
	Operation	LTS	LTS	LTS	LTS	LTS	LTS
Hazards and Hazardous Materials	Construction	LTS	LTS	LTS	LTS	LTS	LTS
	Operation	LTS	LTS	LTS	LTS	LTS	LTS
Hydrology and Water Quality	Construction	LTS	LTS	LTS	LTS	LTS	LTS
	Operation	LTS	LTS	LTS	LTS	LTS	LTS
Utilities and Service Systems	Construction	LTS	LTS	LTS	LTS	LTS	LTS
	Operation	LTS	LTS	LTS	LTS	LTS	LTS

		Proposed Project	Trench Option	Hawthorne Option	No Project Alternative	HFB Alternative	170th/182nd Grade-Separated Alternative
Energy	Construction	LTS	LTS	LTS	LTS	LTS	LTS
	Operation	LTS	LTS	LTS	SUI	LTS	LTS
Cultural Resources	Construction	LTSM	LTSM	LTSM	LTS	LTS	LTSM
	Operation	LTS	LTS	LTS	LTS	LTS	LTS
Tribal Cultural Resources	Construction	LTSM	LTSM	LTSM	LTS	LTS	LTSM
	Operation	LTS	LTS	LTS	LTS	LTS	LTS
Public Services	Construction	LTS	LTS	LTS	LTS	LTS	LTS
	Operation	LTS	LTS	LTS	LTS	LTS	LTS

[1] With establishment of quiet zones by the Cities of Lawndale, Redondo Beach, and Torrance (MM-NOI-4), the Trench Option and 170th /182nd Street Grade-Separated Alternative would have a less than significant impact with mitigation for operational noise.

ES.5-2 Environmentally Superior Alternative

CEQA Guidelines Section 15126.6 requires that an "environmentally superior" alternative be identified. The environmentally superior alternative is the alternative that would be expected to generate the fewest adverse impacts. If the environmentally superior alternative is the No Project alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.

As shown in Table ES-3, the No Project Alternative would avoid many of the construction and operational impacts identified for the Proposed Project, but it would have significant and unavoidable impacts during operation related to transportation, land use and planning, air quality, greenhouse gas emissions, and energy as it would conflict with plans and programs that assumed the Proposed Project would be built. The HFB Alternative would reduce all construction and operational impacts identified for the Proposed Project. Therefore, the HFB Alternative is the environmentally superior alternative as it would avoid or reduce all impacts to a less than significant level. However, the HFB Alternative would not realize the same level of benefits from vehicle miles traveled reduction, air quality improvements, greenhouse gas emissions reduction, and energy savings as the Proposed Project and Options.

ES.6 Areas of Controversy

CEQA Guidelines (Section 15123(b)(2)) require that an EIR identify areas of controversy known to the lead agency, including issues raised by agencies and the public. Public comments were received in response to the Notice of Preparation regarding areas of controversy. Areas of potential controversy include:

- Aesthetic changes and loss of community character
- Effects to local businesses during construction
- Noise levels and air quality during construction and operation
- Changes to street parking
- Security and safety at stations and along the ROW
- Traffic changes due to lane and road closures during construction

ES.7 Issues to be Resolved by the Decision-Making Body

CEQA Guidelines (Section 15123(b)(3)) requires a discussion of issues to be resolved, including a choice of alternatives and whether or how to mitigate significant impacts. The Metro Board will decide if the Proposed Project and Options' significant impacts to land use and planning, aesthetics, vibration, biological resources, paleontological resources, cultural resources, and tribal cultural resources have been fully mitigated below a level of significance. Additionally, the Metro Board will determine whether overriding considerations should be adopted for significant and unavoidable impacts related to air quality, noise, and vibration. The Metro Board will also decide whether any of the CEQA project alternatives are feasible and could be approved.

1. INTRODUCTION

This chapter provides an overview of the purpose of this Draft Environmental Impact Report (EIR) for the C Line (Green) Extension to Torrance Project (Proposed Project), a discussion of the environmental review process, and a description of the organization of this Draft EIR.

The Proposed Project would provide light rail service connecting several cities and communities in the South Bay to the regional rail network. The Proposed Project would consist of a light rail service that runs from the Redondo Beach (Marine) Station in the City of Redondo Beach through the City of Lawndale and into the City of Torrance ending at Torrance Transit Center (TC).The Project Area, roughly a one-mile buffer around the Metro-owned right-of-way (Metro ROW), with the borders generally following city limits and/or major roadways, includes portions of the Cities of Hawthorne, Lawndale, Redondo Beach, and Torrance. However, the Proposed Project itself would only be in the Cities of Lawndale, Redondo Beach, and Torrance. A one-mile buffer is generally the area in which potential benefits and ridership of a major transportation project are likely to be focused.

1.1. PURPOSE OF THIS DRAFT ENVIRONMENTAL IMPACT REPORT

The Los Angeles County Metropolitan Transportation Authority (Metro), as Lead Agency for the Proposed Project, has prepared this Draft EIR for the following purposes:

- To satisfy the requirements of the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] Section 21000, et seq.) and the CEQA Guidelines (California Code of Regulations [CCR], Title 14, Chapter 3, Section 15000, et seq.).
- To inform public agency decision-makers and the public of the significant environmental effects of the Proposed Project, as well as possible ways to minimize those significant effects through mitigation measures, and reasonable alternatives to the Proposed Project that would avoid or minimize those significant effects.
- To enable Metro to consider environmental consequences when deciding whether to approve the Proposed Project.

Metro serves as the Lead Agency for the Proposed Project in accordance with Sections 15051 and 15367 of the CEQA Guidelines, which define the Lead Agency as the public agency that has the principal responsibility for executing or approving a project.

As described in CEQA and the CEQA Guidelines, lead agencies are charged with the duty to avoid or substantially lessen significant environmental impacts of a project, where feasible. In discharging its duties under CEQA, a lead agency has an obligation to balance the economic, social, technological, legal, and other benefits of a project against its significant unavoidable impacts on the environment. This Draft EIR is an informational document designed to identify the potentially significant impacts of the Proposed Project on the environment; to indicate the way those significant impacts can be minimized through implementation of feasible mitigation measures; to identify reasonable and potentially feasible alternatives to the Proposed Project that would avoid or reduce the significant impacts; and to identify any significant unavoidable adverse impacts that cannot feasibly be mitigated. Known areas of controversy associated with the Proposed Project include aesthetic changes and loss of community character, effects to local businesses during construction, noise levels and air quality during construction and operation, changes to street parking, security and safety at stations and along the Metro ROW, and traffic changes due to lane and road closures during construction.

This Draft EIR was prepared in accordance with Section 15151 of the CEQA Guidelines, which defines the standards for EIR adequacy as follows:

> *"An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure."*

1.2. SCOPE AND CONTENT

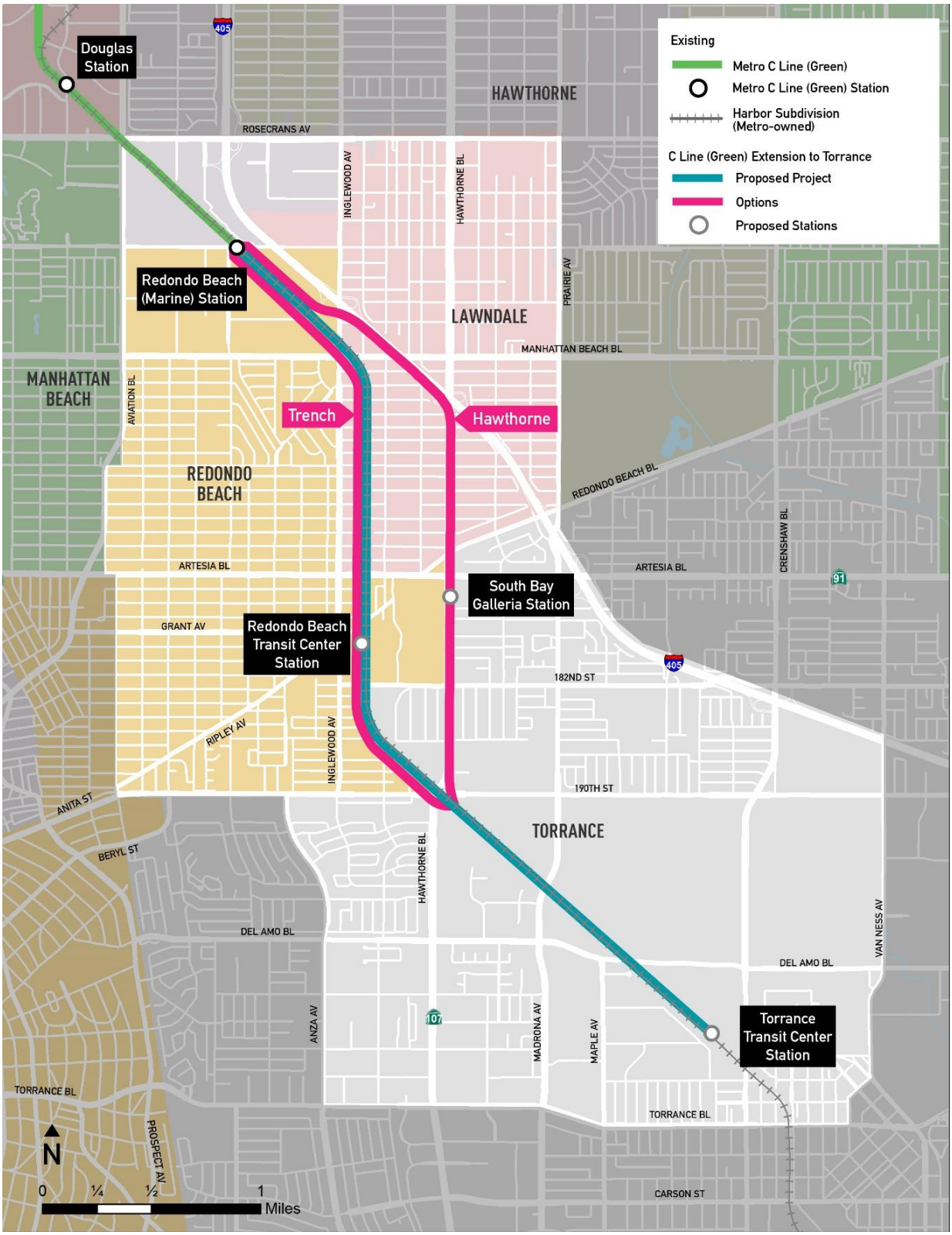
In 2017, Metro initiated a Supplemental Alternatives Analysis (SAA) for the Proposed Project, which assumed an opening year of 2030 and an analysis horizon year of 2042. The intent of the SAA was to build upon previous corridor studies, including an Alternatives Analysis in 2009 and environmental analysis in 2010, and to refine and recommend alternatives to be considered in a future environmental study.

The SAA evaluated four light rail transit alternatives and on September 27, 2018, the Metro Board voted to carry two alignments (Metro ROW and Hawthorne Boulevard) forward for further study and environmental analysis. In February 2021, Metro conducted scoping for this EIR. As a result of community input, the project ream included an additional design option along the Metro ROW, which would travel below street level in an open-air trench. As part of the planning and conceptual engineering process, Metro determined that the Hawthorne Boulevard alignment would need to be elevated to address safety, as there was not a safe design solution to locate the light rail at street level along Hawthorne Boulevard.

For purposes of defining the project under CEQA, the alignment options were renamed for this Draft EIR. This Draft EIR serves to evaluate the potential environmental impacts of the Proposed Project (Metro ROW Elevated/Street-Level alignment) and two Options: Trench Option (Metro ROW Trench/Below-Grade) and Hawthorne Option (entirely elevated), described in more detail in Chapter 2, Project Description. An overview of the Project Area and alignments are shown in Figure 1.2-1.

The Metro ROW Elevated/Street-Level alignment is referred to as the Proposed Project in the Draft EIR because it is the alignment that has been historically studied and advanced for the extension of the Metro C Line (Green) to the South Bay region. This term does not, however, convey any preference or recommendation as to the alignment or options. Metro staff will prepare a recommendation on its preferred alignment in Spring 2023 based on findings from the Draft EIR, public comments made during the comment period, technical analysis, stakeholder input, and other factors such as cost, ridership, and project objectives.

Figure 1.2-1. C Line (Green) Extension to Torrance – Overview



Source: STV, 2022

1.3. ENVIRONMENTAL REVIEW PROCESS

A Notice of Preparation (NOP) of the Draft EIR was prepared and distributed on January 29, 2021 to the State Clearinghouse, other public agencies, and the general public for a review and comment period ending March 15, 2021. During this initial comment period, Metro extended the review and comment period to end on March 29, 2021. Virtual public scoping meetings were held on Wednesday, February 24 and Saturday, February 27, 2021, and a virtual agency scoping meeting was held on Tuesday, February 23, 2021 to gather feedback on the scope of the Draft EIR.

Metro received nearly 700 comment letters, emails, and phone calls during the scoping period on various topics. No comments were received regarding the following subjects: wildfires, utilities and service systems, energy resources, agriculture and forest resources, or mineral resources. The NOP and Scoping Report are contained in Appendix 1-A, Notice of Preparation/Scoping Summary of this Draft EIR. The baseline condition and existing setting for the Draft EIR are those that existed at the NOP date except as noted in individual sections in Chapter 3, Environmental Impacts.

In accordance with the CEQA Guidelines, this Draft EIR includes analyses of the following environmental topics:

- Transportation
- Land Use and Planning
- Aesthetics
- Air Quality
- Greenhouse Gas Emissions
- Noise and Vibration
- Biological Resources
- Geology, Soils, and Paleontological Resources
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Utilities and Service Systems
- Energy Resources
- Cultural Resources
- Tribal Cultural Resources
- Public Services and Recreation
- Agricultural and Forestry Resources
- Mineral Resources
- Population and Housing
- Wildfires

This Draft EIR was prepared under the direction and supervision of Metro and reflects the independent judgment of Metro. During the public review and comment period, public agencies, organizations, and individuals may submit written comments on the Draft EIR by email or mail to the address below. Comments can also be provided by phone at the project hotline at 213.922.4004.

Georgia Sheridan, Project Manager
Los Angeles County Metropolitan Transportation Authority
One Gateway Plaza, Mail Stop: 99-22-2
Los Angeles, CA 90012
Email: *greenlineextension@metro.net*

Metro will conduct public hearings to take testimony on the Draft EIR during the public review and comment period. After the public review and comment period, written responses to all written comments and oral testimony pertaining to environmental issues received during the comment period will be prepared as part of the Final EIR. As required by CEQA, responses to comments submitted by commenting agencies will be distributed to those agencies for review prior to consideration of the Final

EIR by the Metro Board. Upon completion of the Final EIR and other required documentation, the Metro Board will consider whether to certify the Final EIR, adopt CEQA findings of fact and a statement of overriding considerations for the Proposed Project, adopt a mitigation monitoring and report program, and approve the Proposed Project.

1.4. EIR ORGANIZATION

This Draft EIR is comprised of the following chapters:

- **Executive Summary.** This chapter provides a summary of the Proposed Project and Options, project background, environmental impacts, and mitigation measures. The summary also presents areas of controversy, including issues raised by members of the public and agencies.
- **Chapter 1. Introduction.** This chapter briefly discusses the purpose of the Draft EIR, the scope and content, identifies the environmental topics, describes the environmental review process and organization, and discusses the intended use of this Draft EIR.
- **Chapter 2. Project Description**. This chapter provides a detailed description of the Proposed Project and Options, including location and surrounding uses, history, objectives, operating characteristics, and construction schedule and phasing.
- **Chapter 3. Affected Environment and Environmental Impact Analyses.** This chapter presents the environmental setting, project analyses, and if applicable, mitigation measures, and conclusions regarding the level of significance after mitigation for each environmental resource. This chapter summarizes possible effects of the Proposed Project and Options that were determined not to be significant; discusses significant unavoidable impacts that would result from the Proposed Project and Options; analyzes significant irreversible changes in the environment; and assesses potential growth-inducing impacts, related to economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding area. This chapter addresses cumulative impacts and analyzes the potential for the Proposed Project and Options to contribute incrementally to significant cumulative effects when combined with other past, present, and probable future projects.
- **Chapter 4. Evaluation of Alternatives.** This chapter provides an analysis of a range of reasonable alternatives to the Proposed Project, including the No Project Alternative required by CEQA.
- **Chapter 5. References.** This chapter lists all the references and sources used in the preparation of this Draft EIR.
- **Chapter 6. Acronyms and Abbreviations.** This chapter lists all terms and organizations which were abbreviated for this report.
- **Chapter 7. List of Preparers**. This chapter lists the persons who contributed to the preparation of this Draft EIR.

2 PROJECT DESCRIPTION

2.1 OVERVIEW AND HISTORY

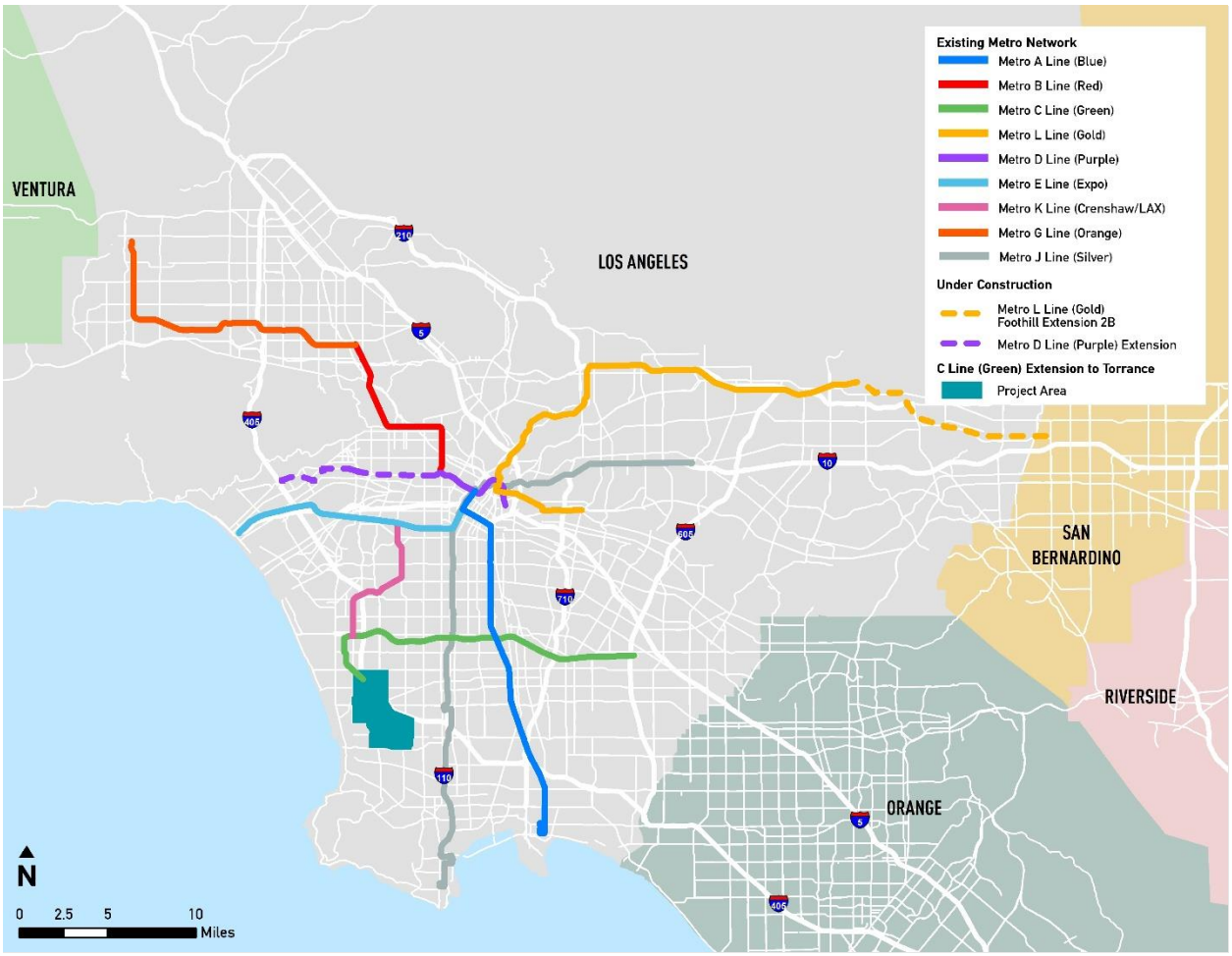
This chapter introduces and defines the Proposed Project studied in this Draft EIR. The purpose of this Draft EIR is to analyze and disclose the Proposed Project's potential significant effects on the environment and to identify mitigation measures and alternatives to avoid or lessen significant effects. The analysis presented in this Draft EIR is in compliance with the CEQA (Pub. Resources Code, § 21000 et seq.) and the CEQA Guidelines (14 Cal. Code. Regs., § 15000 et seq.).

2.1-1 Project Location and Surrounding Uses

Figure 2.1-1 shows the project location within the South Bay region of Los Angeles County. Figure 2.1-2 shows the Project Area, which follows the Metro-owned railroad right-of-way (Metro ROW) along a 4.5-mile north-south corridor from the existing Redondo Beach (Marine) Metro C Line (Green) Station traveling southeast to the Torrance Transit Center (TC). The Proposed Project would travel through the cities of Lawndale, Redondo Beach, and Torrance. The boundaries of the Project Area form roughly a one-mile buffer around the Metro ROW, with the borders generally following city limits and/or major roadways. A one-mile buffer is generally the area in which potential benefits and ridership of a major transportation project are likely to be focused.

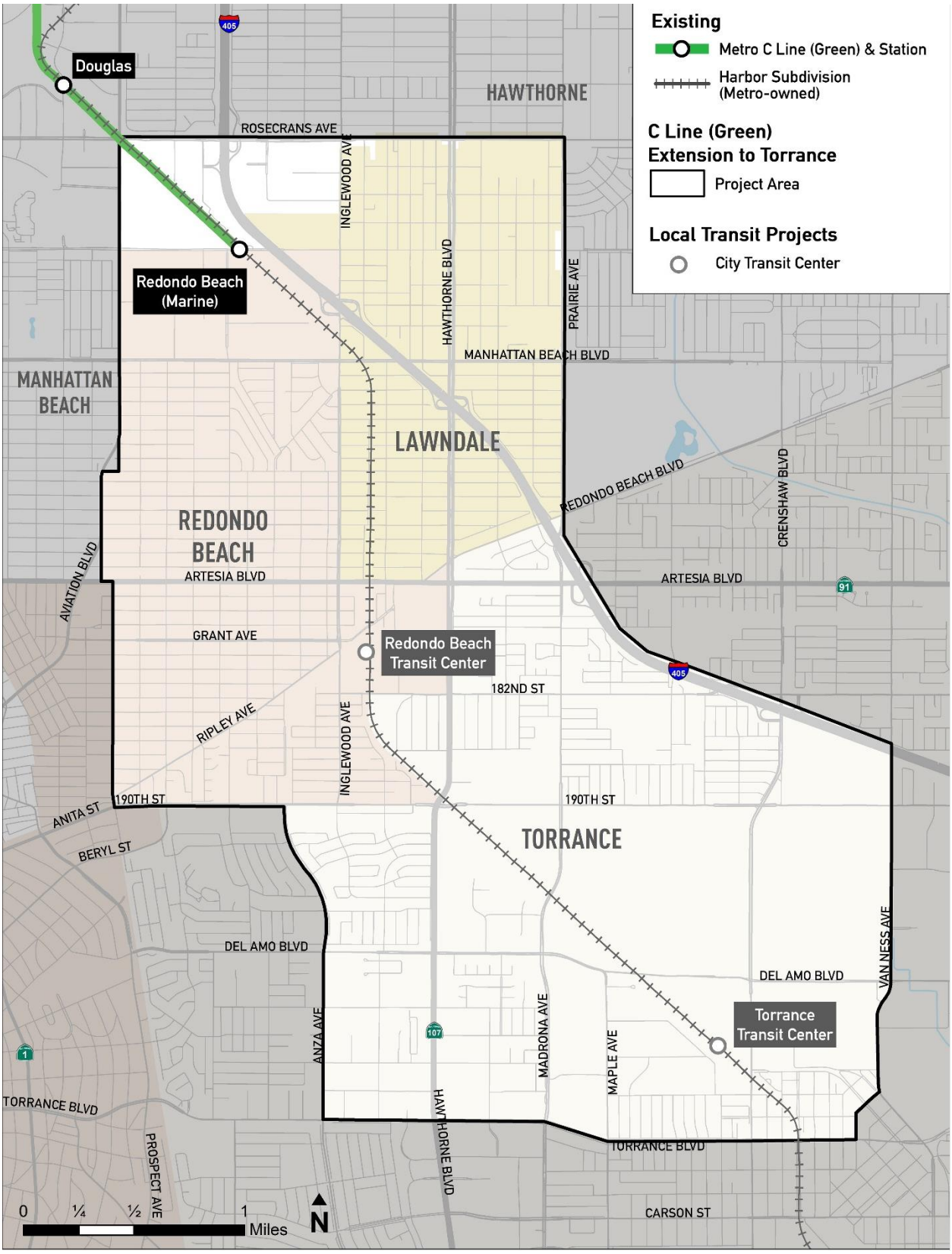
The Project Area includes single family and multi-family residential areas, industrial and institutional uses, as well as commercial and recreational areas. The Project Area also includes major activity centers, such as the South Bay Galleria, and high-capacity bus transit centers, such as the Redondo Beach TC and Torrance TC.

Figure 2.1-1. Project Location and Regional Vicinity



Source: Metro, STV, 2022

Figure 2.1-2. Project Area



Source: Metro, STV, 2022

2.1-2 Project History

Metro purchased the Harbor Subdivision from the precursor to the BNSF Railway in the early 1990s. It currently carries limited freight traffic through the Metro ROW, typically one or two trains a day. A number of studies have examined the potential for transit service along all or portions of the Metro ROW, which are described below.

- **Metro Harbor Subdivision Transit Corridor Alternatives Analysis (AA) Study (2009)** – Metro completed an AA study evaluating various transit options along the Metro ROW between Downtown Los Angeles, Los Angeles International Airport (LAX), and the Ports of Los Angeles and Long Beach. The 2009 Study analyzed various transit modal options such as light rail transit, bus rapid transit, self-propelled railcar, electric multiple unit vehicles, and commuter rail transit. The segment between the Redondo Beach (Marine) Station and the Torrance TC emerged as the highest-priority project, with light rail as the preferred mode. The Freight Track Alternative was also recommended for further study. In December 2009, the Metro Board approved the preparation of a Draft Environmental Impact Statement (EIS)/EIR for the Project.
- **South Bay Metro Green Line Extension Draft EIS/EIR (2010 to 2014)** – Metro held scoping meetings for the South Bay Metro Green Line Extension EIS/EIR in 2010 and began conducting environmental analysis on the two alternatives recommended in the 2009 AA (a light rail alternative and a freight track alternative). Several alternatives and alignment options were considered during the preparation of the Draft EIS/EIR, but were rejected from further study for a number of reasons, including poor cost effectiveness, lack of public support, and/or substantial environmental impacts. Alternatives and options rejected from further study included the Freight Track Alternative, several light rail alignment options, and several maintenance facility options. After the failure of Measure J in November 2012, the Project was put on hold due to funding uncertainty.
- **Green Line Extension to Torrance Supplemental Alternatives Analysis (SAA) (2017 to 2018)** – Measure M was passed in November 2016, which provided a source of funding for the Project in addition to the previously allocated funding from Measure R, passed in 2009. In spring 2017, Metro reinitiated the Project with an SAA, which renamed the Project as the Green Line Extension to Torrance Project. With the elimination of the Freight Track Alternative in 2011, the Project Area was reduced to focus on the area potentially affected by the light rail alternative. The revised Project Area boundaries focused on the 4.5-mile segment of the Metro ROW from the existing Redondo Beach (Marine) Station to the Torrance TC. The SAA study focused on soliciting feedback from corridor cities and stakeholders to refine and update alternatives previously identified in the 2009 AA and 2010-2014 Draft EIS/EIR. Its goal was to gain consensus on revised alternatives for the Project. On September 27, 2018, the Metro Board voted to approve two alternatives to be carried forward for environmental analysis: the Metro ROW and the Hawthorne Boulevard alignment (both primarily at-grade alignments).
- **C Line (Green) Extension to Torrance EIR (2018 to Present) –** Following Metro Board approval, Metro initiated environmental review to study the two alignments (Metro ROW and Hawthorne Boulevard) recommended in the SAA. In February 2021, Metro conducted scoping for this EIR. As a result of community input, the project team included an additional design option along the Metro ROW, which would travel below street level in an open-air trench. As part of the planning and conceptual engineering process, Metro determined that the Hawthorne Boulevard alignment would need to be elevated to address safety. There was not a safe design solution to locate the light rail at street level along Hawthorne Boulevard, which is a busy arterial that provides access to Interstate 405 (I-405), along with pedestrians, vehicles, and cyclists. For purposes of defining the project under CEQA, the alignment options were renamed for this Draft EIR. This Draft EIR serves to evaluate the

potential environmental impacts of the Proposed Project (Metro ROW Elevated/Street-Level alignment) and two Options: Trench Option (Metro ROW Trench/Below-Grade) and Hawthorne Option (entirely elevated), described in more detail in this chapter. This Draft EIR also analyzes a No Project Alternative, a High-Frequency Bus Alternative, and a 170th/182nd Grade-Separated Light Rail Alternative, described in further detail in Chapter 4, Alternatives.

The Metro ROW Elevated/Street-Level alignment is referred to as the Proposed Project in the Draft EIR because it is the alignment that has been historically studied and advanced for the extension of the C Line (Green) to the South Bay region. This term does not, however, convey any preference or recommendation as to the alignment or Options. Metro staff will prepare a recommendation on its preferred alignment in Spring 2023 based on findings from the Draft EIR, public comments made during the comment period, technical analysis, stakeholder input, and other factors such as cost, ridership, and project objectives.

2.2 PROJECT OBJECTIVES

The underlying purpose of the Proposed Project is to provide high-capacity transit service in the South Bay. Metro has identified the following project objectives:

> Improve mobility within the South Bay and encourage mode shift by:

- Introducing high-frequency transit service options from the current C Line terminus south to Torrance.
- Creating direct connections between the regional transit network and local transit hubs for convenient transfers.
- Providing an alternative mode of transportation for commuters traveling along congested arterials and I-405.
- Providing first-last mile facilities to connect to neighborhoods to station areas.

> Reduce air pollution and greenhouse gas emissions by making transit a more viable transportation choice.

> Avoid and minimize environmental impacts on environmental resources to the maximum extent feasible.

> Provide a cost-effective project.

> Provide more equitable access to regional destinations by improving connections to the Metro regional rail system.

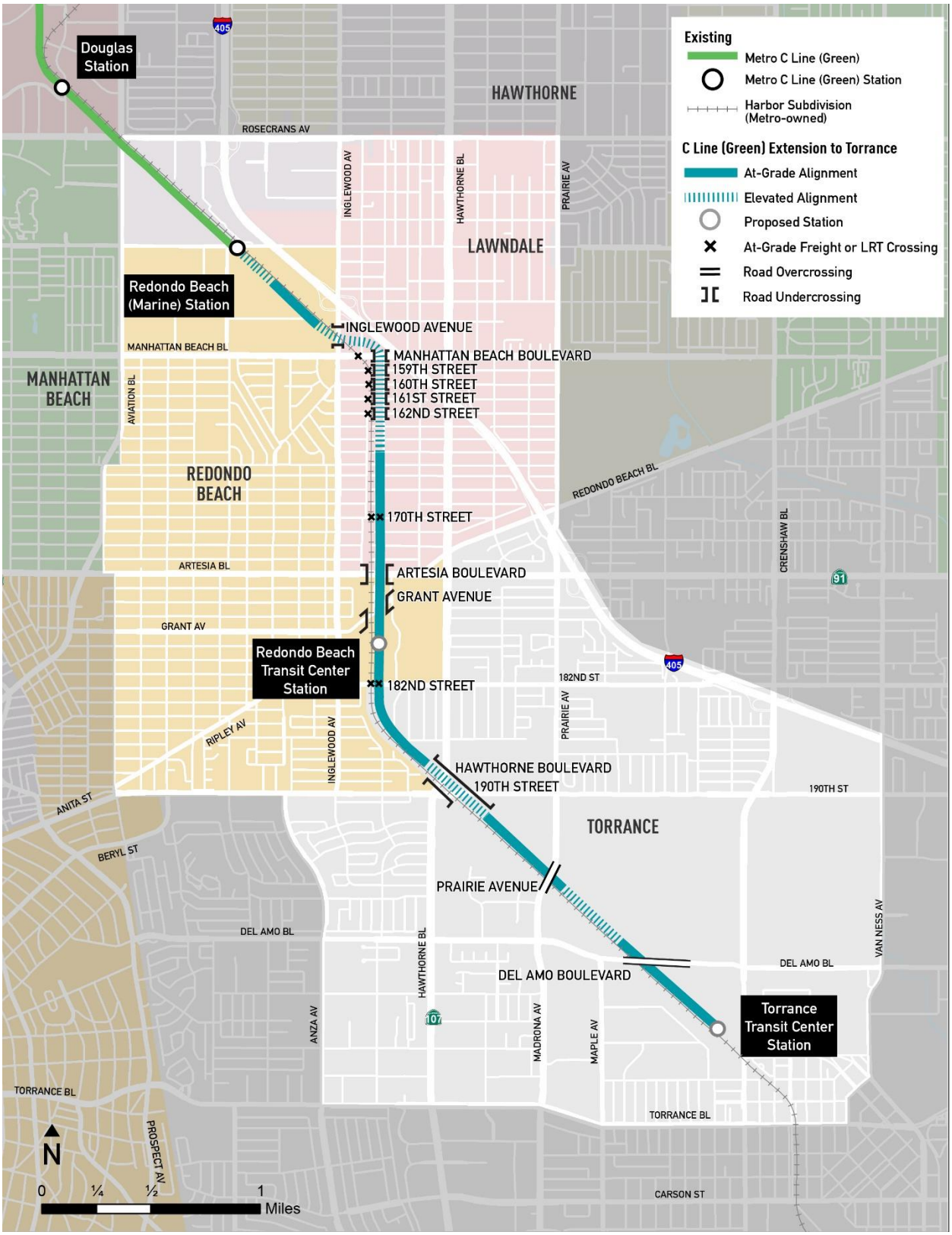
2.3 PROJECT AND PROJECT OPTIONS CONSIDERED IN THE EIR

2.3-1 Proposed Project

The Proposed Project would extend the Metro C Line (Green) approximately 4.5 miles to the south by providing a light rail line that follows the existing Metro ROW for the length of the Project. Two stations are proposed: Redondo Beach TC Station and Torrance TC Station. Figure 2.3-1 shows an overview of the Proposed Project. Between the existing Redondo Beach (Marine) Station and 190th Street within the Metro ROW, BNSF operates a single freight track. As part of the Proposed Project, Metro would build two new light rail tracks and relocate the existing freight track in some areas within the Metro ROW, which is discussed in greater detail below. The Proposed Project includes multi-use recreational paths within the Metro ROW, where there is sufficient room, discussed further below. South of 190th Street, BNSF and Metro share ownership of the freight corridor. Metro owns approximately 15 feet in width

and would acquire or lease additional ROW from BNSF to accommodate two new light rail tracks between 190th Street and the Torrance TC Station. Appendix 2-A, Select Advanced Conceptual Engineering Drawings provides detailed drawings of the alignment.

Figure 2.3-1. Proposed Project – Overview

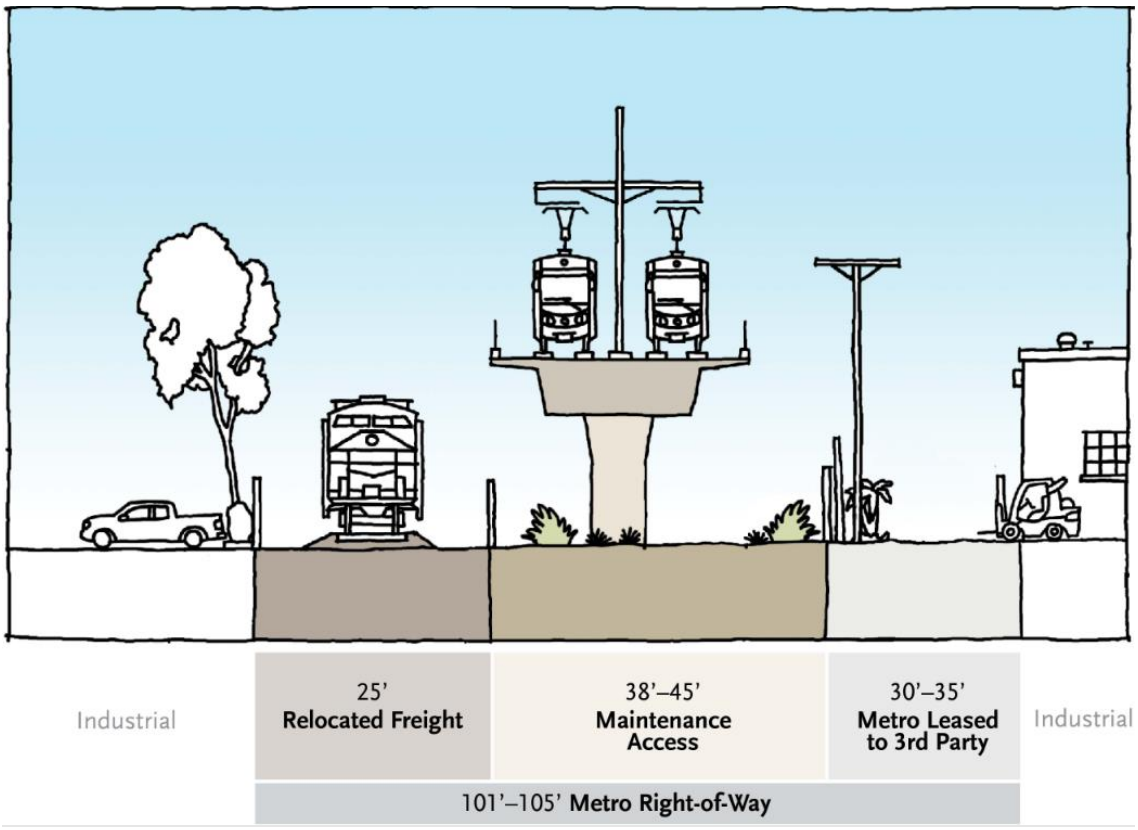


Source: STV, 2022

2.3-1.1 Alignment

The Proposed Project would begin at the existing Redondo Beach (Marine) Station, where the existing light rail tracks and station are elevated above street level in a guideway supported by columns. The Proposed Project would continue south in an elevated configuration within the existing Metro ROW, running parallel to and west of the existing freight tracks, which run at-grade (street level). Approximately 400 feet south of the station, the light rail tracks would descend and travel at-grade for approximately 800 feet before ascending back up to an elevated structure to cross over Inglewood Avenue and Manhattan Beach Boulevard into the City of Lawndale (Figure 2.3-2). Just south of Manhattan Beach Boulevard, the light rail guideway would cross over the existing freight tracks and shift to travel along the east side of the Metro ROW as it continues south. The existing freight track crossings at Inglewood Avenue and Manhattan Beach Boulevard would be rebuilt and remain at-grade.

Figure 2.3-2. Proposed Project – Looking South Between Inglewood Avenue and Manhattan Beach Boulevard



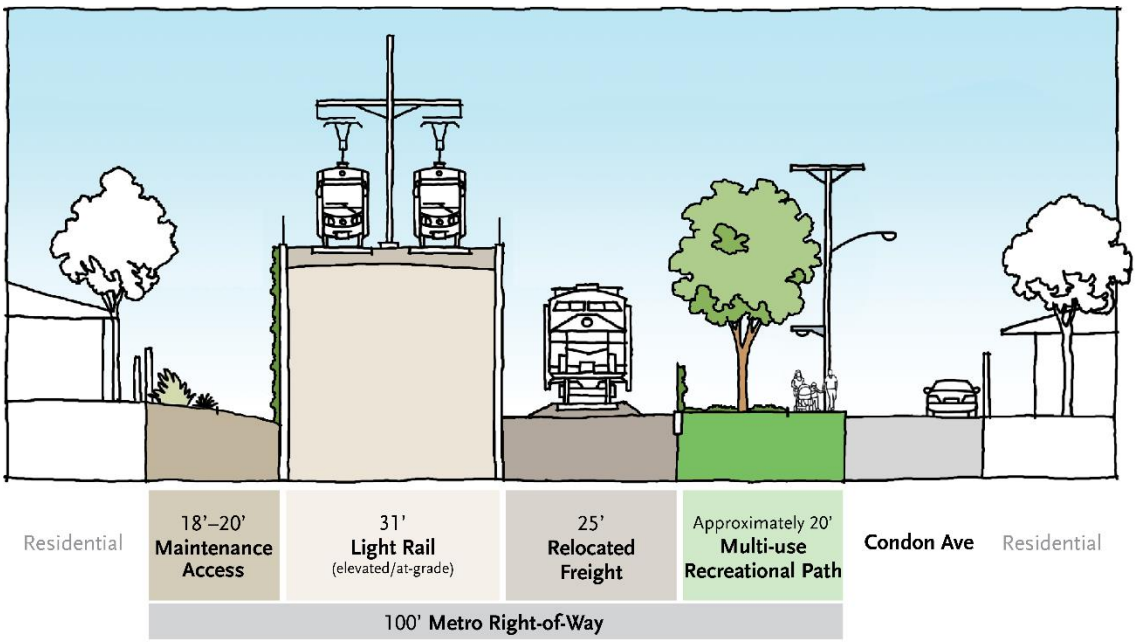
Source: Cityworks Design, 2022
Dimensions and ROW boundaries are preliminary and subject to confirmation in future phases of design.

Continuing south, the light rail tracks would cross over 159th Street, 160th Street, 161st Street, and 162nd Street on an elevated structure supported by columns, and then would descend on retained fill[1] until it reaches street level to near 165th Street. The retained fill section is shown in Figure 2.3-3. Between 165th and 170th Street, the light rail tracks would be at-grade, shown in Figure 2.3-4. The segment between Manhattan Beach Boulevard and 170th Street is wide enough to accommodate a

[1] The retained fill would be an elevated platform made of reinforced walls which are filled with soil material.

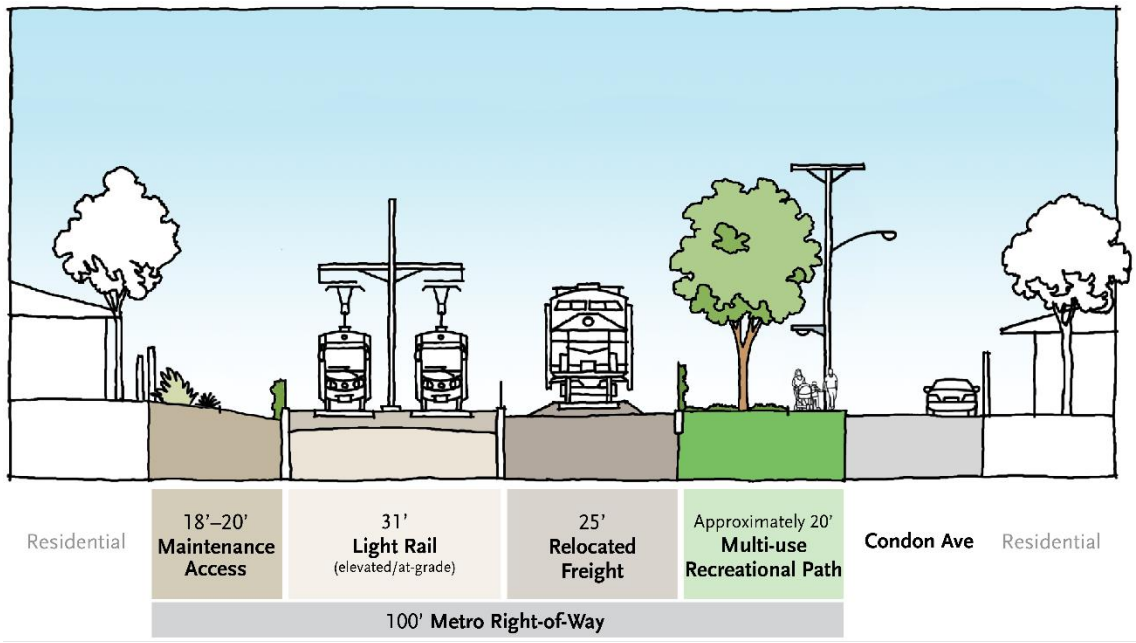
multi-use path parallel to the freight track, discussed further below. The light rail tracks would cross 170th Street at-grade parallel to the freight track with safety gates and equipment to prohibit conflicts between passing trains, vehicles, pedestrians, and cyclists. Between 170th Street and Grant Avenue, the Metro ROW narrows and there is not sufficient room to accommodate a multi-use path. The cross-section between 170th Street and Artesia Boulevard is shown in Figure 2.3-5.

Figure 2.3-3. Proposed Project – Looking South of 162nd Street



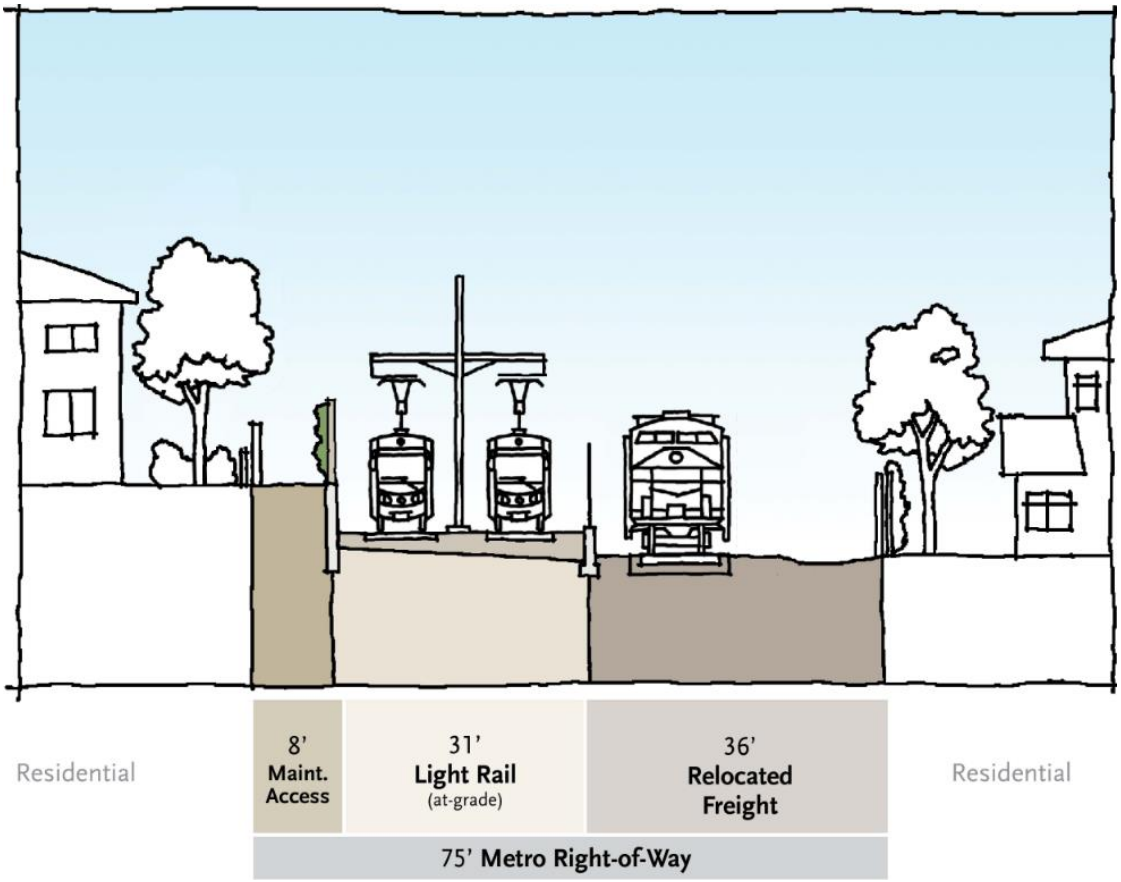
Source: Cityworks Design, 2022
Dimensions and ROW boundaries are preliminary and subject to confirmation in future phases of design.

Figure 2.3-4. Proposed Project – Looking South Between 165th Street and 170th Street



Source: Cityworks Design, 2022
Dimensions and ROW boundaries are preliminary and subject to confirmation in future phases of design.

Figure 2.3-5. Proposed Project – Looking South Between 170th Street and Artesia Boulevard

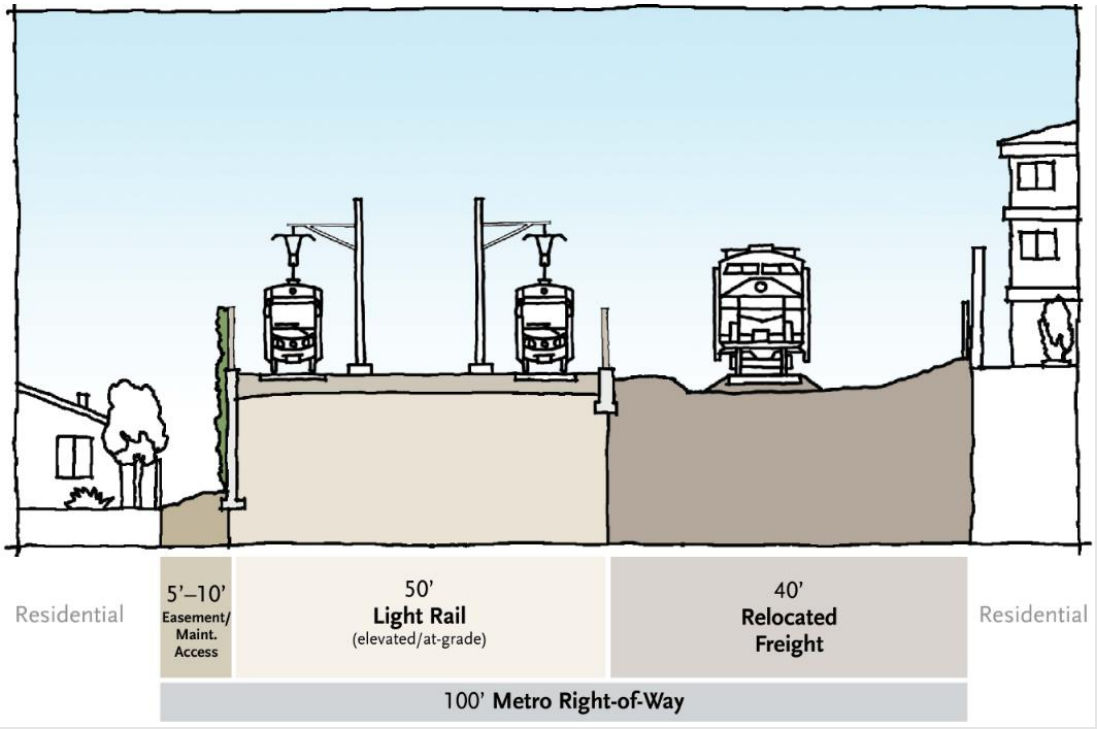


Source: Cityworks Design, 2022
Dimensions and ROW boundaries are preliminary and subject to confirmation in future phases of design.

The light rail tracks would cross over Artesia Boulevard into the City of Redondo Beach on a new bridge adjacent to the existing freight bridge. South of Artesia Boulevard, the light rail tracks continue to travel at-grade within the Metro ROW, as shown in Figure 2.3-6.

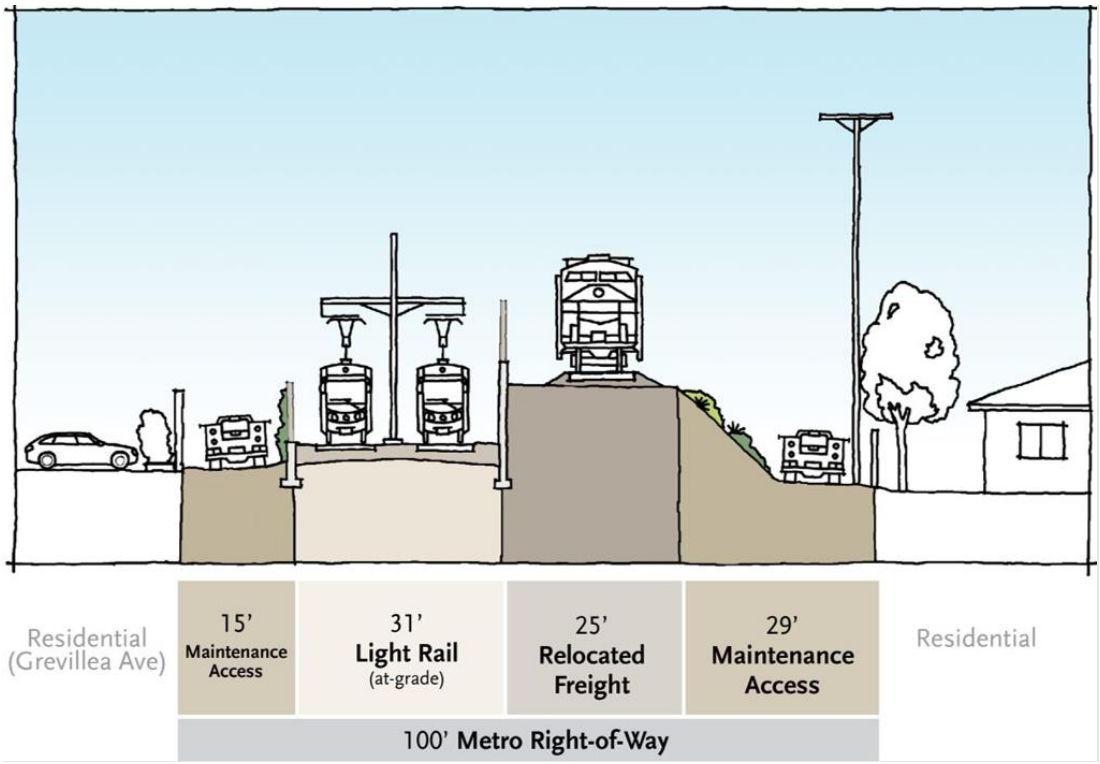
The light rail tracks would cross over Grant Avenue on a new light rail bridge parallel to the existing freight bridge, which would need to be demolished and rebuilt farther to the west. Immediately south of Grant Avenue, the light rail tracks would rise up on retained fill (approximately four to six feet higher than the existing freight track) to reach the elevated Redondo Beach TC Station, described in more detail in Section 2.3-1.4. From the Redondo Beach TC Station, the light rail tracks would descend on retained fill to reach street-level and cross over 182nd Street at-grade parallel to the existing freight track. From south of 182nd Street to Hawthorne Boulevard, the light rail tracks would run parallel to the freight track on a retained fill, as shown in Figure 2.3-7. The light rail tracks would be lower than the freight track to reduce their visibility, in response to community input.

Figure 2.3-6. Proposed Project – Looking South of Artesia Boulevard



Source: Cityworks Design, 2022
Dimensions and ROW boundaries are preliminary and subject to confirmation in future phases of design.

Figure 2.3-7. Proposed Project – Looking South Between 186th Street and Hawthorne Boulevard



Source: Cityworks Design, 2022
Dimensions and ROW boundaries are preliminary and subject to confirmation in future phases of design.

The light rail tracks would then cross over Hawthorne Boulevard and 190th Street on new bridges parallel to the existing freight bridge. South of 190th Street, the light rail tracks would travel at-grade within the Metro ROW, cross under the Prairie Avenue bridge, and rise up onto an elevated structure, and then descend to cross under Del Amo Boulevard. This elevated light rail structure is required to maintain freight operations, as described in more detail in the section below. South of Del Amo Boulevard, the light rail tracks would continue at-grade and end at a terminus station adjacent to the Torrance TC, just west of where the Metro ROW meets Crenshaw Boulevard. Tail tracks, which can be used for train carparking, storing, or reversing the direction of the light rail trains, would extend beyond the station platform and end west of Crenshaw Boulevard.

The entire light rail guideway would be enclosed, either with a fence, a combination of a fence on top of a low wall, or a sound wall in areas where noise mitigation is proposed.

Utility lines, including oil, gas, and electrical, currently run underneath the Metro ROW. The Proposed Project would relocate these lines within the Metro ROW in several areas or protect them in place. Utilities are discussed further in Section 3.11, Utilities and Service Systems.

Freight Track Modifications

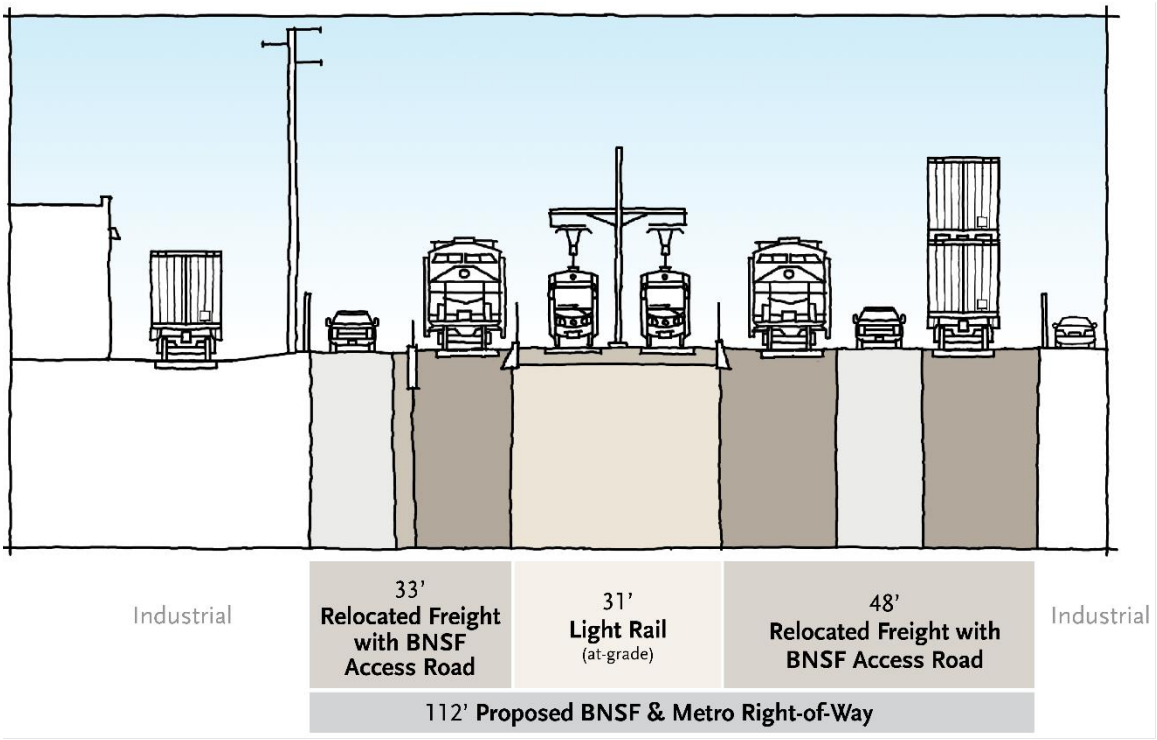
The width of the Metro ROW varies throughout the project area. This section discusses where the existing freight track would be shifted within the Metro ROW as part of the Proposed Project to accommodate the light rail tracks.

Just south of the Redondo Beach (Marine) Station, the two existing freight tracks would be shifted slightly to the east within the existing Metro ROW. Two new siding tracks and an access road would be added to the east of the new siding tracks, within Southern California Edison ROW. The existing siding tracks near Inglewood Avenue would be removed, to accommodate the new light rail tracks. The two mainline freight tracks would merge into a single track at Inglewood Avenue. At Manhattan Beach Boulevard, the freight track would cross under the elevated light rail structure to the west side of the Metro ROW, running west of the light rail tracks. Between Manhattan Beach Boulevard and 172nd Street, the existing freight track would be relocated to the west up to 14 feet within the Metro ROW. In this segment, the freight trains would continue to cross streets at-grade as they do today. Between 172nd Street and Artesia Boulevard, the freight track would remain in its current location. Between Artesia Boulevard to 182nd Street, the freight track would be relocated to the west up to 25 feet to allow the light rail to approach an elevated station at the Redondo Beach TC, and a new freight bridge would be constructed at Grant Avenue (see Figure 2.3-11). The freight crossing at 182nd Street would remain at-grade with safety improvements. Between 182nd Street and Hawthorne Boulevard, the freight track would be relocated to the west, from approximately three feet at 182nd Street up to 12 feet near El Nido Park. Just north of Hawthorne Boulevard, the existing freight track would remain in its existing location to cross over the existing freight bridges at Hawthorne Boulevard and 190th Street as it does today.

South of 190th Street, the character of the Metro ROW changes from a single freight track to a denser network of freight tracks, storage tracks to stage cargo, and spur tracks serving adjacent properties along the Metro ROW. To accommodate the light rail, the existing freight tracks would be shifted on both sides (east and west) of the Metro ROW to allow the light rail tracks to travel in between freight tracks to cross under two bridges: Prairie Avenue and Del Amo Boulevard. In various areas throughout this segment, the BNSF ROW would be expanded on both sides of the existing corridor, to accommodate the freight tracks and new access roads. Figure 2.3-8 shows the light rail and freight track configuration in this area. To provide access for freight track maintenance, there would be crossover tracks between Prairie Avenue and Del Amo Boulevard. The light rail tracks in this section would be elevated in an aerial

structure to cross over the freight tracks. The Del Amo Boulevard bridge span would be demolished and reconstructed with a wider span to accommodate an additional BNSF track underneath and to allow BNSF to maintain access to adjacent properties.

Figure 2.3-8. Proposed Project – Typical Cross-Section between 190th Street and Prairie Avenue



Source: Cityworks Design, 2022
Dimensions and ROW boundaries are preliminary and subject to confirmation in future phases of design.

Multi-Use Recreational Paths

Where there is sufficient room within the Metro ROW, the Proposed Project would provide two multi-use recreational paths for walking, cycling, etc. Parallel to Condon Avenue between 159th Street and 170th Street, a multi-use path would be provided on the west side of the freight track. This path would vary in width, and be approximately 20 feet wide. It would allow residents and visitors to safely walk or cycle along the Metro ROW next to Condon Avenue, which does not have a sidewalk. A fence would be provided between this multi-use path and freight track for safety. An example cross-section of the alignment and the multi-use path are shown in Figure 2.3-4.

Between Grant Avenue and 182nd Street, a multi-use recreational path would be provided on the east side of the light rail tracks, as shown in Figure 2.3-11. This path would be approximately 10 to 20 feet wide and provide access to the Redondo Beach TC Station, as well as enhance access within the neighborhood.

2.3-1.2 Roadway Modifications

Figure 2.3-9 shows the vertical profile of the Proposed Project and all the roadways that the light rail would cross. The light rail tracks would be separated from all roadways except for 170th and 182nd Streets, where the light rail would cross at-grade. The freight track would remain at-grade throughout the length of the corridor (see Figure 2.3-1). The roadway crossings are described below from north to south, and would include the following modifications:

- Inglewood Avenue: The roadway would cross under the elevated light rail structure, and the freight track would remain an at-grade crossing. New pedestrian gates and warning devices would be upgraded and installed on both sides of the freight track crossing. A new median and new vehicular safety gates would also be installed.
- Manhattan Beach Boulevard: The roadway would cross under the elevated light rail structure, and the freight track would remain an at-grade crossing. The pedestrian crossings would be reconfigured and include gates on both sides of the freight track crossing. The vehicular gates and signals would be relocated.
- 159th, 160th, 161st and 162nd Streets: These roadways would cross under the elevated light rail structure, and the freight track would remain an at-grade crossing. The multi-use recreational path would run at-grade parallel to the freight track, and at each roadway crossing, pedestrian gates and signals would be provided on both sides of the freight track, on both sides of each street. The multi-use path would cross each street with a signed and continental ("zebra") striped crosswalk. The vehicular gates and signals would be relocated.
- 170th Street: Both the light rail and freight tracks would cross the roadway at-grade. The multi-use path would run at-grade parallel to the freight track. The at-grade crossing would include gates and other crossing protection, and pedestrian upgrades on the sidewalks on both sides of the tracks and both sides of 170th Street. The multi-use path would cross the street with a signed and continental ("zebra") striped crosswalk.
- Artesia Boulevard: Both the light rail and freight tracks would cross over the roadway on bridges. No modifications to the roadway are required, except for new columns in the existing median to support rail bridges.
- Grant Avenue: Both the light rail and freight track would cross over Grant Avenue on bridges. No modifications to the roadway are required, except for new columns within the existing median to support rail bridges. A new pedestrian crossing would be provided at Grant Avenue and Condon Avenue, to provide access to the multi-use path that connects to the Redondo Beach TC station, and would include advance pedestrian signals to warn approaching drivers.
- 182nd Street: Both the light rail and freight tracks would cross the roadway at-grade. The at-grade crossing would include gates and other crossing protection, and pedestrian upgrades on the sidewalks on both sides of the tracks and both sides of 182nd Street, including a continental ("zebra") striped crosswalk on the east side of the Metro ROW.
- Hawthorne Boulevard and 190th Street: These roadways would cross under the new light rail and existing freight bridges. No modifications to the roadways are required.
- Prairie Avenue: The roadway would cross over the light rail and freight tracks on the existing roadway bridge. The west embankment would be cut back to make room for the relocated freight tracks and access road, but no modifications to the roadway bridge are required.
- Del Amo Boulevard: The bridge span would be reconstructed to make room for new light rail and freight tracks that travel below the roadway bridge.

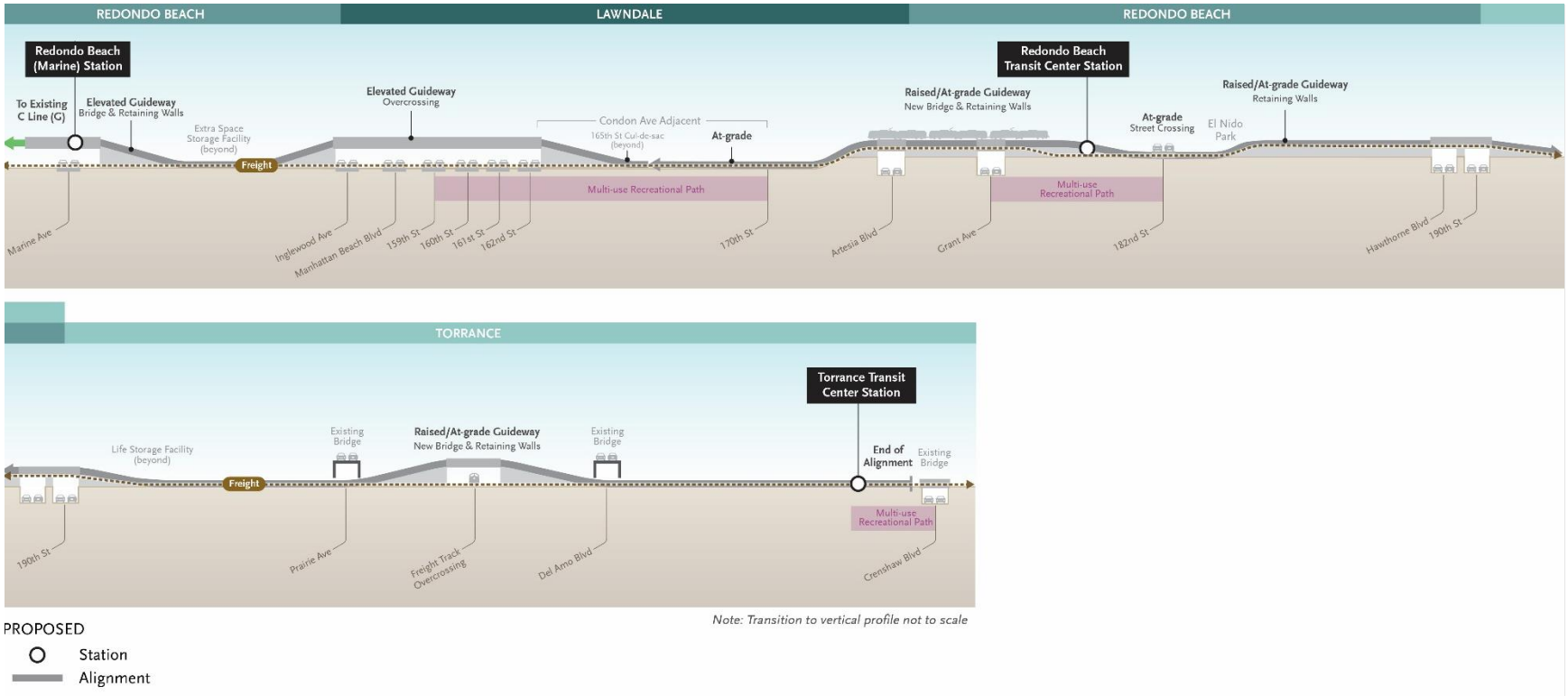
The Proposed Project would not modify any street parking.

2.3-1.3 Quiet Zones

All at-grade roadway crossings would comply with California Public Utilities Commission (CPUC) regulations to ensure they are safely designed, constructed, and maintained. The at-grade crossings (for

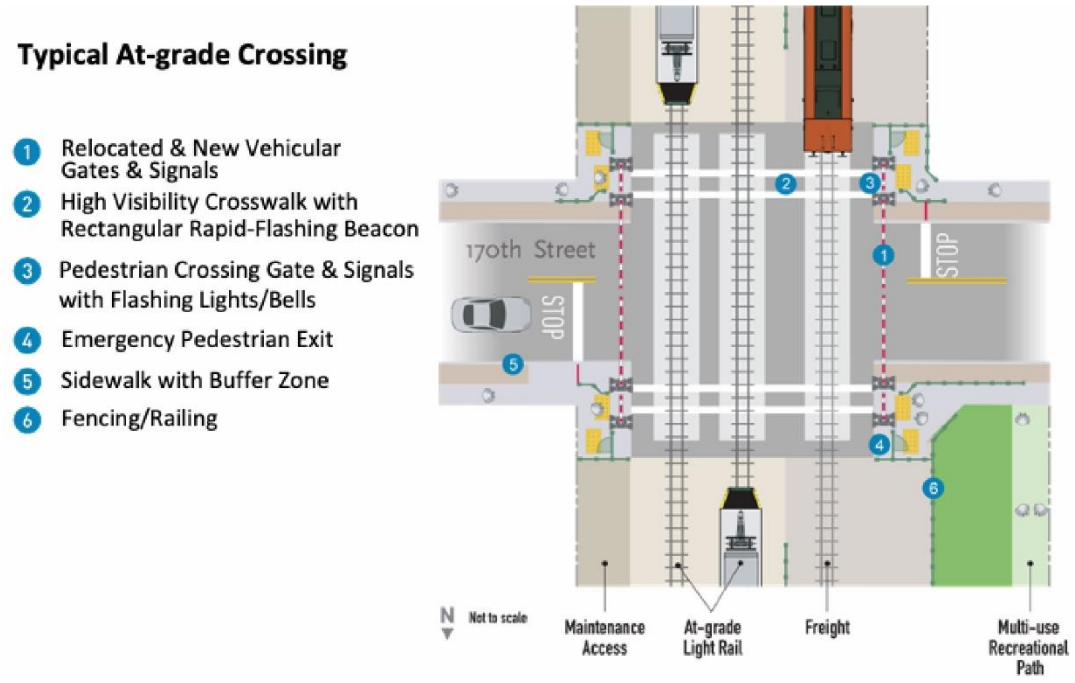
both freight and light rail) would be designed and upgraded to be “quiet zone ready”, which would allow local jurisdictions to implement a quiet zone policy for the corridor in the future. A quiet zone would reduce noise along the corridor by allowing freight trains to eliminate the use of horns when approaching at-grade crossings, which would have safety gates and enhancements for trains, vehicles, and pedestrians. The quiet zone ready design includes site-specific safety infrastructure such as vehicle gates, pedestrian gates, signals such as lights and bells, and sidewalks and ramps that are all compliant with the American Disability Act (ADA). Figure 2.3-10 shows the elements of a crossing where both the light rail and freight tracks are at-grade. For crossings where the light rail tracks are separated from the roadway, but the freight track is at-grade, all safety crossing amenities would still be included. Implementation of a quiet zone would result in the elimination of freight horns for a distance of approximately three miles, from north of Inglewood Avenue to south of 182nd Street.

Figure 2.3-9. Proposed Project – Vertical Profile Diagram



Source: Cityworks Design, 2022

Figure 2.3-10. Typical At-Grade Crossing for both Light Rail and Freight (e.g., 170th and 182nd Streets)



Source: Cityworks Design, 2022

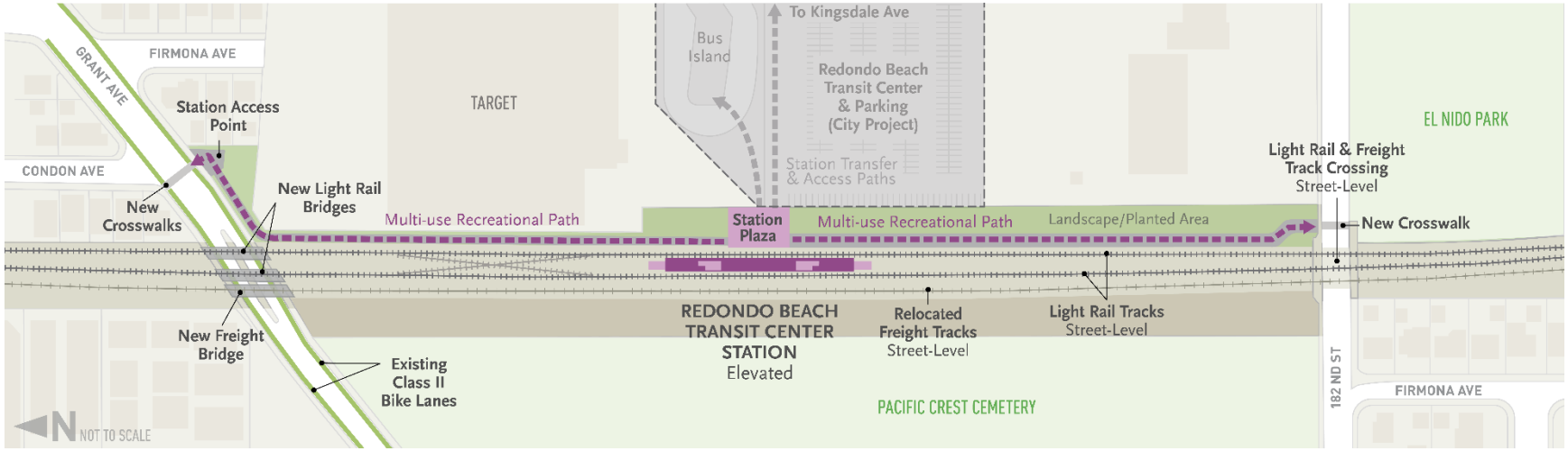
2.3-1.4 Station Sites

The Proposed Project includes two new light rail stations. The stations would follow Metro's Systemwide Station Design Standards consistent with the Metro Boards Systemwide Station Design Policy. Pursuant to Metro Board Policy, stations shall be required to have a consistent canopy design, station entrance, signage, communications equipment, fare collection equipment, and safety and security systems. Metro's Systemwide Station Design Standards include elements of variability, such as landscaping and integrated site-specific artwork that connects the station within the broader community context. All the stations are proposed as a center-platform configuration, allowing passengers to access trains from either direction from the same platform. The station platforms would be capable of accommodating three-car trains in the future if ridership increases and additional capacity is needed along the Metro C Line. The stations would allow level-boarding and full accessibility to comply with the ADA. Bicycle parking would be provided at all station sites.

Redondo Beach TC Station

The City of Redondo Beach's new regional transit center, Redondo Beach TC, is located between Kingsdale Avenue and the Metro ROW, south of the existing Target store. The City's Redondo Beach TC is a regional hub for local and regional bus lines, and also includes parking for Redondo Beach TC bus patrons. The Proposed Project would include a two-level light rail station located approximately 580 feet south of the Grant Avenue crossing, adjacent to the city's transit center (shown in Figure 2.3-11 and Figure 2.3-12). Light rail riders would arrive at the elevated light rail station platform, and descend to the lower level station plaza to connect to the city's transit center. As described in Section 2.3-1.1, the Proposed Project would also include a multi-use recreational path that would provide direct access to the light rail station via Grant Avenue and 182nd Street.

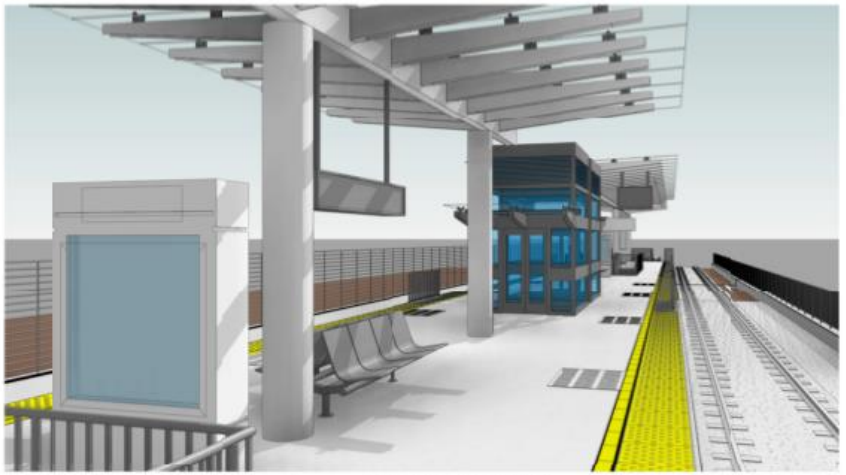
Figure 2.3-11. Proposed Project – Redondo Beach TC Station Layout



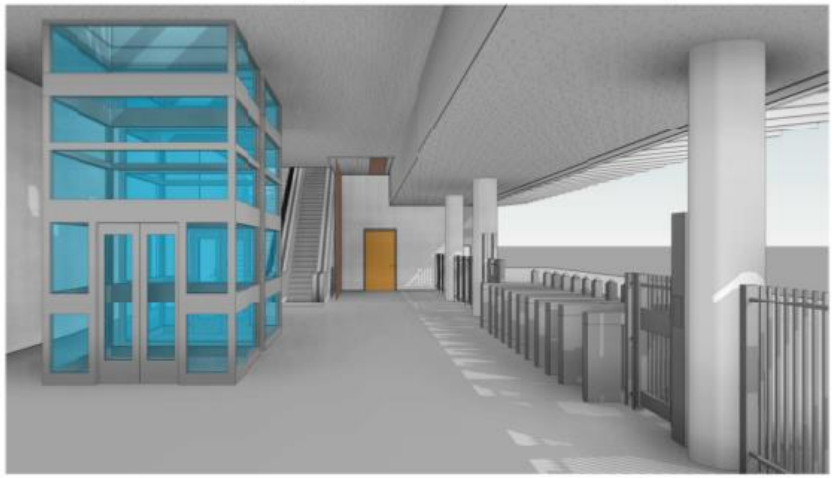
Source: Cityworks Design, 2022
Not to scale

Figure 2.3-12. Proposed Project – Renderings of Elevated Station at Redondo Beach TC

SW FACING - MAIN ENTRANCE PLAZA LEVEL



N FACING - PLATFORM



N FACING - PLAZA LEVEL PAID AREA

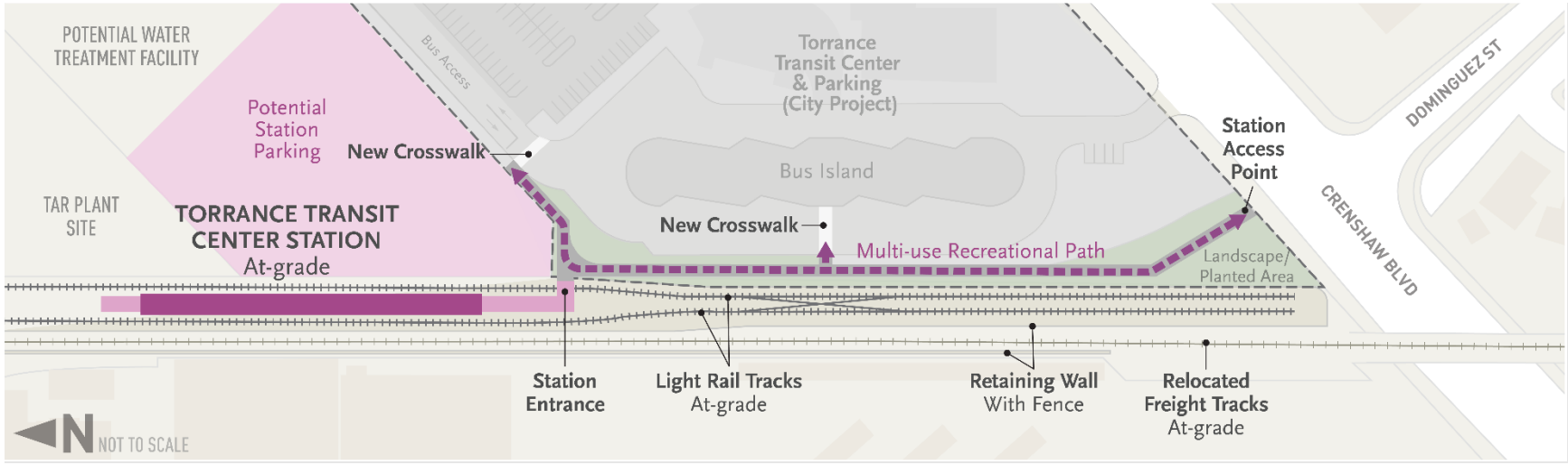
W FACING - MAIN ENTRANCE

Source: STV, 2022

Torrance TC Station

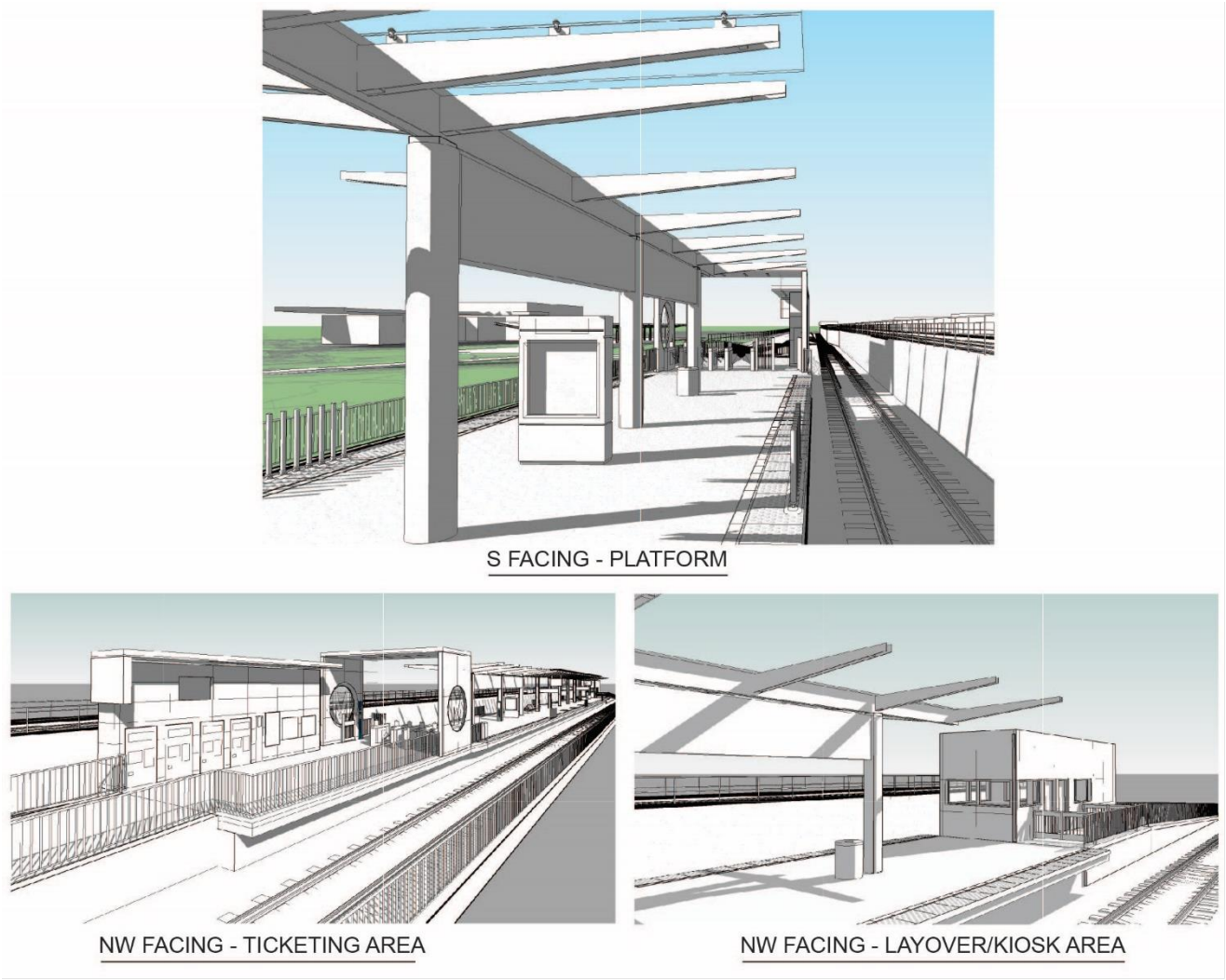
The City of Torrance's regional transit center, the Torrance TC, is located west of Crenshaw Boulevard and east of the Metro ROW. The Proposed Project would include an at-grade light rail station adjacent to the city's transit center, slightly north of the bus plaza (shown in Figure 2.3-14). The Proposed Project station would also include a surface parking lot with approximately 180 spaces, north of the city transit center's parking area. The light rail station platform would be accessible by pedestrian pathways and crosswalks from the Torrance TC bus plaza and parking areas, and as well as a path from Crenshaw Boulevard. This would be the southern terminus station for the Proposed Project.

Figure 2.3-13. Proposed Project – Torrance TC Station Layout



Source: Cityworks Design, 2022
Not to scale

Figure 2.3-14. Proposed Project – Renderings of Torrance TC Station (Terminus)

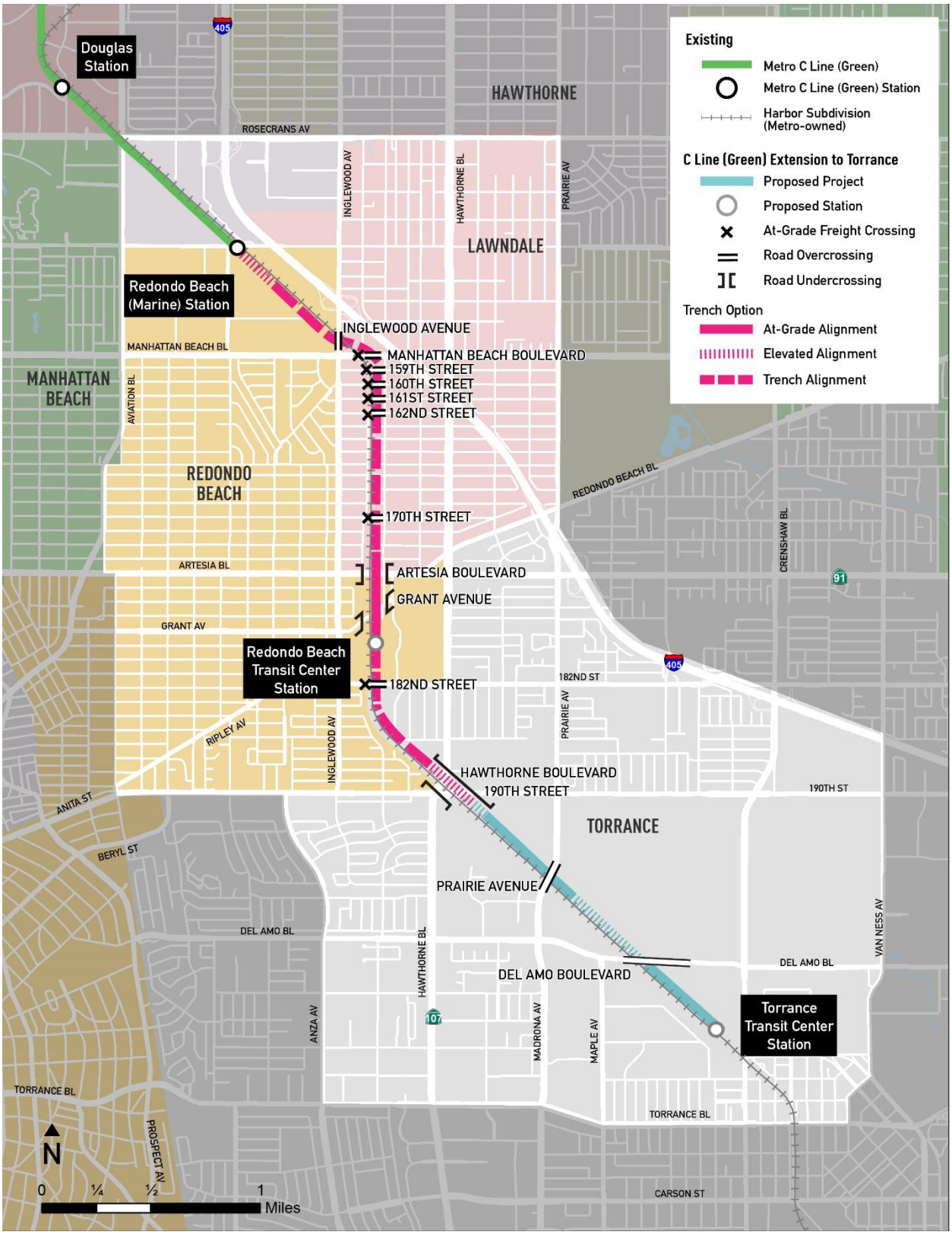


Source: STV, 2022

2.3-2 Trench Option

Along the Metro ROW, there is an option being considered between Marine Avenue and 190th Street called the Trench Option. Like the Proposed Project, the Trench Option would follow the existing Metro ROW, but would have a different vertical configuration (height) and be completely grade-separated with eight light rail under-crossings. All freight crossings would remain at-grade as they are today. One station is proposed in this segment: Redondo Beach TC Station. Figure 2.3-15 provides an overview of the Trench Option. South of 190th Street, the alignment and Torrance TC Station would be identical to the Proposed Project. Appendix 2-A, Select Advanced Conceptual Engineering Drawings provides detailed drawings of the alignment.

Figure 2.3-15. Trench Option – Overview

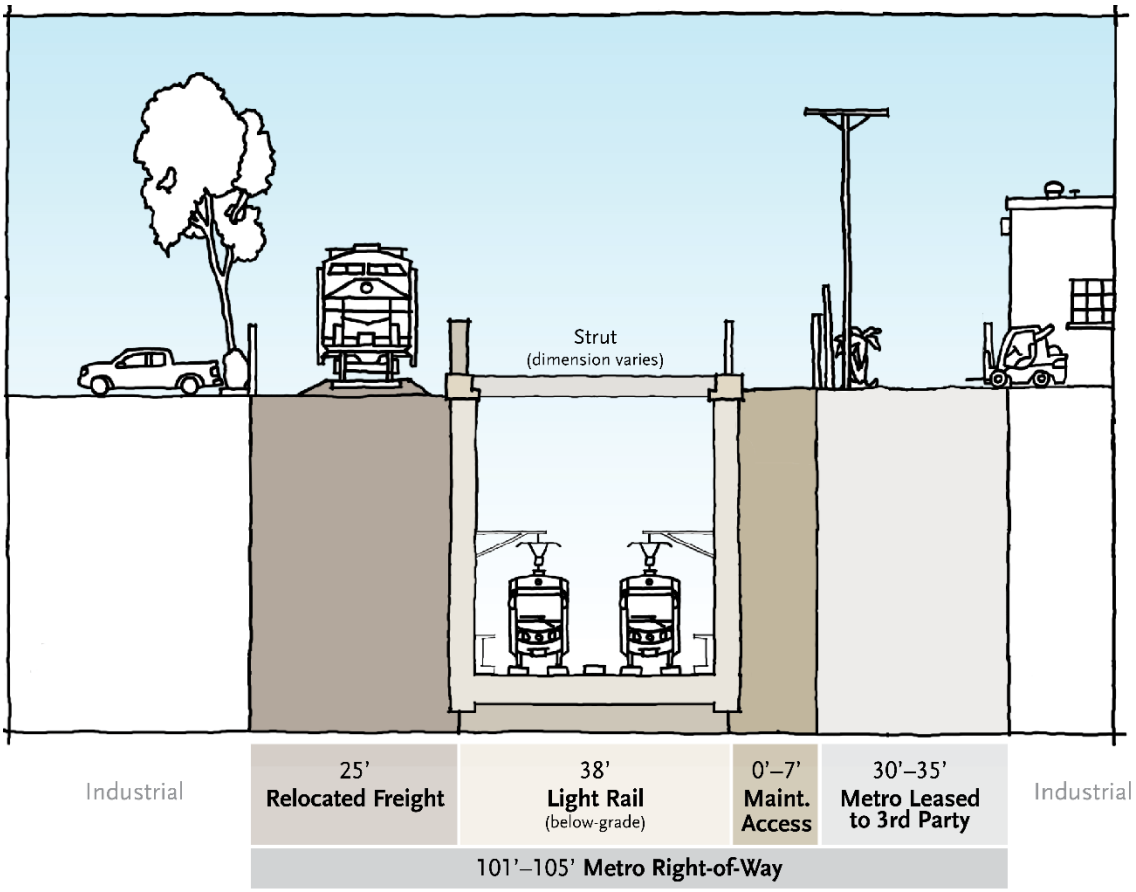


Source: STV, 2022

2.3-2.1 Alignment

The Trench Option would begin at the existing Redondo Beach (Marine) Station, where the existing light rail tracks and station are elevated above street level. Approximately 400 feet south of the station, the elevated light rail tracks would start descending on retained fill and transition below street level into an open-air trench configuration to cross under Inglewood Avenue and Manhattan Beach Boulevard. An example cross-section of the Trench Option configuration is shown in Figure 2.3-16.

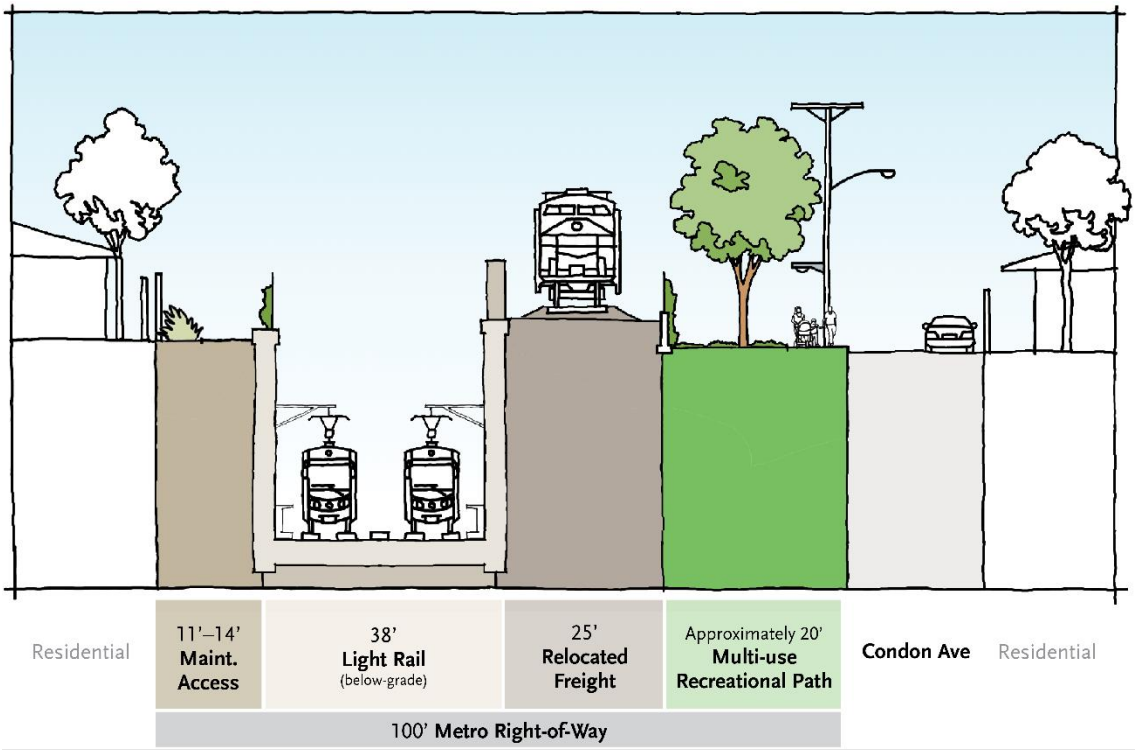
Figure 2.3-16. Trench Option – Looking South Between Inglewood Avenue and Manhattan Beach Boulevard



Source: Cityworks Design, 2022
Dimensions and ROW boundaries are preliminary and subject to confirmation in future phases of design.

South of Manhattan Beach Boulevard, the Trench Option would continue to run below street level with the light rail tracks located on the east side of the Metro ROW, parallel to (and west of) the existing freight tracks. The light rail tracks would travel under local streets through the City of Lawndale, with the local streets remaining open for vehicles, pedestrians, etc. to cross over the trench on bridge structures. Figure 2.3-17 shows the Trench Option configuration through this area. To avoid underground utilities between located below cross streets between Inglewood Avenue and 166th Street, the trench would be approximately 30 to 40 feet deep. The trench would be approximately 20 feet in depth at 170th Street.

Figure 2.3-17. Trench Option – Looking South between 162nd Street and 168th Street

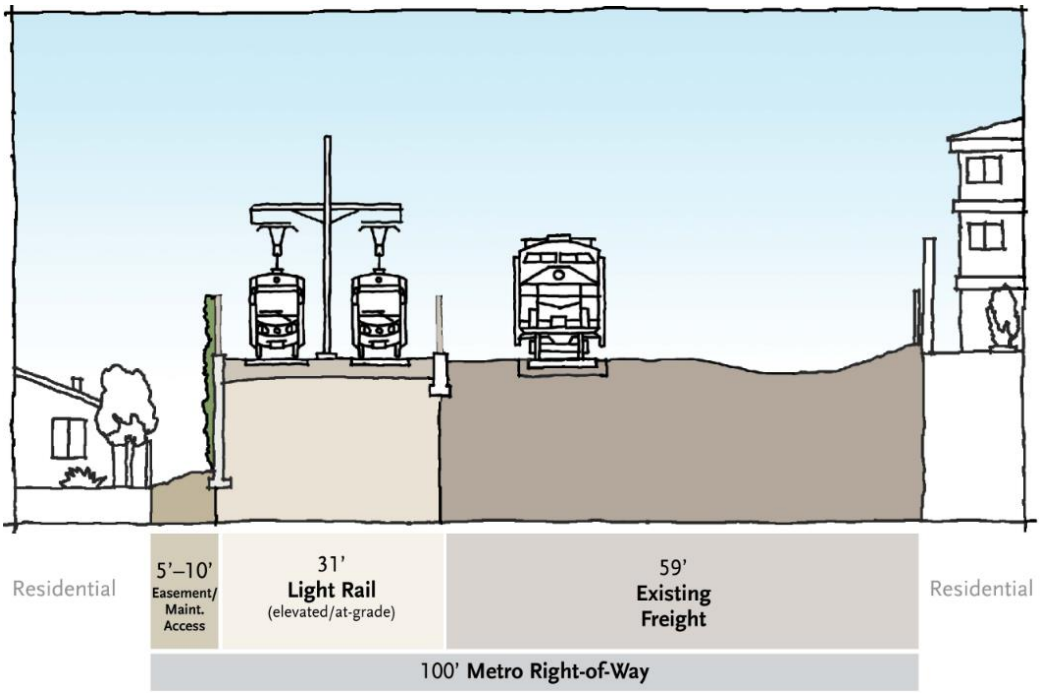


Source: Cityworks Design, 2022
Dimensions and ROW boundaries are preliminary and subject to confirmation in future phases of design.

South of 170th Street, the light rail tracks would ascend to run at-grade near 173rd Street in order to cross over Artesia Boulevard into the City of Redondo Beach on a new light rail bridge adjacent to the existing freight bridge. South of Artesia Boulevard, the Trench Option would continue at-grade, as shown in Figure 2.3-18. The light rail tracks would cross over Grant Avenue on a new light rail bridge before descending to reach the Redondo Beach TC Station. The station under the Trench Option would have a lower elevation and different layout from the elevated station under the Proposed Project, in order to cross under 182nd Street, discussed in more detail in Section 2.3-1.4.

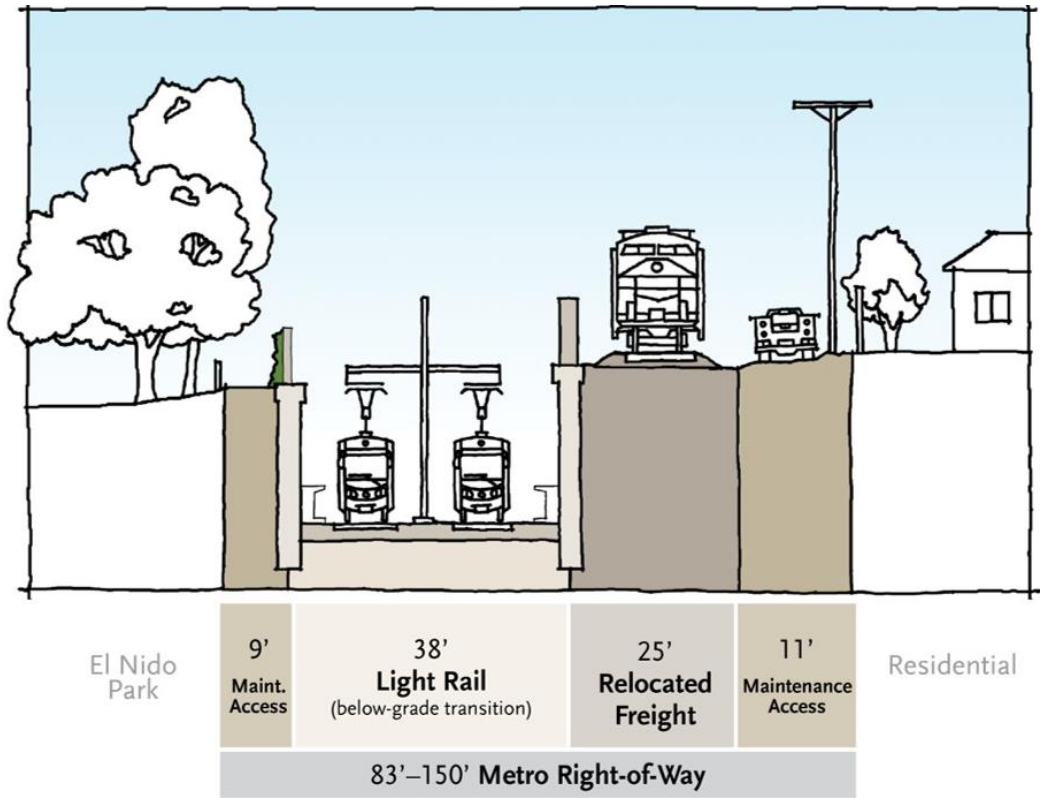
From the station, the light rail tracks would continue to descend into a short trench to cross under 182nd Street (shown in Figure 2.3-19). The trench would be between 18 to 24 feet deep below 182nd Street, before the light rail tracks rise back to at-grade near 186th Street. The light rail tracks would be approximately at the same elevation as the existing freight track to cross over Hawthorne Boulevard and 190th Street on new light rail bridges (parallel to the existing freight bridge). South of 190th Street, the alignment is the same as the Proposed Project, see Section 2.3-1.1.

Figure 2.3-18. Trench Option – Looking South of Artesia Boulevard



Source: Cityworks Design, 2022
Dimensions and ROW boundaries are preliminary and subject to confirmation in future phases of design.

Figure 2.3-19. Trench Option – Looking South of 182nd Street



Source: Cityworks Design, 2022
Dimensions and ROW boundaries are preliminary and subject to confirmation in future phases of design.

The entire light rail guideway would be enclosed, either with a fence, a combination of a fence on top of a low wall, or a sound wall in areas where noise mitigation is proposed. Similar to the Proposed Project, the existing utility lines underneath the Metro ROW would need to be relocated within the Metro ROW in several areas or be protected in place.

The Trench Option would require a sump drainage system to collect any water that enters the trench. Two sump pumps are proposed at low points along the trench, near Manhattan Beach Boulevard and near 182nd Street. All water would be collected, treated, and discharged in accordance with Regional Water Quality Control Board requirements, as described in more detail in Section 3.10, Hydrology and Water Quality.

Freight Track Modifications

As part of the Trench Option, existing freight tracks would need to be rebuilt and relocated in some areas within the Metro ROW. Between the Redondo Beach (Marine) Station to Manhattan Beach Boulevard, the freight track would be located on the east side of the Metro ROW, east of the light rail tracks. At Manhattan Beach Boulevard, the freight track would cross at-grade on a bridge over the light rail trench to the west side of the Metro ROW, running west of the light rail tracks. The existing freight track would be relocated approximately 12 feet west (within the Metro ROW) south of Manhattan Beach Boulevard to 172nd Street. Between 172nd Street and Artesia Boulevard, the freight track would remain in its existing location. The freight track would cross Grant Avenue on the existing freight bridge (see Figure 2.3-22). South of Grant Avenue, the freight track would shift approximately five to seven feet to the west and continue south to Hawthorne Boulevard to cross over 190th Street on the existing freight bridge to continue south to Torrance.

Multi-Use Recreational Paths

Similar to the Proposed Project, the Trench Option would provide two multi-use recreational paths within the Metro ROW. Parallel to Condon Avenue between 159th Street and 170th Street, a multi-use path would be provided on the west side of the freight track. This path would vary in width, and would be approximately 20 feet wide along the Metro ROW. It would allow residents and visitors to safely walk or cycle along the Metro ROW next to Condon Avenue, which does not have a sidewalk. A fence would be provided between this multi-use path and freight track for safety. An example cross-section of the alignment and the multi-use path along Condon Avenue is shown in Figure 2.3-17.

Between Grant Avenue and 182nd Street, a multi-use recreational path of approximately 10 to 20 feet in width would be provided on the east side of the light rail tracks. This path would provide access to the Redondo Beach TC Station, as well as enhance access within the neighborhood.

2.3-2.2 Roadway Modifications

Figure 2.3-20 shows the vertical profile of the Trench Option and all eight roadways that the light rail would cross under. The light rail tracks would be separated from all roadways, while the freight track would remain at-grade throughout the length of the corridor. The roadway crossings are described below from north to south, and would include the following modifications:

- Inglewood Avenue: The roadway would be reconstructed as a bridge over the trench, and the freight track would remain an at-grade crossing. New pedestrian gates and warning devices would be upgraded and installed on both sides of the freight track crossing. New vehicular safety gates would also be installed.
- Manhattan Beach Boulevard: The roadway would be reconstructed as a bridge over the trench, and the freight track would remain an at-grade crossing. The pedestrian crossings would be reconfigured

and include gates on both sides of the freight track crossing. The vehicular gates and signals would be relocated.

- 159th, 160th, 161st, 162nd, and 170th Streets: The roadways would be reconstructed as bridges over the trench, and the freight track would remain an at-grade crossing at each roadway. The multi-use path would run at-grade parallel to the freight track. Pedestrian gates and signals would be provided on both sides of the freight track, on both sides of each street. The multi-use path would cross each street with a signed and continental ("zebra") striped crosswalk. The vehicular gates and signals would be relocated. Figure 2.3-21 shows the elements of a typical light rail trench crossing.
- Artesia Boulevard: The roadway would cross under the light rail and freight track bridges. No modifications to the roadway are required, except a new column in the existing median.
- Grant Avenue: The roadway would cross under the light rail and freight track bridges, and no modifications to the roadway are required, except for new columns within the existing median. A new pedestrian crossing would be provided at Grant Avenue and Condon Avenue, to provide access to the station path.
- 182nd Street: The roadway would be reconstructed as a bridge over the trench, and the freight track would remain an at-grade crossing. New pedestrian gates and warning devices would be upgraded and installed on both sides of the freight track crossing, including a continental ("zebra") striped crosswalk on the west side of the Metro ROW. New vehicular safety gates would also be installed.

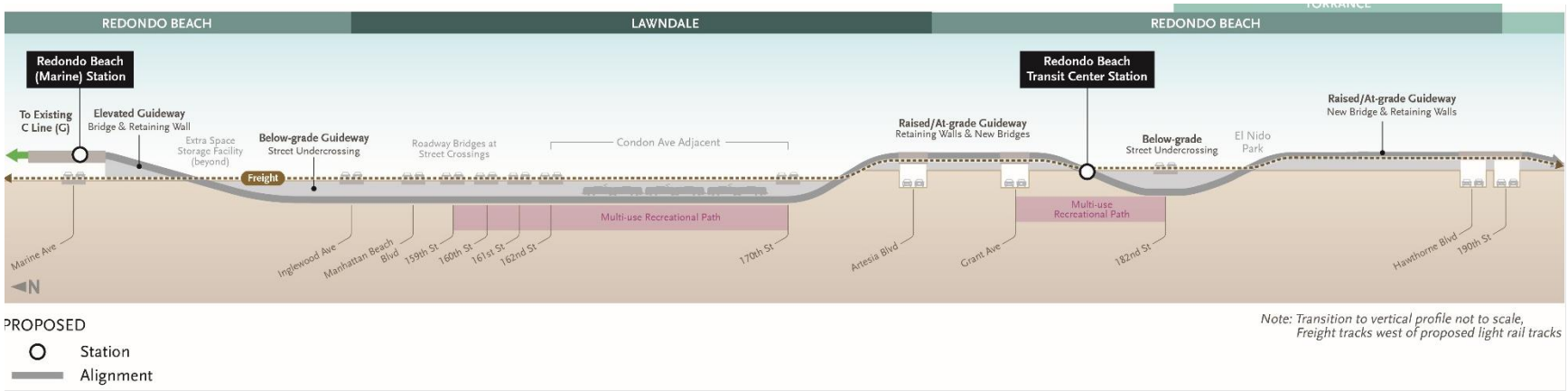
The roadways south of 182nd Street would have the same modifications as the Proposed Project, described in Section 2.3-1.2.

The Trench Option would not modify any street parking.

2.3-2.3 Quiet Zones

As described in Section 2.3-1.3, all at-grade freight crossings would be designed and upgraded to be "quiet zone ready", which would allow local jurisdictions to implement a quiet zone policy for the corridor in the future. While all roadways would be separated from the light rail under the Trench Option, all the at-grade freight crossings would be designed to be quiet zone ready. The freight crossings would comply with CPUC regulations and include site-specific safety infrastructure. Figure 2.3-21 shows the elements of a crossing for the Trench Option.

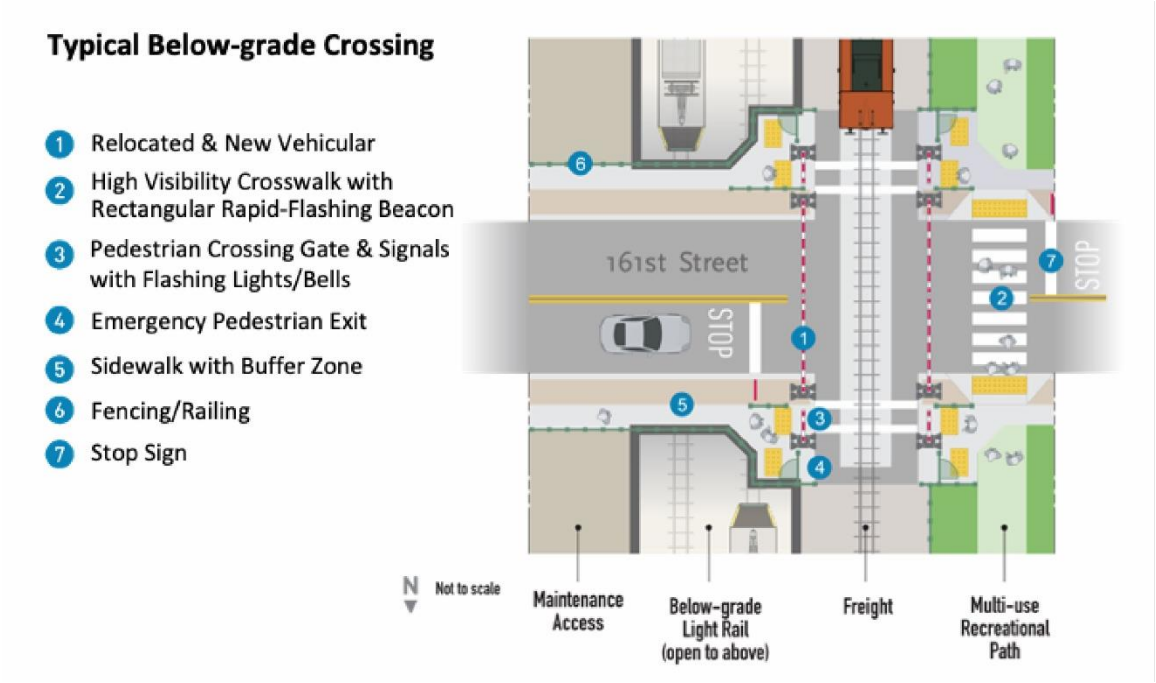
Figure 2.3-20. Trench Option – Vertical Profile Diagram



Source: Cityworks Design, 2022

Note: South of 190th Street, the alignment is the same as the Proposed Project.

Figure 2.3-21. Trench Option – Typical Below-Grade Crossing for Light Rail & At-Grade Freight Crossing



Source: Cityworks Design, 2022

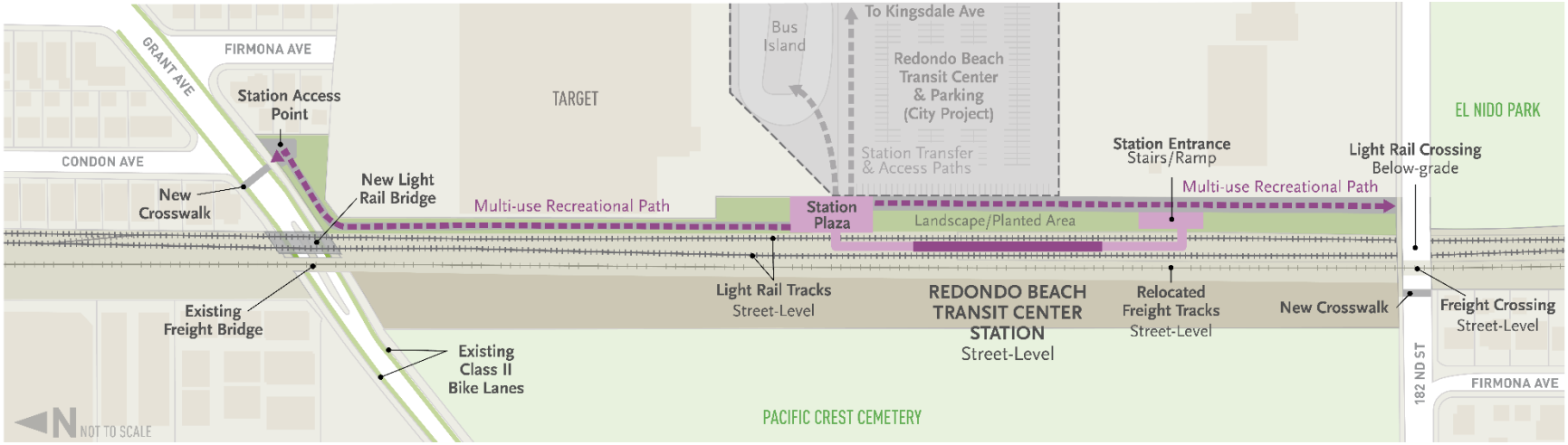
2.3-2.4 Station Sites

The Trench Option station would follow the same design criteria and include the same elements as described in Section 2.3-1.4.

Redondo Beach TC Station

Similar to the Proposed Project, the Trench Option proposes a station adjacent to the city's Redondo Beach TC along the east side of the Metro ROW, approximately 800 feet south of the Grant Avenue bridge (shown in Figure 2.3-22 and Figure 2.3-23). The Trench Option station would be a one-level station, with the platform located approximately 10 feet below the existing ground level. The lower station configuration allows the light rail to cross under 182nd Street. Light rail riders would arrive at the station platform, and connect to a station plaza via pedestrian pathways, ramps, and stairs to access the adjacent city's transit center and proposed multi-use path between 182nd Street and Grant Avenue.

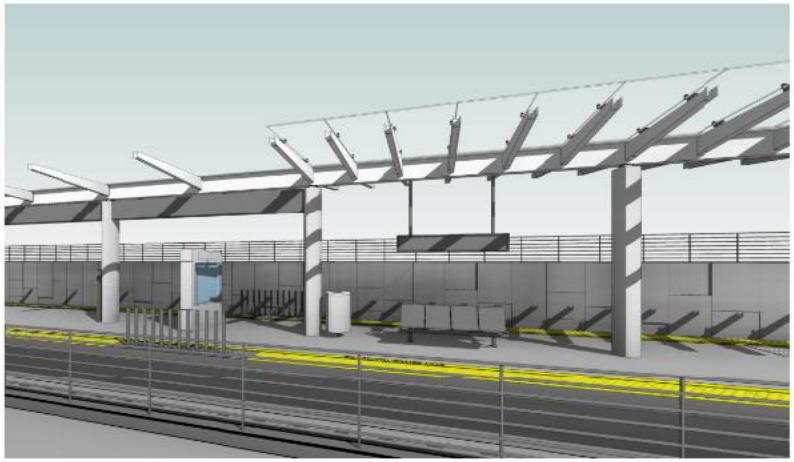
Figure 2.3-22. Trench Option – Redondo Beach TC Proposed Station Layout



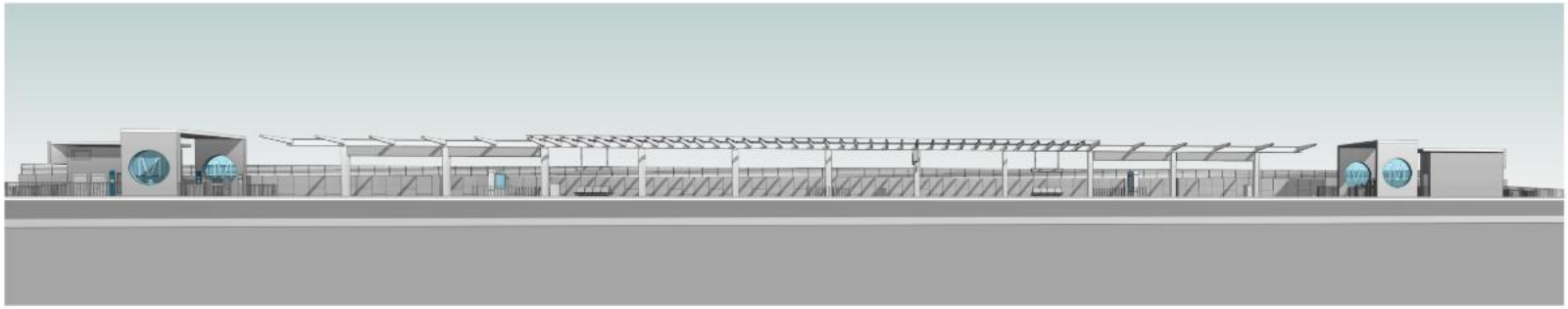
Source: Cityworks Design, 2022
Not to scale

Figure 2.3-23. Trench Option – Renderings of At-Grade Station at Redondo Beach TC

W FACING - TICKETING AREA



NW FACING - PLATFORM AREA



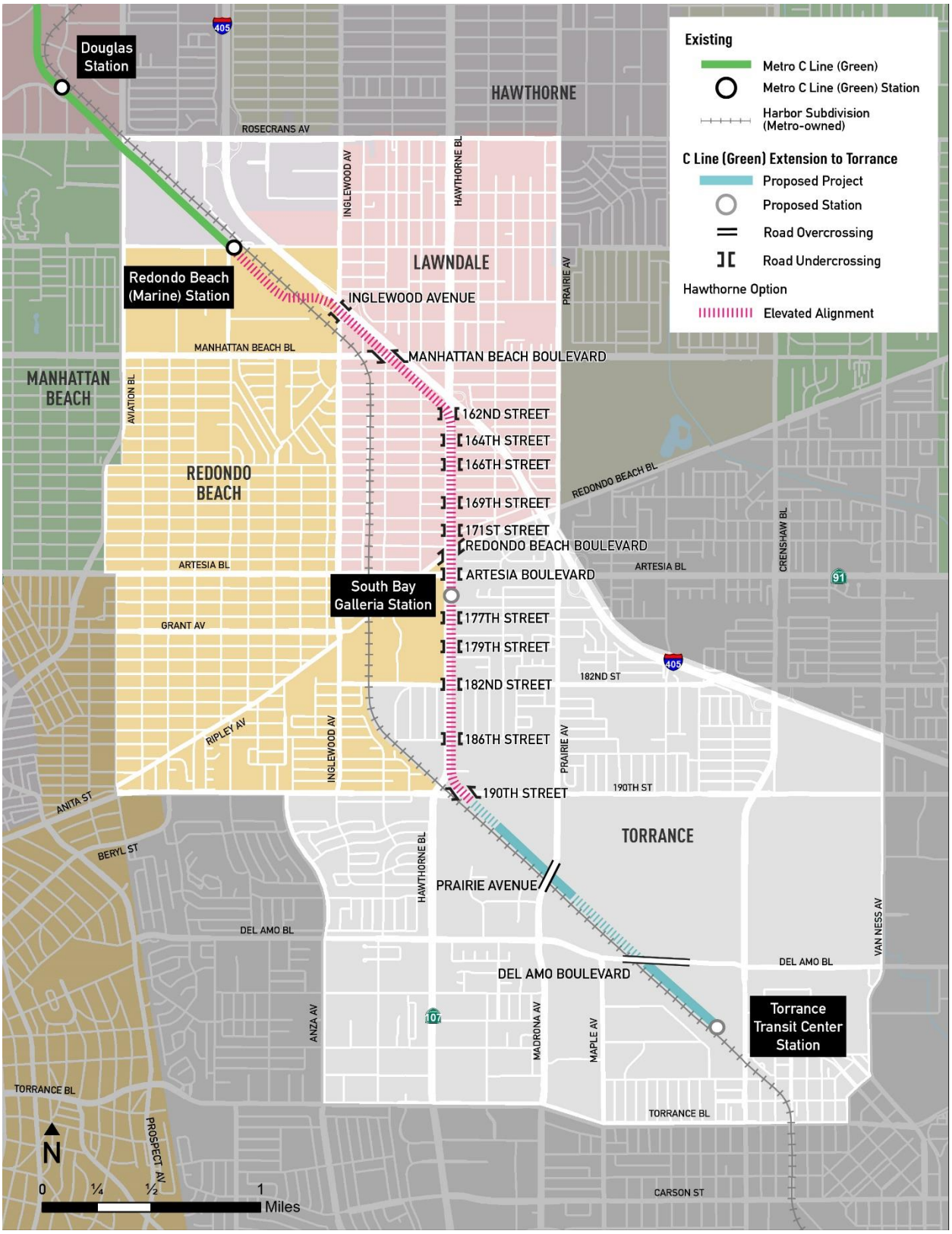
W FACING - OVERALL PLATFORM

Source: STV, 2022

2.3-3 Hawthorne Option

Between the Redondo Beach (Marine) Station and 190th Street, the Hawthorne Option is being considered, which is entirely elevated. It would start within the existing Metro ROW, leave the Metro ROW to parallel I-405 between Inglewood Avenue and Hawthorne Boulevard, and follow Hawthorne Boulevard south (Figure 2.3-24) between 162nd Street and 190th Street. One station is proposed in this segment: South Bay Galleria Station south of Artesia Boulevard. Near 190th Street, the Hawthorne Option would turn southeast to join the Metro ROW. South of 190th Street, the alignment and Torrance TC Station would be identical to the Proposed Project. Appendix 2-A, Select Advanced Conceptual Engineering Drawings provides detailed drawings of the alignment.

Figure 2.3-24. Hawthorne Option – Overview

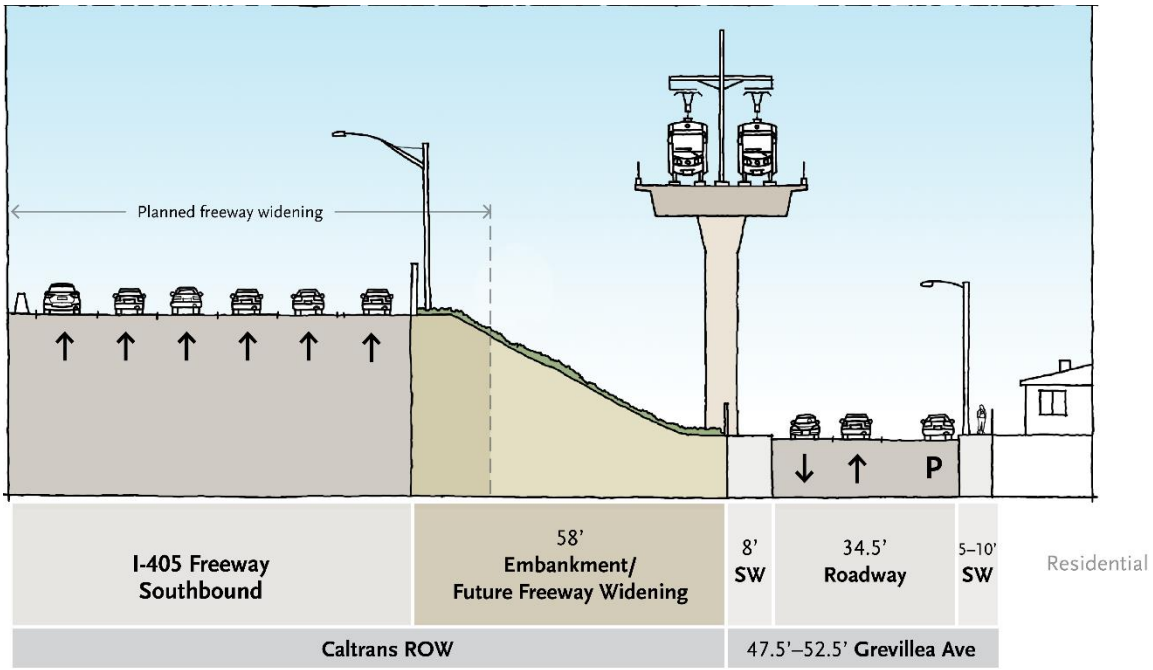


Source: STV, 2022

2.3-3.1 Alignment

The Hawthorne Option would begin at the existing Redondo Beach (Marine) Station, where the existing tracks and station are elevated above street level. Within the Hawthorne Option segment, the alignment would be entirely elevated. The elevated light rail tracks would travel within the existing Metro ROW for approximately 850 feet west of Inglewood Avenue. In this segment, existing overhead transmission lines would need to be relocated to avoid conflicts with the elevated structure. South of Inglewood Avenue, the light rail tracks would turn east (out of the Metro ROW), crossing over the existing freight track and Inglewood Avenue, and immediately south of the southbound I-405 on- and off-ramps. From Inglewood Avenue to 160th Street, the elevated tracks would run within the California Department of Transportation (Caltrans) ROW parallel to I-405, as shown in Figure 2.3-25. The light rail structure would be located at the edge of the Caltrans ROW to avoid potential future conflicts with freeway widening; Metro will coordinate with Caltrans as designs for the projects progress, to ensure there would not be any conflicts. Overhead transmission lines along Grevillea Avenue would need to be relocated to avoid conflicts with the elevated structure.

Figure 2.3-25. Hawthorne Option – Looking South of 159th Street



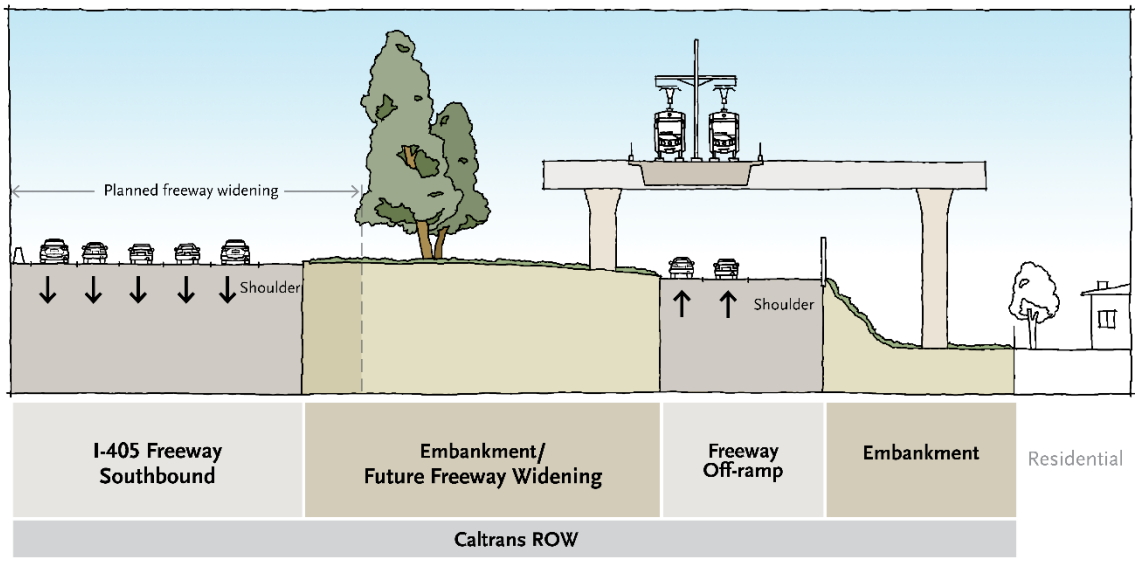
Source: Cityworks Design, 2022
Dimensions and ROW boundaries are preliminary and subject to confirmation in future phases of design.
SW = sidewalk

South of 160th Street, the elevated tracks would cross over the I-405 southbound on- and off-ramps for Hawthorne Boulevard, and then turn south to travel within the median of Hawthorne Boulevard on an elevated structure. A straddle bent would be required in this transition area, shown in Figure 2.3-26.

The Hawthorne Option would remain on an elevated structure down Hawthorne Boulevard until 190th Street, where it would curve to the east and rejoin the Metro ROW. A typical cross-section of the alignment along Hawthorne Boulevard is shown in Figure 2.3-27. For the transition area near 190th Street where the light rail tracks rejoin the Metro ROW, a straddle bent would be required. Between 177th and 178th Street, overhead transmission lines that currently cross perpendicular to Hawthorne Boulevard would need to be raised to avoid conflicts with the elevated structure. Additionally, an

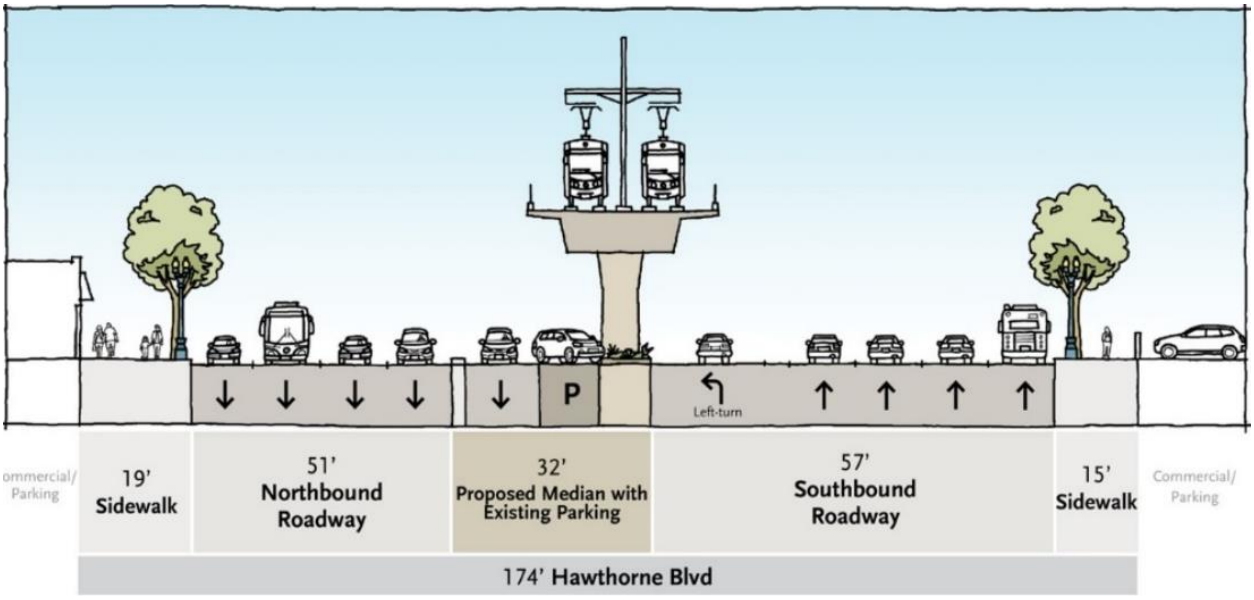
existing storm drain that runs underneath the Hawthorne Boulevard median would need to be relocated to avoid conflicts with the column footings. After rejoining the Metro ROW, the alignment of the Hawthorne Option would be identical to that of the Proposed Project, described in Section 2.3-1.1.

Figure 2.3-26. Hawthorne Option – Looking South Between 160th Street and Hawthorne Boulevard



Source: Cityworks Design, 2022
Dimensions and ROW boundaries are preliminary and subject to confirmation in future phases of design.

Figure 2.3-27. Hawthorne Option – Looking South at 170th Street



Source: Cityworks Design, 2022
Dimensions and ROW boundaries are preliminary and subject to confirmation in future phases of design.

The entire light rail guideway would be enclosed, either with a fence, a combination of a fence on top of a low wall, or a sound wall in areas where noise mitigation is proposed.

Freight Track Modifications

Within the Hawthorne Option segment, no modifications to freight tracks would be required.

Multi-Use Recreational Paths

No multi-use recreational paths are proposed within the Hawthorne Option segment.

2.3-3.2 Roadway Modifications

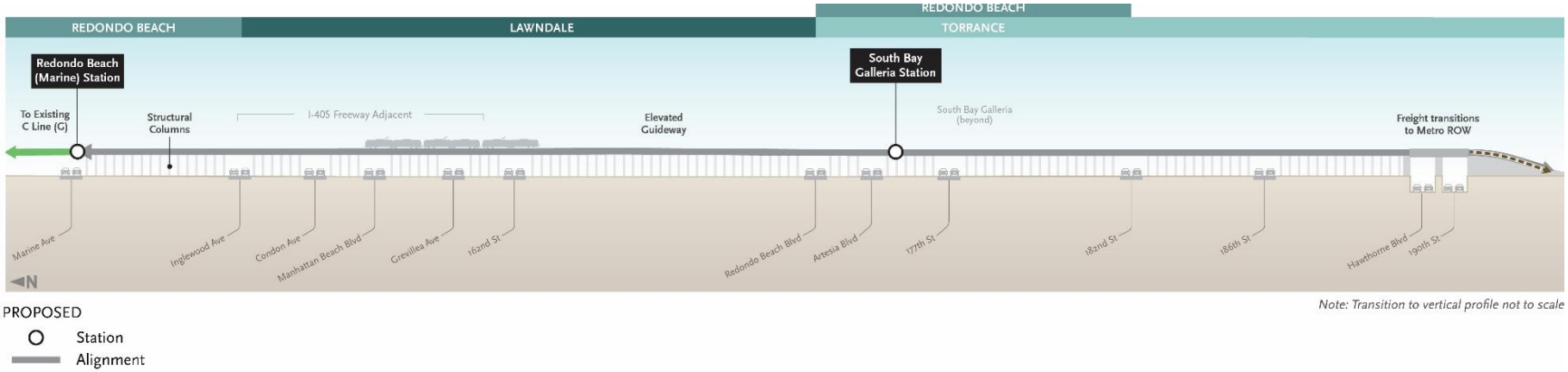
Figure 2.3-28 shows the vertical profile of the Hawthorne Option and all the roadways that the light rail would cross on an elevated structure, separated from all vehicles, pedestrians, and cyclists. The Hawthorne Option would require relocation and realignment of several lanes along Hawthorne Boulevard to accommodate the elevated structure columns, as well as new traffic signalizations at some intersections. However, there would be no reduction in the number of travel lanes. The roadway crossings are described below from north to south, and would include the following modifications:

- Inglewood Avenue, Manhattan Beach Boulevard, I-405 Hawthorne Boulevard on- and off-ramps, and 162nd Street: The roadways would cross under the light rail elevated structure. No modifications to the roadways are required.
- 164th Street: The intersection would be signalized. The existing southbound left turn lane would be shifted east and the northbound existing left-turn lane would be shifted west.
- 166th Street: The existing southbound left turn lane would be shifted east and the northbound existing left-turn lane would be shifted west.
- Midblock pedestrian crossing south of 167th Street: The roadway would cross under the light rail elevated structure. No modifications to the pedestrian crossing are required.
- 169th Street: The existing southbound left turn lane would be shifted east and the northbound existing left-turn lane would be shifted west.
- 171st Street: The roadway would cross under the light rail elevated structure. The southbound turn lane would be shifted east. No modifications to the pedestrian crossing are required.
- Redondo Beach Boulevard: Northbound and southbound left turn lanes would be slightly realigned to accommodate column placement.
- Artesia Boulevard: Southbound left turn lanes would be realigned between straddle-bent columns.
- New South Bay Galleria Station Mid-Block Crossing: New signalized mid-block crossings would be constructed approximately 360 feet south of Artesia Boulevard, at the south end of the station, to provide station access to either side of Hawthorne Boulevard. The southbound right turn pocket into the South Bay Galleria, which is also currently shared with a major bus stop serving multiple routes, would be replaced with a bus-only turnout, and a curb extension would be added at the crosswalk to improve safety, visibility, and reduce the pedestrian crossing distance.
- 177th Street: Northbound left turn lanes would be realigned, and the northbound left turn pocket would be reduced from two lanes to one longer lane.
- 179th Street: The intersection would be signalized, and new pedestrian crossing would be added. The existing left turn lane would be extended.
- 180th Street: The median would be closed at this location.
- 182nd Street: The roadway would cross under the light rail elevated structure. No modifications to the pedestrian crossing are required. The left turn lanes would be realigned.
- 186th Street: The northbound left turn lane would be realigned to the west.

> New median access south of 186th Street: Immediately south of 186th Street, an unsignalized southbound left turn would be provided to maintain access businesses on the east side of Hawthorne Boulevard.

Currently, street parking is available within the median of Hawthorne Boulevard from 162nd Street to 171st Street. The Hawthorne Option would locate columns within the median and reconfigure the parking spaces, with an overall reduction of approximately 20 spaces. The Hawthorne Option would not modify side street parking.

Figure 2.3-28. Hawthorne Option – Vertical Profile Diagram



Source: Cityworks Design, 2022

Note: South of 190th Street, the alignment is the same as the Proposed Project.

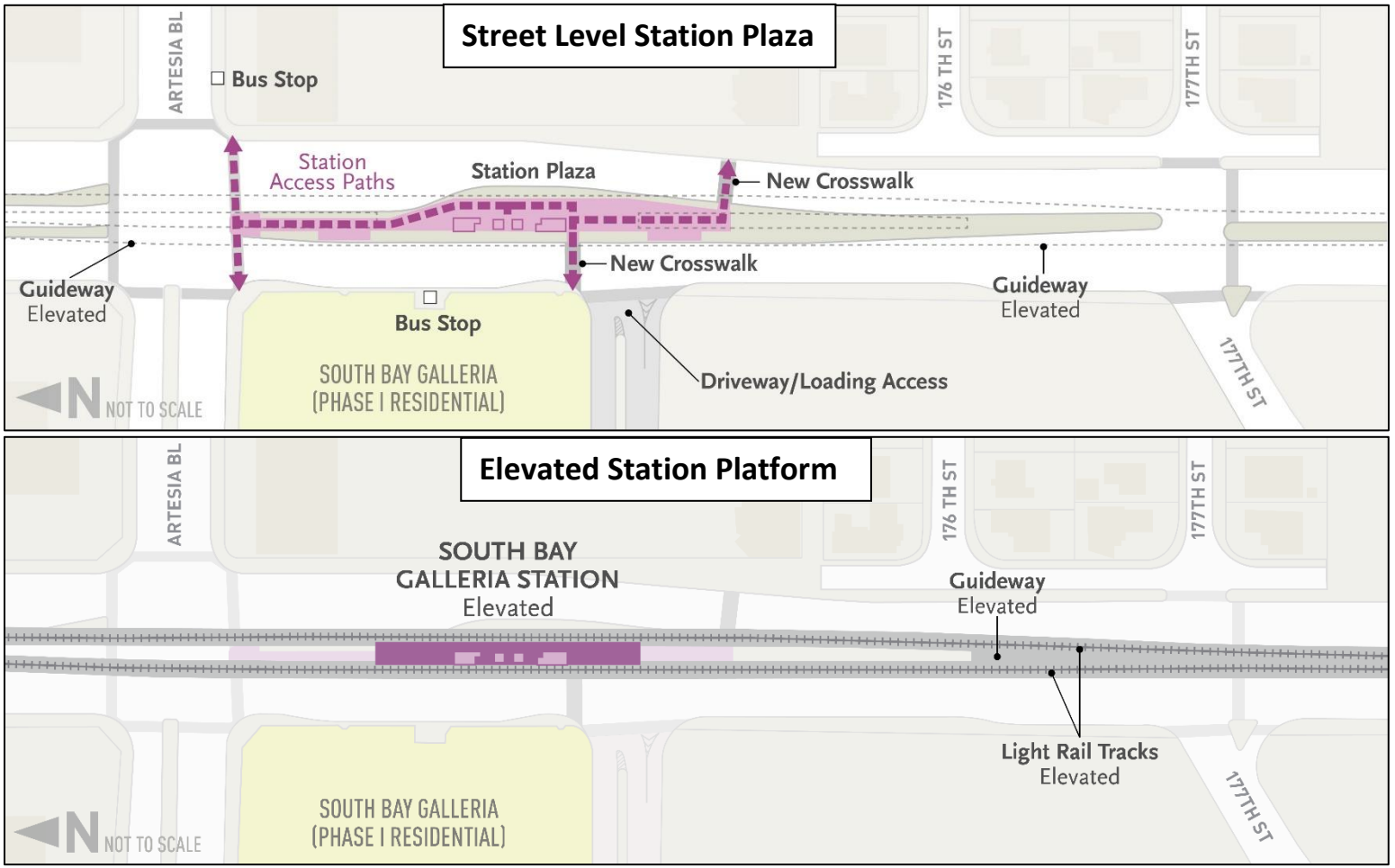
2.3-3.3 Station Sites

The Hawthorne Option station would follow the same design criteria and include the same elements as described in Section 2.3-1.4.

South Bay Galleria Station

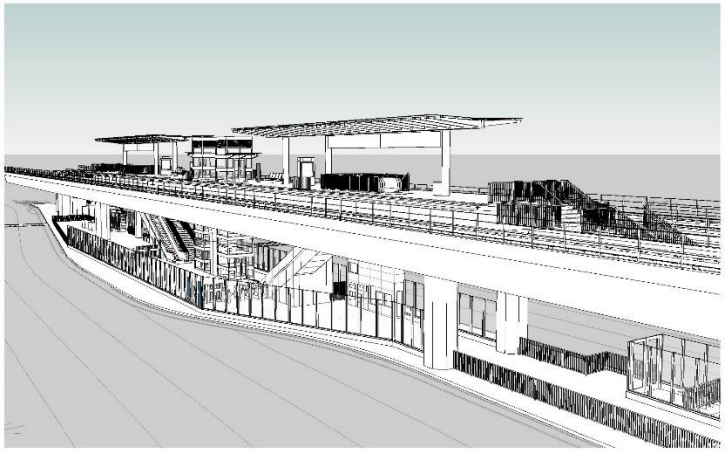
The Hawthorne Option includes a new two-level station to the east of the South Bay Galleria. The elevated station (shown in Figure 2.3-29 and Figure 2.3-30) would be located in the median of Hawthorne Boulevard between Artesia Boulevard and 177th Street, featuring a center platform on the second level. Light rail riders would descend via stairs/escalators or elevators to the street-level station plaza, which would be connected via pedestrian pathways to Artesia Boulevard at the north end and the new midblock crossings north of 177th Street at the south end.

Figure 2.3-29. Hawthorne Option – South Bay Galleria Proposed Station Layout

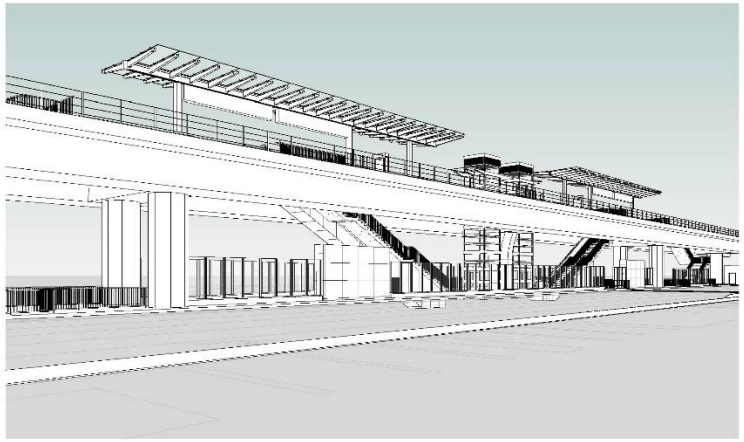


Source: Cityworks Design, 2022
Not to scale

Figure 2.3-30. Hawthorne Option – Renderings of Elevated South Bay Galleria Station

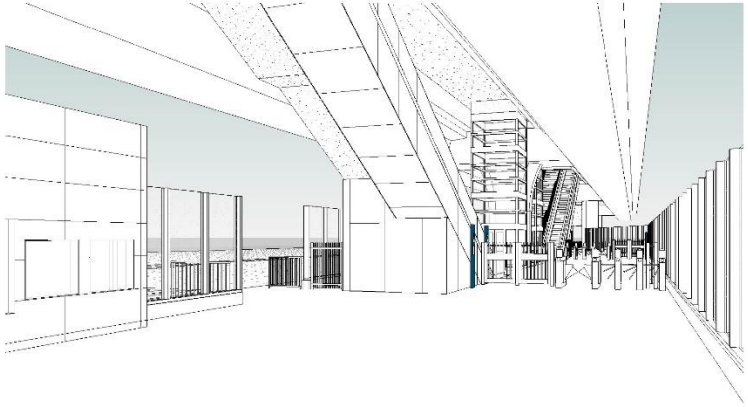


NE FACING - BIRD'S EYE VIEW



W FACING VIEW

S FACING - ENTRANCE AT ARTESIA BLVD



N FACING - STREET-LEVEL PLAZA

Source: STV, 2022

2.3-4 System Components and Ancillary Facilities

The following section describes the required system components for the Proposed Project and Options. The light rail system components would adhere to the Metro Rail Design Criteria and would use a similar design as existing Metro light rail lines.

2.3-4.1 Light Rail Guideways

At-grade light rail guideways would run at or close to the grade of the existing ground, with some variation in heights to accommodate changes in topography. The distance between the at-grade light rail track centerlines would be a minimum of 14 feet, and the distance between the nearest realigned freight track centerline and light rail track centerline would be a minimum of 18 feet. Figure 2.3-4 shows a typical cross-section of at-grade light rail tracks.

Elevated light rail guideways would be supported by structures including retained fill embankments, columns, or straddle bents. Retained fill guideways would be constructed where there is a transition between the at-grade and elevated guideway. They would be raised above the existing ground level on a platform made of reinforced walls. Typical elevated structures would be approximately 32 feet wide, with elevated structure columns placed in approximately 150-feet intervals. The permanent vertical clearances of the elevated structure over Hawthorne Boulevard would range from approximately 16 to 29 feet, depending on the location and falsework depth. For the transition areas described in Section 2.3-3.1, straddle bents would be needed, which consist of a pier structure that spans the functional limit of the roadway. Figure 2.3-27 shows a typical cross-section of elevated structure, and Figure 2.3-26 shows an example of a straddle bent.

Trench guideways would consist of the light rail tracks in an open trench, which varies in depth depending on site conditions and location of underground utilities. In the northern part of the Trench Option (between Inglewood Avenue and 166th Street), the trench would be deeper than the south end, approximately 30 to 40 feet below ground level (shown in Figure 2.3-16). Near 170th Street and 182nd Street, the trench would be shallower, approximately 20 feet. The trench guideways would be approximately 30 feet wide.

2.3-4.2 Light Rail Vehicles

It is assumed that existing Metro light rail vehicles would be used for this Project. For purposes of this analysis, the model P3010 light rail cars, manufactured by Kinkisharyo, are assumed. An example vehicle is shown in Figure 2.3-31. These vehicles are typically six-axle, double ended and articulated, and could be combined in trains up to three cars in length. The light rail would operate at speeds of up to 65 miles per hour and would carry approximately 70 seated passengers per car. The light rail vehicles would be configured with a driver's cab at either end so that the train could run in either direction without the need to turn around. An additional five light rail vehicles would need to be added to Metro's fleet to operate the Proposed Project.

Figure 2.3-31. Example Metro Light Rail Vehicle

Source: Kinkisharyo

2.3-4.3 Maintenance Facility

The Proposed Project would not include a new or modified maintenance facility. The light rail vehicles would be serviced, maintained, and stored at the existing Division 16 Southwestern Yard, located in El Segundo.

2.3-4.4 Ancillary and Support Facilities

Multiple additional elements are required to support light rail vehicle operations, including an overhead catenary system (OCS), traction power substations (TPSS), and communications and signaling buildings.

2.3-4.4.1 *OCS*

An OCS is a network of overhead wires that distributes electricity to light rail vehicles. The OCS poles would be approximately 25 feet tall with a base of approximately 15 inches, generally located between the two light rail tracks and spaced 90 to 170 feet apart. In some locations, the poles would be located on both sides of the tracks. Figure 2.3-32 shows an example of an OCS pole and wires.

Figure 2.3-32. Typical OCS

Source: STV, 2022

2.3-4.4.2 *Traction Power Substations*

TPSSs supply the electricity for light rail operations by receiving high voltage power from utility companies and converting the alternating current power to direct current for distribution to the light rail vehicles. The TPSSs are enclosed structures that would be spaced approximately one mile apart along the alignment and would require approximately 4,800 square feet of land. The siting and screening of TPSSs would follow principles of urban design. A representative example of a TPSS is shown in Figure 2.3-33. Between four and six TPSSs would be needed for the Proposed Project and Options, with several options available for some locations. Access would be provided to each via maintenance roadways from the nearest public street and shielded with landscaping where possible. Table 2.3-1 lists the locations that have been identified as possible TPSS sites, which are also shown in Figure 2.3-34.

Figure 2.3-33. Typical TPSS Facility

Source: STV, 2012

Table 2.3-1. TPSS Sites

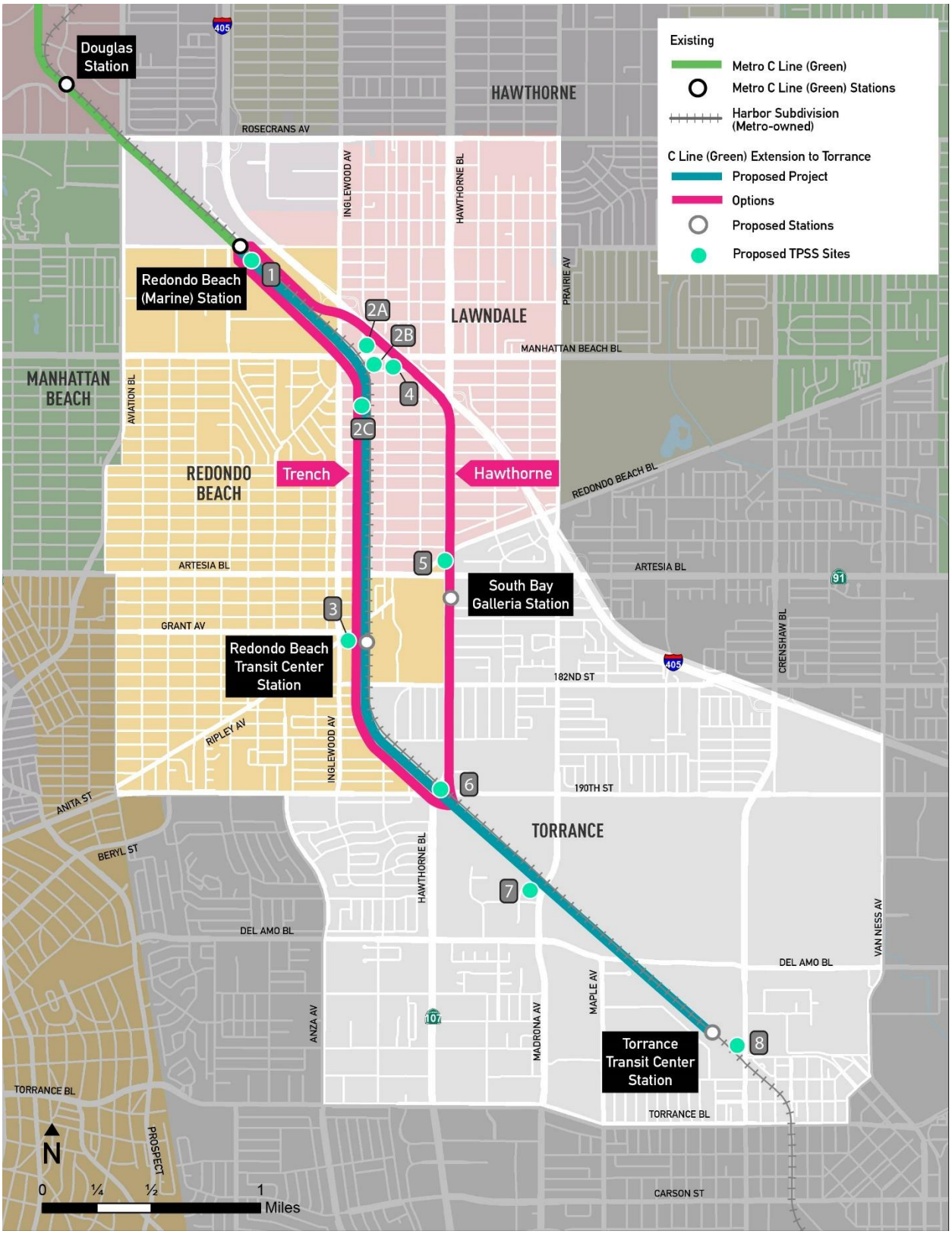
TPSS ID[1]	Applies to	Description
1	Proposed Project, Trench Option, Hawthorne Option	South of the Redondo Beach (Marine) Station within Metro ROW
2A	Trench Option	North of Manhattan Beach Boulevard, west of Condon Avenue within private property
2B	Proposed Project	Between Manhattan Beach Boulevard and 159th Street, west of the Metro ROW within private property
2C	Proposed Project, Trench Option	North of 162nd Street, within Metro ROW
3	Proposed Project, Trench Option	South of Grant Avenue, west of Metro ROW within private property
4	Hawthorne Option	South of Manhattan Beach Boulevard, west of I-405 within private property
5	Hawthorne Option	South of Redondo Beach Boulevard, west of Hawthorne Boulevard within private property
6	Proposed Project, Trench Option, Hawthorne Option	North of 190th Street, east of Hawthorne Boulevard, west of Metro ROW within private property
7	Proposed Project[2]	North of Prairie Avenue, west of Metro ROW within private property
8	Proposed Project[2]	West of Crenshaw Boulevard, east of Metro ROW within private property

Source: STV, 2022

[1]TPSS ID number corresponds with Figure 2.3-34.

[2]The Project Options end at 190th Street. South of 190th Street, there is only the Proposed Project.

Figure 2.3-34. TPSS Locations



Source: STV, 2022
Not to scale

2.3-4.4.3 *Communications and Signaling Buildings*

Communications and signaling buildings contain train control and communications equipment. They would be located at each station as well as at each at-grade crossing. These facilities are typically constructed as enclosures either underneath the station platforms or as small stand-alone structures along the guideway away from major pedestrian access. The communications buildings would require approximately 500 square feet area and signaling buildings would require approximately 100 square feet. Figure 2.3-35 shows an example of a train communications and signaling building.

Figure 2.3-35. Typical Train Communications and Signaling Building

Source: Metro, 2019

2.4 CONSTRUCTION SCENARIOS

Construction of the Proposed Project would employ conventional construction techniques and equipment typically used (and permitted) in Southern California for highway, bridge, utility, transit, and railroad projects. The following section summarizes the construction assumptions and requirements for the Proposed Project and Options. Appendix 2-B, Construction Methods Memorandum provides additional details, including durations of construction activities, approximate quantities of soil to be imported or exported, and detailed lists of construction equipment.

2.4-1 Construction Activities

Construction is anticipated to last approximately five to seven years, depending on the Proposed Project or Option. Construction would typically occur during daytime hours on weekdays, although some night construction may be required at times to avoid congested freeways and surface streets or due to the nature of certain construction processes, such as construction of freight track to avoid disruption to BNSF operations or construction of bridges over major arterials. Greater detail regarding construction schedule, equipment, and effort is included in Appendix 2-B, Construction Methods Memorandum. Key construction elements required to construct the Proposed Project and Options are summarized below, generally in the order in which they would occur.

- **Clearing and Demolition of Existing Structures** – The ground would be cleared of vegetation in an early stage of the construction work. In some locations, the demolition of existing structures (or parts thereof) would be required to shift the freight track and/or to install the light rail tracks, stations, and facilities. The debris generated from demolition would be recycled in part and disposed of in part.

- **Utility Relocations** – Construction would require some existing utilities to be protected in place or relocated. Utility relocation work would generally occur within the affected ROW and on adjacent and nearby streets. Affected utilities would include storm drains, sanitary sewers, power lines, gas pipelines, electrical duct banks, oil pipelines, electrical transmission lines, lighting, irrigation pipelines, water lines, fiber optic lines, telephone, and cable lines. Aboveground and underground utilities would be relocated or protected in place, if possible, to prevent damage or interruption of use of these facilities. Aboveground utilities, such as poles, would be relocated, or removed with the utility line relocated underground. Underground utilities would require soil excavation to varying depths, and disturbed ground would be backfilled with the same material or clean material.
- **Embankment Work** – The embankment that would support the new or relocated tracks and stations would require the removal of vegetation and debris, shaping and compacting the soil, importing, or exporting soil as needed to achieve the required embankment and compacting the soil and importing crushed rock base material to support the track and structure foundations.
- **Freight Track At-Grade Street Crossings** – The existing freight track at the at-grade crossings would be relocated to accommodate the new light rail tracks. The subgrade would first be constructed and then the new track would be installed. Temporary street and lane closures would be coordinated to ensure no two adjacent streets would be closed concurrently.
- **Bridges and Elevated Structures** –Bridges and elevated structures would be constructed by first installing piles and then the columns and piers that support the superstructure. The horizontal support of the elevated guideway would then be constructed, using cast-in-place concrete temporarily supported by falsework. Where new light rail bridges are adjacent to existing freight track bridges, a portion of the abutment/retaining walls would be demolished before construction of the new structure.
- **Trenches** – Trenches could be constructed with different methods depending on the trench depth. Shallow guideway trenches (in the southern segment near 170th and 182nd Streets) would likely be constructed by driving steel sheet piles and then excavating between them to construct a U-shaped reinforced concrete trench structure. Where necessary, ground replacement or improvement would be undertaken to strengthen the base of the trench, and any gaps between sheet pile and trench walls would be backfilled with self-compacting material. Deeper sections of trench (in the northern segment) would likely utilize drilled hole piles backfilled with concrete to form the trench walls, with alternating large and small secant piles. Existing soil would then be excavated to form the trench void and construction of the concrete base of the trench structure would follow. The deepest sections of trench would have supporting concrete strut beams installed near the tops of the walls. The top of the pile walls would be capped by a cast-in-place longitudinal reinforced concrete beam. All trench walls would be waterproofed and constructed with drainage systems behind the walls to adequately remove water and prevent the buildup of hydrostatic pressure, with sump pumps at the low points of the trench.
- **Retaining Walls** – Retaining walls would be constructed in different ways, depending on the location and wall type. Mechanically stabilized earth (MSE) walls are generally used in fill areas, and would be constructed by first building a “leveling pad” foundation, followed by placement of prefabricated concrete facing panels and steel geo-reinforcing straps as the wall is back-filled. When the walls have been built to the finished elevations, concrete caps would be placed over the top panels. Soldier pile or secant pile walls would be used in cut areas, and would be constructed by first drilling shafts, placing steel piles, and backfilling the holes. The area would be excavated from top-down, and then the cast-in-place concrete facing would be placed. Cast-in-place retaining walls may be used in some areas, which consist of first constructing the foundation, followed by cast-in-place

concrete walls. All walls would be constructed with drainage systems behind the walls to adequately remove water and prevent the buildup of hydrostatic pressure.

- **Stations** – The construction approach varies according to the proposed station location and layout. The Redondo Beach TC Station would be constructed following a similar sequence as described for trenches and retaining walls, with the walls constructed first, followed by the foundation and track bed and then construction of platforms. Platforms would involve cast-in-place concrete or pre-cast panels. The Hawthorne Option elevated South Bay Galleria Station would be constructed following a similar sequence as described above for elevated structures, with the foundations and columns constructed first, followed by the station platform which is typically constructed of cast-in-place concrete with falsework. The at-grade Torrance TC Station would involve cast-in-place concrete or pre-cast panels to construct the station platform with ramps and stairs. For all station types, the station operational equipment and furnishings (e.g., vertical circulation elements, lighting, seating, signage, artwork and fare vending equipment) would be added after the station platform is constructed.
- **Railroad/Light Rail Track** – Construction activities for at-grade light rail track would include preparation of the track bed and installation of the supporting base, followed by installation of the rails and ties. Rails would be flash-butt welded either on site or in a nearby staging yard. On-track regulators and tampers would be utilized to set and align the tracks, with grinders used to adjust the rail heads to match train wheel profiles. For elevated guideways, the light rail track would be installed via direct fixation (i.e., rail fastened directly to a bridge superstructure). Construction activities for the relocated BNSF tracks would be coordinated with BNSF.
- **Systems Construction** – This would include the installation of wayside signals, crossing warning signals, conduits, control houses, the OCS, and TPSSs. The OCS construction would start with the foundations for the OCS poles, followed by duct banks and conduit for the electrical feeder lines from the TPSS, and then the OCS poles. TPSS construction would involve first grading the site, and then installing the TPSS structure and connecting it to the utilities. Signal houses are typically prefabricated metal-clad buildings, which are placed upon a concrete foundation.

The Proposed Project and Options would require acquisitions (full or partial) and easements (temporary or permanent) of nearby properties during construction and operation. North of 190th Street, the Proposed Project and Trench Option would have limited property acquisitions, with some acquisitions required only for the TPPSs. The Hawthorne Option would require property acquisitions for the elevated structure in some areas, as well as for TPSSs. South of 190th Street, the Proposed Project would require property acquisitions to build the light rail tracks and accommodate multiple relocated or new freight tracks, storage tracks, spurs, and access roads. For any properties that may have existing contamination at the site, Metro would conduct a Phase II site investigation and conduct remediation as needed, which is described in further detail in Section 3.9, Hazards and Hazardous Materials.

2.4-2 Construction Equipment

The construction equipment that would be used for the Proposed Project is typical of that found engaged in contemporary highway, building, bridge and utility work plus some specialized railroad track and OCS construction equipment. All equipment would conform to current applicable safety and environmental regulations. The general construction equipment (subject to final selection by the contractor) could include the following:

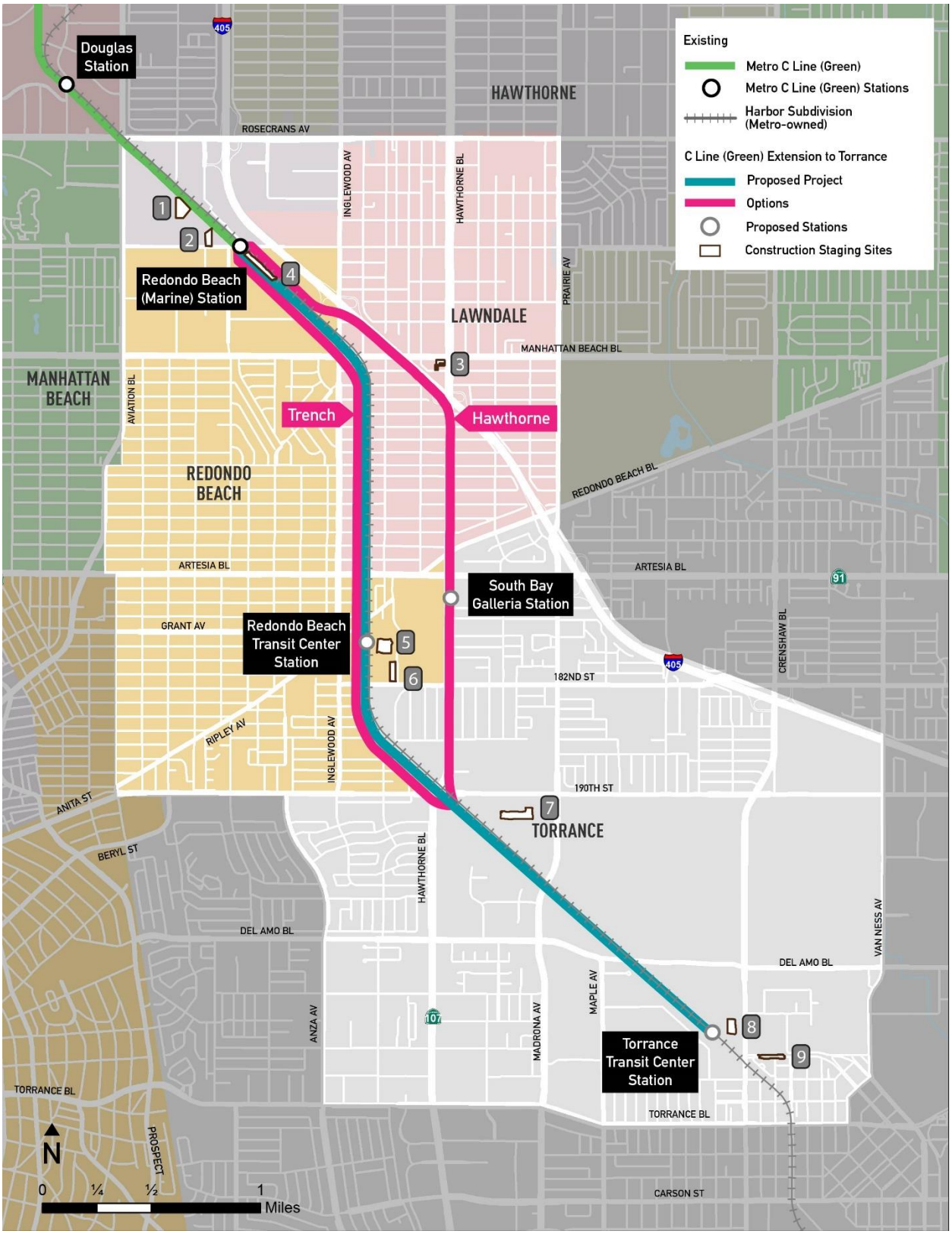
- Aerial Lifts
- Air Compressors
- Bore/Drill Rigs
- Cement and Mortar Mixers

- Concrete/Industrial Saws
- Cranes
- Crawler Tractors
- Crushing/Processing Equipment
- Dumpers/Tenders
- Excavators
- Forklifts & Rough Terrain Forklifts
- Generator Sets
- Graders
- Pavers & Paving Equipment
- Plate Compactors
- Pressure Washers
- Pumps
- Rollers
- Rubber Tired Dozers
- Rubber Tired & Skid Steer Loaders
- Signal Boards
- Surfacing Equipment
- Sweepers/Scrubbers
- Tractors/Loaders/Backhoes
- Trenchers
- Welders
- Support vehicles, including employee personal transportation, fuel delivery trucks, mechanics' trucks and utility trucks used by supervisors and inspector

Appendix 2-B, Construction Methods Memorandum, provides additional details, including equipment to be used for each construction activity.

The Proposed Project would also include potential off-site locations for temporary use during construction for laydown of tools, materials, equipment, and vehicles. A map of the potential locations is shown in Figure 2.4-1, and images of each site are included in Figure 2.4-2 and Figure 2.4-3.

Figure 2.4-1. Construction Staging Sites



Source: STV, 2022
Site numbers correspond with Figures 2.4-2 and 2.4-3.

Figure 2.4-2. Construction Staging Locations: Sites 1-6

Source: STV, 2022

Figure 2.4-3. Construction Staging Locations: Sites 7-9

Source: STV, 2022

2.4-3 Construction Durations

Table 2.4-1, Table 2.4-2, and Table 2.4-3 show the approximate construction schedules, as well as amount of soil that would be moved per phase for the Proposed Project and Options. Appendix 2-B, Construction Methods Memorandum provides additional details on durations of construction activities.

Table 2.4-1. Proposed Project – Construction Schedule

Phase Name	Total Duration	Activity Frequency (days/week)	Maximum Soil Import/ Export	Approx. Maximum Daily Truck Loads
Early Utility Relocation	18 months	5	12,400 CY	2
Project Start Up	6 months	5	121,000 CY	101
Utility Relocation	15 months	5	3,100 CY	2
Retaining Walls, Grading and Embankment for Freight Track Relocation	12 months	5	112,100 CY	60
Freight Track Bridges	10 months	5	1,000 CY	1
Freight Railroad At-Grade Crossings	4 months	5	4,200 CY	2
Freight Trackwork (By BNSF)	4 months	5	72,400 CY	21
Stations and Access	18 months	5	11,000 CY	1
Retaining Walls, Grading and Embankment for LRT Guideway	8 months	5	72,400 CY	7
LRT Guideway Bridges	25 months	5	66,500 CY	6
LRT Trackwork	15 months	5	80,000 CY	21
Systems Construction	12 months	5	-	-
Contingency	11 months	-	-	-
Testing/Commissioning	9 months	5	-	-
Revenue Service	-	-	-	-

CY = cubic yard; LRT = light rail

Table 2.4-2. Trench Option – Construction Schedule

Phase Name	Total Duration	Activity Frequency (days/week)	Maximum Soil Import/ Export	Approx. Maximum Daily Truck Loads
Early Utility Relocation	18 months	5	13,600 CY	2
Project Start Up	6 months	5	49,800 CY	35
Utility Relocation	15 months	5	3,400 CY	2
Retaining Walls, Grading and Embankment for Freight Track Relocation	18 months	5	105,500 CY	54
Freight Track Bridges	8 months	5	14,000 CY	2
Freight Railroad At-Grade Crossings	4 months	5	4,200 CY	4
Freight Trackwork (By BNSF)	25 months	5	71,100 CY	21
Stations and Access	20 months	5	15,100 CY	1
Retaining Walls, Grading and Embankment for LRT Guideway	8 months	5	155,800 CY	110
LRT Guideway Bridges	32 months	5	22,900 CY	4
LRT Guideway Trench	36 months	5	277,700 CY	200
LRT Trackwork	15 months	5	80,000 CY	21
Systems Construction	12 months	5	-	-
Contingency	15 months	-	-	-
Testing/Commissioning	9 months	5	-	-
Revenue Service	-	-	-	-

CY = cubic yard; LRT = light rail

Table 2.4-3. Hawthorne Option- Construction Schedule

Phase Name	Total Duration	Activity Frequency (days/week)	Maximum Soil Import/ Export	Approx. Maximum Daily Truck Loads
Early Utility Relocation	18 months	5	8,000 CY	1
Project Start Up	6 months	5	87,100 CY	73
Utility Relocation	15 months	5	2,000 CY	1
Retaining Walls, Grading and Embankment for Freight Track Relocation	6 months	5	68,400 CY	35
Freight Trackwork (By BNSF)	8 months	5	29,700 CY	21
Stations and Access	22 months	5	7,800 CY	1
Retaining Walls, Grading and Embankment for LRT Guideway	8 months	5	2,000 CY	1
LRT Guideway Bridges	35 months	5	278,700 CY	27
LRT Trackwork	14 months	5	81,000 CY	21
Systems Construction	12 months	5	-	-
Contingency	11 months	-	-	-
Testing/Commissioning	9 months	5	-	-
Revenue Service	-	-	-	-

CY = cubic yard; LRT = light rail

2.5 PROJECT FEATURES

As a part of the Proposed Project and Options, several project features would be implemented during construction or operations, which would ensure compliance with the laws, guidelines, and best practices of regulatory agencies. These project features consist of design features, best management practices, and other measures that would be required by law and/or permit approvals by federal, state, regional or local agencies or that demonstrate best practices in transit construction and operation.

The project features are listed below. They are described further in each respective section within Chapter 3, as well as in Appendix 2-C, Project Features.

> Transportation

- PF-T-1. Construction Traffic Management Plan

> Aesthetics

- PF-AES-1. Local Zoning Ordinances
- PF-AES-2. Metro Design Standards

> Air Quality

- PF-AQ-1. Metro Green Construction Policy Compliance
- PF-AQ-2. SCAQMD Rule 403 Compliance
- PF-AQ-3. Metro 2020 Moving Beyond Sustainability Strategic Plan Compliance
- PF-AQ-4. Metro Rail Design Guidelines

> Noise and Vibration (subject to future agency approval)

- PF-NV-1. Quiet Zone Equipment Installation
- PF-NV-2. Crossing Signal Bell Shrouds
- PF-NV-3. Gate-Down-Bell-Stop Variance

> Geology and Soils

- PF-GEO-1. Metro Geotechnical Design Standards

> Hazards and Hazardous Materials

- PF-HHM-1. Handling, Storage, and Transport of Hazardous Materials and Wastes
- PF-HHM-2. Demolition Plans
- PF-HHM-3. Property Acquisition Phase II Site Investigation
- PF-HHM-4. Soil, Soil Vapor, and Groundwater Management Plans
- PF-HHM-5. Disposal of Groundwater

> Hydrology and Water Quality

- PF-HWQ-1. SWPPP Implementation per Construction General Permit and MS4 Permit
- PF-HWQ-2. Groundwater Treatment and Discharge per RWQCB Waste Discharge Requirements for Construction Dewatering

- PF-HWQ-3. Trench Construction Groundwater Pressure Control
- PF-HWQ-4. Trench Construction Runoff Collection and Treatment
- PF-HWQ-5: Temporary Storm Drain Inflow Rerouting
- PF-HWQ-6. LID BMPs per Regional Requirements
- PF-HWQ-7. Trench Option Runoff Collection and Treatment
- PF-HWQ-8. City of Torrance Flood Zone Requirements

> Utilities and Service Systems

- PF-US-1. Utility identification and Coordination
- PF-US-2. Service Interruption Notification

2.6 PERMITS AND APPROVALS

This Draft EIR may be used in connection with permits and other discretionary approvals necessary for construction implementation of the Proposed Project. Construction and implementation of the Proposed Project would require permits and approvals from responsible agencies such as the City of Lawndale, City of Redondo Beach, and the City of Torrance, and other departments and owners with jurisdiction over impacted resources. The anticipated permits and approvals required for the Proposed Project are listed in Table 2.6-1.

Table 2.6-1. Permits and Approvals

Agency/Jurisdiction		Permit/Approval Required
State	California Department of Transportation	Permit approvals for encroachment on Caltrans ROW (I-405 and Hawthorne Boulevard for Hawthorne Option, Artesia Boulevard and Hawthorne Boulevard bridges for Proposed Project and Trench Option)
	State Department of Toxic Substances Control	Hazardous materials cleanup
	State Water Resources Control Board	Construction General Permit and SWPPP
		NPDES Dewatering Permit
		LA County MS4 NPDES Package
	California Public Utilities Commission	Grade separations, crossings, state safety oversight
	California Department of Fish and Wildlife	Consultation on protected species
Regional	Metro Board	Certification of the Final EIR, adoption of CEQA Findings, a Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Program, and approval of the Project
	Regional Water Quality Control Board	Construction General Permit and SWPPP
	Southern California Edison	Permits for utility relocation
	LA County Department of Public Works	Permits for utility relocation
	LA County Fire Department	Discretionary actions
	BNSF Railroad	Approval of track relocations
Local	City of Lawndale City of Redondo Beach City of Torrance	Permits (traffic, street use, lighting, landscape, building demolition)
	Redondo Beach Fire Department Torrance Fire Department	Discretionary actions

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACT ANALYSES

3.0 INTRODUCTION

This section provides an overview of the structure and format for the environmental analysis of the Proposed Project. Sections 3.1 through 3.16 discuss the environmental impacts that may result with approval and implementation of the Proposed Project (including Options), and where impacts are identified, proposes mitigation measures that, when implemented, would reduce significant impacts to a level less than significant, or otherwise to the extent feasible.

Chapter 3 presents the following environmental resource topics:

- Section 3.1, Transportation
- Section 3.2, Land Use and Planning
- Section 3.3, Aesthetics
- Section 3.4, Air Quality
- Section 3.5, Greenhouse Gas Emissions
- Section 3.6, Noise and Vibration
- Section 3.7, Biological Resources
- Section 3.8, Geology, Soils, and Paleontological Resources
- Section 3.9, Hazards and Hazardous Materials
- Section 3.10, Hydrology and Water Quality
- Section 3.11, Utilities and Services Systems
- Section 3.12, Energy
- Section 3.13, Cultural Resources
- Section 3.14, Tribal Cultural Resources
- Section 3.15, Public Services and Recreation
- Section 3.16, Other CEQA Considerations

3.0-1 Chapter 3 Format and Content

For each environmental resource topic, the format and content is as follows:

- **Regulatory Framework**: contains an overview of the relevant federal, state, regional, and local laws and regulations that apply to the Proposed Project.
- **Methodology:**
    - Resource Study Area: This section defines resource study areas (RSAs) in which all environmental investigations specific to each environmental resource are conducted.
    - Significance Thresholds: This section lists the thresholds used to determine the significance of each project impact.
    - Project Features: This section describes any project features that would be implemented during construction or operations, which would ensure compliance with the laws, guidelines, and best practices of regulatory agencies.
- **Affected Environmental/Existing Conditions**: This discussion provides a description of the existing physical environment and baseline setting for each environmental issue area. For the purpose of this document and pursuant to the CEQA Guidelines (Section 15125(a)), the environmental setting is used to determine the impacts associated with the Proposed Project and is generally based on the environmental conditions that existed at the time the Notice of Preparation (NOP) was published (January 29, 2021).
- **Environmental Impacts:** This section describes the impacts of the Proposed Project, the Trench Option, and the Hawthorne Option, and states whether the impacts would exceed a threshold of

significance. Impacts are determined without consideration of mitigation measures, and if mitigation measures are proposed, impacts are determined again with consideration of the applicable mitigation measures.

- **Mitigation Measures:** This section describes the mitigation measures that are proposed to avoid or minimize a significant impact.
- **Project Impacts Remaining After Mitigation:** This section summarizes the impact conclusions, including a determination of any significant impacts that would remain significant even after mitigation measures are applied.
- **Cumulative Analysis:** This section provides the analysis of cumulative impacts for the resource topic.

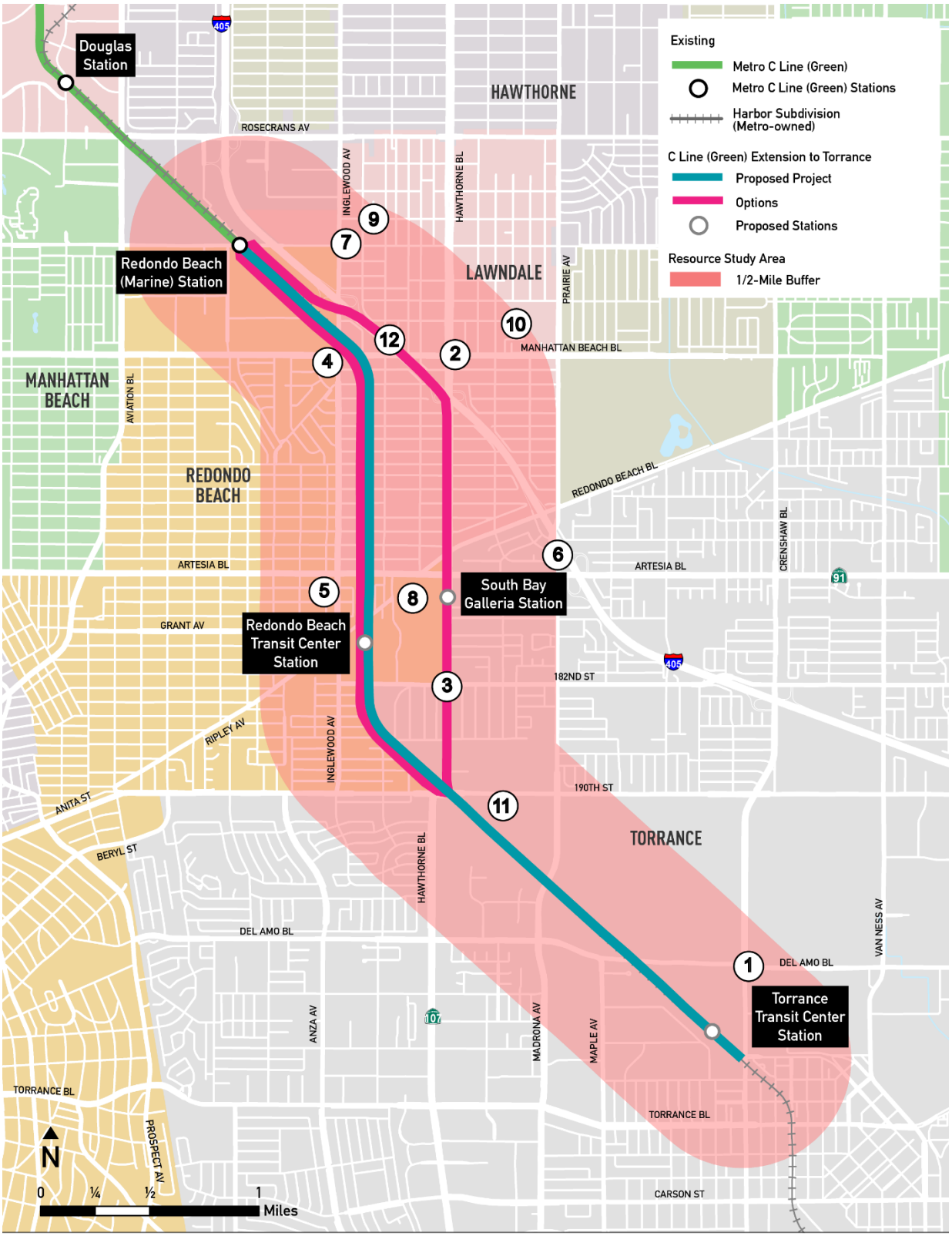
3.0-2 Cumulative Analysis Methodology

CEQA requires an analysis of a project's contribution to cumulative impacts. CEQA Guidelines (Section 15355) define a cumulative impact as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor, but collectively significant, projects taking place over a period of time.

CEQA requires that the discussion of cumulative impacts reflect the severity of the impacts, as well as the likelihood of their occurrence; however, the discussion need not be as detailed as the discussion of environmental impacts attributable to the Proposed Project alone. Further, the discussion is intended to be guided by the standards of practicality and reasonableness. A discussion of significant cumulative impacts involves analyzing: (1) "a list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency," or (2) "a summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect" (CEQA Guidelines Section 15130(b)(1)).

This Draft EIR utilizes both approaches. For regional cumulative impacts, the cumulative analysis incorporates regional projections from the Southern California Association of Governments (SCAG) 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). The RTP/SCS reflects transportation, population, employment, and land use data for the six-county SCAG area through the year 2045. For more site-specific or localized cumulative impacts, the analysis is based on a list of probable future projects within a half-mile of the alignments, listed in Table 3.0-1 and depicted in Figure 3.0-1**.** The cumulative analysis for each environmental resource is included in the individual sections in Chapter 3.

Figure 3.0-1. Cumulative Projects Within Half-Mile of the Proposed Alignments



Source: STV, 2022

Table 3.0-1. Cumulative Projects Within Half-Mile of the Proposed Alignments

Map #	Status	Project Type	Project Name	Project Description	Project Location	Project City
1	Pre-Construction	Road	Crenshaw Boulevard Intersection Improvements	Addition of dedicated right-turn lane for southbound lane	Crenshaw Blvd between Del Amo Blvd and the Torrance TC entrance	Torrance
2	Pre-Construction	Road	Manhattan Beach Boulevard Improvements	Left-Turn traffic signal improvements	Manhattan Beach Blvd and Hawthorne Blvd	Lawndale
3	Pre-Construction	Road	Hawthorne Boulevard Corridor Improvement	Installation of turn lanes	Hawthorne Blvd and 182nd Street	Torrance
4	Planning	Road	Inglewood Avenue Intersection Improvements	Construction of a right turn only lane	Inglewood Ave at Manhattan Beach Blvd	Redondo Beach
5	Pre-Construction	Road	Grant Avenue Signal Improvements	Upgrade six existing traffic signals	Grant Ave between Inglewood Ave and Aviation Blvd	Redondo Beach
6	Design	Road	South Bay Forum Traffic Signal Corridors Project	Upgrade and synchronization of traffic signals and equipment	> Prairie Ave: 118th St/Redondo Beach Blvd > Redondo Beach Blvd: Artesia Blvd to Vermont Ave > Manhattan Beach Blvd: Manhattan Ave to Van Ness Ave	Hawthorne
7	Construction	Road	Inglewood Avenue Street Improvements Project Phase 1 and 2	Pavement striping and rehabilitation; Traffic signal upgrades	Inglewood Ave from Marine Ave to railroad tracks north of Manhattan Beach Blvd	Lawndale
8	Planning	Commercial	South Bay Galleria Development	300-unit residential building, 15,730 sq. ft commercial space, 150-room hotel, 17,000 sq. ft. retail, town square plaza	1815 Hawthorne Blvd	Redondo Beach
9	Planning	Commercial	Hilton Hotel	195-unit hotel	15239 Hawthorne Blvd	Lawndale
10	Planning	Recreation	Lawndale Wellness and Activity Center	New community center adjacent to and on school property	4161 Manhattan Beach Blvd	Lawndale

Map #	Status	Project Type	Project Name	Project Description	Project Location	Project City
11	Pre-construction	Industrial	Torrance Industrial Exchange	428,020 sq. ft. warehouse/industrial complex	19201 Prairie Ave	Torrance
12	Pre-construction	Road	I-405 Auxiliary Lanes Improvement Project	Addition of auxiliary lanes between I-105 and Artesia Blvd	I-405 between I-105 and Artesia Blvd	Hawthorne, Lawndale, Redondo Beach, Torrance

3.1 TRANSPORTATION

This section of the Draft EIR provides an analysis of the C Line (Green) Extension to Torrance Project potential impacts on the transportation system. This section presents data associated with the Base Year, which for ridership forecasts, is 2017, consistent with the Metro Transportation Analysis Model. For other data outside of ridership forecasts, the Base Year represents 2021 conditions. The project Horizon Year is 2042, consistent with the Horizon Year used in the Metro Transportation Analysis Model used to develop the ridership forecast.

3.1-1 Regulatory Framework

Federal, state, regional and local regulations concerning transportation are described in the following section.

3.1-1.1 Federal Regulations

Americans with Disabilities Act

Titles I, II, III, and IV of the Americans with Disabilities Act (ADA) have been codified in Title 42 of the United States Code, beginning at Section 12101. Title III prohibits discrimination on the basis of disability in "places of public accommodation" (businesses and non-profit agencies that serve the public) and "commercial facilities" (other businesses). The regulation includes Appendix A to Part 36 (Standards for Accessible Design), establishing minimum standards for ensuring accessibility when designing and constructing a new facility or altering an existing facility. The ADA requires public transit operators to meet its requirements. Transit facilities, intermodal centers, rail stations, and platforms must meet accessibility standards as set by the U.S. Department of Transportation (USDOT). Accessibility standards regulate paths of travel, boarding ramps and bridgeplates, bus stops and shelters, curb ramps, doors, elevators, escalators, and emergency alarms, fare collection box placement, gates and turnstiles, grade crossings, parking areas, passenger drop-off areas, platform edges, rescue assistance areas, restrooms, signs, stairs, public telephones, water fountains, and wheelchair spaces. ADA requires fixed route services to provide accessible vehicles, including lifts and ramps so that a passenger using a wheelchair or mobility device can reach a securement location onboard; illuminations, contrast, and slip-resistant surfaces at doorways and stepwells; turning and maneuvering room for wheelchairs; accessible handrails, stanchions, and stop controls (such as pull cords); stop announcements; and legible destination information on vehicles in large font. Additionally, public transit providers must provide rider information in multiple formats, such as large print or braille, assistance equipment and accessible features, adequate boarding time, priority seating and signs, training for operators on how to assist individuals with disabilities and allowing service animals onboard.

3.1-1.2 State and Regional Regulations

California Environmental Quality Act (CEQA)

CEQA Guidelines Section 15064.3(a) establishes increases in vehicle miles traveled (VMT) as the most appropriate measure of transportation impacts, and states that other considerations may include effects on transit and non-motorized travel. The state has set ambitious targets for reductions in greenhouse gas (GHG) generation, which in turn relates to transportation and required reductions in VMT, as transportation is the largest generator of GHGs by sector in the state (41%) (CARB, 2021a). Thus, legislation, programs, plans and policies which target GHG generation and climate change relate directly to transportation and the need to reduce VMT. While the CEQA Guidelines address transportation

impacts and provides general guidance, the methodology and quantitative thresholds are deferred to regional and local regulations.

California Manual on Uniform Traffic Control Devices (CAMUTCD)

The CAMUTCD defines the standards used by road managers in California to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public traffic. The CAMUTCD is published by the California Department of Transportation (Caltrans). The CAMUTCD is a compilation of state standards for all traffic control devices, including road markings, highway signs, and traffic signals. All temporary signage and striping for construction and new permanent signage and striping will adhere to these standards.

Statewide Transportation Improvement Program

The California Transportation Commission (CTC) administers transportation programming. Transportation programming is the public decision-making process, which sets priorities and funds projects envisioned in long-range transportation plans. It commits expected revenues over a multi-year period to transportation projects. The Statewide Transportation Improvement Program (STIP) is a multi-year Capital Improvement Program of transportation projects on and off the State Highway System, funded with revenues from the State Highway Account and other funding sources. Caltrans manages the operation of State Highways, including the freeways passing through Los Angeles County.

Caltrans Highway Design Manual

The 7th Edition Caltrans Highway Design Manual (HDM) (2020) establishes uniform standards for the design of roadways in the State. Local design guidance generally conforms to the HDM when feasible, though local design standards may deviate when necessary due to local contexts that may differ from overall Statewide standards.

Assembly Bill (AB) 1358, the Complete Streets Act

AB 1358, the Complete Streets Act (Government Code Sections 65040.2 and 65302), was signed into law by Governor Arnold Schwarzenegger in September 2008. As of January 1, 2011, the law requires cities and counties, when updating the part of a local general plan that addresses roadways and traffic flows, to ensure that those plans account for the needs of all roadway users. Specifically, the legislation requires cities and counties to ensure that local roads and streets adequately accommodate the needs of bicyclists, pedestrians, and transit riders, as well as motorists.

At the same time, Caltrans, which administers transportation programming for the State, unveiled a revised version of Deputy Directive 64 (DD-64-R1 October 2008), an internal policy document that now explicitly embraces Complete Streets as the policy covering all phases of state highway projects, from planning to construction to maintenance and repair.

Complete Streets Directive

Caltrans enacted Complete Streets: Integrating the Transportation System (Complete Streets Directive) in October 2008, which required cities to plan for a “balanced, multimodal transportation network that meets the needs of all users of streets” (Caltrans, 2008). A complete street is a transportation facility that is planned, designed, operated, and maintained to provide safe mobility for all users, including bicyclists, pedestrians, transit vehicles, trucks, and motorists, appropriate to the function and context of the facility. Every complete street looks different, according to its context, community preferences, the types of road users, and their needs.

Senate Bill (SB) 743, Transportation Impacts

To further the state's commitment to the goals of SB 375, AB 32, and AB 1358, Governor Jerry Brown signed SB 743 on September 27, 2013. SB 743 adds Chapter 2.7, Modernization of Transportation Analysis for Transit-Oriented Infill Projects, to Division 13 (Section 21099) of the Public Resources Code (PRC). Key provisions of SB 743 include eliminating the measurement of vehicle delay (level of service [LOS]), as a metric that can be used for measuring traffic impacts. Under SB 743, the focus of transportation analysis shifts from LOS to the reduction of GHG emissions through the creation of multimodal transportation networks and promotion of a mix of land uses to reduce VMT. SB 743 required the Governor's Office of Planning and Research (OPR) to amend the CEQA Guidelines to provide an alternative to LOS for evaluating transportation impacts. Particularly for areas served by transit such as transit priority areas (TPA), those alternative criteria must "promote the reduction of GHG emissions, the development of multimodal transportation networks, and a diversity of land uses" (PRC Section 21099[b][1]). Measurements of transportation impacts may include "vehicle miles traveled, vehicle miles traveled per capita, automobile trip generation rates, or automobile trips generated." OPR also has discretion to develop alternative criteria for areas that are not served by transit, if appropriate.

Pursuant to the mandate in SB 743, OPR adopted the revised CEQA Guidelines in December 2018, recommending the use of VMT for analyzing transportation impacts under CEQA. In turn, Section 15064.3 was added to CEQA Guidelines, which states "generally, vehicle miles traveled is the most appropriate measure of transportation impacts." In accordance with this requirement, CEQA Guidelines Section 15064.3(a), adopted in December 2018, states "a project's effect on automobile delay does not constitute a significant environmental impact." The requirements of SB 743 went into full effect as of July 1, 2020.

Senate Bill 288, California Environmental Quality Act: Exemptions: Transportation-Related Projects

California SB 288, approved by the Governor on September 28, 2020, defines new statutory exemptions under CEQA for various active transportation, transit, and transit-supportive projects carried out by public agencies that meet certain criteria. Included on the list are light rail and bus rapid transit services on public rail of highway rights-of-way, as well as conversion of general freeway lanes to high-occupancy lanes. Transit prioritization projects, and transit, pedestrian, and bicycle information and wayfinding improvements are also added to the list of exemptions.

Local Roadway Safety Plan (LRSP)

Federal regulations require each state to have a Strategic Highway Safety Plan (SHSP). An SHSP is a statewide data-driven traffic safety plan that coordinates the efforts of a wide range of organizations to reduce traffic accident fatalities and serious injuries on all public roads. In coordination with federal, state, local and private sector safety stakeholders, the SHSP establishes goals, objectives, and emphasis (or challenge) areas. The SHSP address the 4Es of traffic safety: Engineering, Enforcement, Education, and Emergency Services. While the SHSP is used as a statewide approach for improving roadway safety, a LRSP can be a means for providing local and rural road owners with an opportunity to address unique highway safety needs in their jurisdictions while contributing to the success of the SHSP. The process of preparing an LRSP creates a framework to systematically identify and analyze safety problems and recommend safety improvements. Preparing an LRSP facilitates the development of local agency partnerships and collaboration, resulting in a prioritized list of improvements and actions that can demonstrate a defined need and contribute to the statewide plan. The LRSP offers a proactive approach to addressing safety needs and demonstrates agency responsiveness to safety challenges. An LRSP provides a framework for organizing stakeholders to identify, analyze, and prioritize roadway safety

improvements on local roads. The process of developing an LRSP can be tailored to local protocols, needs, and issues. In future Highway Safety Improvement Program (HSIP) Calls-for-Projects, an LRSP (or equivalent, such as a Systemic Safety Analysis Report [SSAR] or Vision Zero Action Plan) will be required for an agency to be eligible to apply for federal HSIP funds. Within the C Line (Green) Extension to Torrance study area, the City of Lawndale has initiated the LRSP process, but has not yet finalized its study. The Cities of Redondo Beach and Torrance have not yet initiated the LRSP process.

Southern California Association of Governments (SCAG)

SCAG is the designated MPO for six Southern California counties (Los Angeles, Ventura, Orange, San Bernardino, Riverside, and Imperial), and is federally mandated to develop plans for regional transportation, land use and growth management, and air quality. The County is one of many local and regional jurisdictions comprising SCAG. The Regional Transportation Plan (RTP), Regional Comprehensive Plan (RCP), and Compass Growth Vision Report identify the transportation priorities for the Southern California region. The policies and goals of the RTP, RCP, and Compass Growth Vision Report focus on the need to coordinate land use and transportation decisions to manage travel demand.

> RTP – SCAG updates its long-range (i.e., minimum 20 years) RTP/ Sustainable Communities Strategy (SCS) every four years, per federal law (23 U.S.C.A. §134 et seq) and state law (SB 375). SCAG's 2020–2045 RTP/SCS "Connect SoCal" was adopted in May 2020 for federal transportation conformity purposes; the plan in its entirety was formally adopted in September 2020.

> The SCS is a required element of the RTP that provides a plan for meeting GHG emissions reduction targets set forth by CARB. It provides growth forecasts that are used in the development of air quality-related land use and transportation control strategies by the South Coast Air Quality Management District (SCAQMD). CARB has determined SCAG's reduction target for per capita vehicular emissions to be 8% by 2020 and 19% by 2035 relative to the 2005 baseline. Successfully meeting these targets will require substantial effort to reduce VMT. The 2020–45 RTP/SCS calls for investing $638 billion over the 25-year term of the plan toward over 4,000 transportation projects, all of which collectively are expected to result in a 5% reduction in daily VMT per capita and a more than 25% decrease in traffic delay per capita. Investments will focus on maintaining and better managing the existing transportation network, expanding mobility choices, and increasing investment in transit and complete streets.

> Of the 10 goals presented in the 2020–2045 RTP/SCS, the following five are applicable to transportation:

- Goal 2: Improve mobility, accessibility, reliability, and travel safety for people and goods.
- Goal 3: Enhance the preservation, security, and resilience of the regional transportation system.
- Goal 4: Increase person and goods movement and travel choices within the transportation system.
- Goal 7: Adapt to a changing climate and support an integrated regional development pattern and transportation network.
- Goal 8: Leverage new transportation technologies and data-driven solutions that result in more efficient travel.

Los Angeles County Metropolitan Transportation Authority

Metro is the primary public transit operator in Los Angeles County. Metro develops and oversees transportation plans, policies, and funding programs. Relevant Metro policies and plans are discussed below.

Long Range Transportation Plan (LRTP)

Metro's 2009 LRTP provided a 30-year vision for Los Angeles County's transportation system through the year 2040. Metro adopted the 2020 Long Range Transportation Plan, titled *Our Next LA*[1], in September 2020. It is the first update to the LRTP since 2009 and provides a vision for transportation in Los Angeles County through 2047. The plan aims to address population growth, changing mobility needs and preferences, technological advances, equitable access to opportunity, and adaptation to a changing environment. The plan details construction of an additional 100 miles of fixed-guideway transit, investments in arterial and freeway projects to reduce congestion, and construction of regional-scale bicycle and pedestrian projects to increase active transportation. Other efforts detailed in the plan include traffic management practices for congested roadways (e.g., ExpressLanes toll lanes), maintaining and upgrading the existing transportation system for all modes, and partnering with local, state, and federal agencies, and the private sector. *Our Next LA* includes transit and highway improvements funded by Measure M, as well as expansion of off-peak transit service, of the active transportation network, and of programs such as ExpressLanes, partnerships to provide bus only lanes and freight management policies, and bold policy proposals, including more affordable transit, faster bus trips, and subregional congestion pricing.

Short Range Transportation Plan (SRTP)

The 2014 Metro SRTP is a 10-year action plan that guides future Metro programs and projects through 2024 and advances Metro towards the long-term goals identified in the 2009 Metro LRTP. The 2014 SRTP identifies the short-term challenges, provides an analysis of financial resources, proposes action plans for the public transportation and highway modes, and includes other project and program initiatives. In addition, it addressed sustainability, future funding strategies, and lastly, measured the Plan's performance. The 2014 SRTP aimed to honor the near-term priorities of the 2009 LRTP; maintain the existing Metro system in a State of Good Repair; increase construction, operation, and planning sustainability; and develop new funding strategies. Transit improvements programmed in the 2014 SRTP include six major transit corridor projects providing 32 miles of additional track on the C, D, E, and L Lines, as well as the K Line (Crenshaw) and the Regional Connector. Programmed freeway improvements include capacity enhancements, gap closures, construction of carpool lanes, interchange projects, good movement projects, and others.

Vision 2028 Plan

The Metro Vision 2028 Plan is a strategic plan that lays the foundation for transforming mobility across the county over the 10-year period ending in 2028. The plan also seeks to increase prosperity for all by removing mobility barriers, provide swift and easy mobility anytime throughout Los Angeles County, and accommodate more trips through a variety of high-quality mobility options. The Plan seeks to increase mobility across the County by reducing the number of people who drive alone and increasing the number of trips people take by transit, walking, rolling modes such as biking and scootering, shared

[1] "LA" in the context of *Our Next LA* accounts for the overarching region and collection of cities that make up "LA".

rides, and carpooling. It also seeks to improve the customer experience by reducing maximum wait times for any transit trip to 15 minutes or less, even during peak periods, improving bus travel speeds by 30%, and providing reliable, convenient options for users to bypass congestion.

Metro Transit Oriented Communities (TOC) Implementation Plan

The TOC Implementation Plan sets four initiatives for addressing Los Angeles County's mobility challenges, including creating TOC corridor baseline assessments, continually improving Metro TOC program areas, enhancing Metro's internal coordination, and strengthening coordination and collaboration. The TOC Implementation Plan seeks to build partnerships with the community to realize five goals, which include:

1. Increase transit ridership and choice
2. Stabilize and strengthen communities around transit
3. Engage communities and partners in visioning
4. Distribute transit benefits to all
5. Capture value created by transit

2021 LA County Goods Movement Strategic Plan

The Goods Movement Strategic Plan identifies challenges and defines a roadmap for goods movement in Los Angeles County in the context of mobility, competitiveness, equity, and air quality. The Plan outlines five initiatives for improving the goods movement process within these contexts, including equity for goods movement, the LA Metro Countywide Clean Truck Initiative, Southern California rail investment partnership, urban freight delivery, and logistics workforce and competency. Within this plan, many arterial roadways across the County are recognized as being part of the Countywide Strategic Truck Arterial Network (CSTAN), including Hawthorne Boulevard. The designation is used for the recognition of inequitably impacted communities surrounding the network.

Measure M Expenditure Plan

Approved by voters in 2016, Measure M is a sales tax measure that aimed to improve regional transportation. The goals of Measure M include improved traffic flow, expansion of rail transit, pollution reduction, job creation, and overall accessibility, convenience, and affordability improvements for public transportation. 35% of the funds are planned to go toward transit construction, and another 5% to rail operations. Specific goals related to the Proposed Project include the following:

- Improve freeway traffic flow
- Expand the rail and rapid transit system
- Keep the transit and highway system safe
- Make public transportation more accessible, convenient, and affordable
- Embrace technology and innovation
- Create jobs, reduce pollution, and generate local economic benefits

Bus Rapid Transit (BRT) Vision & Principles Study

Adopted in March 2021 in support of Measure M, the "Visioning BRT" report established a set of standards and guidelines for Metro's BRT projects. The report also includes a recommended list of future BRT corridors across Los Angeles County. The study used three levels of screening, including

factors such as network connectivity, land use, points of interest, Metro's Equity Focus Community (EFC) metric, TOCs, trip length, and stakeholder input to build a top five corridors list. Among the top five priority BRT corridors are Atlantic Boulevard, Broadway, La Cienega Boulevard, Sunset Boulevard, and Venice Boulevard. In addition to the top five corridors are an additional top 30 corridors, which includes Hawthorne Boulevard, Prairie Avenue, and Western Avenue. In March 2021, a Metro Board motion requested the evaluation of extending the Western Avenue BRT corridor to San Pedro as part of the BRT Early Action Program.

NextGen Bus Study

Metro initiated the NextGen Bus Study in 2018 to reimagine and restructure its bus network after 25 years to be more relevant to, reflective of, and attractive to the diverse customer needs within Los Angeles County. The plan proposes major bus service changes across the Metro Service Area, including development of a new bus network to improve service to current customers, attract new customers, and regain past customers. The NextGen Bus Study represents the first major overhaul to Metro bus service in more than a quarter century. The plan will:

- Align transit service patterns with travel patterns
- Develop service tiers to provide more frequent service along busy lines
- Establish seamless connectivity with local municipal operators
- Increase the number of routes operating frequently
- Assure all fixed-route services provide headways of 30 minutes or better
- Create standardized frequencies by service tier
- Make the network easier for riders to understand
- Align schedules with midday, evening, and weekend riders
- Consolidate Rapids/Locals into a single service
- Consolidate stops
- Apply all strategies through an equity lens

The NextGen service plan was adopted by the Metro Board in October 2020 and was implemented with a 3-phased roll-out beginning in December 2020 through the end of 2021 for Phase 1. Efforts continue to roll out the speed and reliability elements of the plan including new bus lanes.

Grade Crossing Safety Policy for Light Rail Transit

The Metro Grade Crossing Safety Policy for Light Rail Transit is intended to provide a structured process for the evaluation of grade crossings along light rail lines. The policy includes three levels of review: (1) planning-level; (2) detailed operational evaluation with assessment of potential impacts to rail operations; and (3) developing consensus regarding the proposed design solution with local constituencies, including other involved agencies and the community, as appropriate. The evaluation is based on factors including roadway volumes, train frequencies, site conditions, traffic and rail operations, and safety information.

First/Last Mile(FLM) Strategic Plan

The 2014 Metro FLM Strategic Plan introduced an infrastructure improvement strategy designed to facilitate easy, safe, and efficient access to the Metro system, and provides direction on the layout of

transit access networks and components within Metro Rail and BRT station areas in an effort to increase the size of station area access sheds and improve access conditions within those sheds. The FLM Strategic Plan serves as a resource for planners and decision makers seeking to take advantage of Metro's investments in the public transportation network. The goals of the FLM Strategic Plan are to expand the reach of transit through infrastructure improvements, maximize multi-modal benefits and efficiencies, and build on the SCAG RTP/SCS and Countywide Sustainable Planning Policy.

On May 18, 2016, the Metro Board motioned (File ID 2016-0442) to support the FLM Strategic Plan by designating a Countywide FLM Priority Network, facilitating a build-out of infrastructure for this network, and specifying a process framework for local contribution to first/last mile supportive projects.

To further integrate first/last mile planning, the 2021 FLM Strategic Plan Planning Guidelines provide a coordination tool and resource for Metro, Los Angeles County, municipal organizations, community groups, and private institutions. It also serves as a key source of direction for Metro staff when undertaking planning and design efforts aimed at improving first and last mile connections to transit.

Regional Complete Streets Policy

Metro's adopted Complete Streets policy reinforces the California Complete Streets Act (AB 1358). Effective January 1, 2017, Metro is requiring that all local jurisdictions within LA County must adopt a Complete Streets Policy, an adopted city council resolution supporting Complete Streets, or an adopted general plan consistent with the California Complete Streets Act of 2008 in order to be eligible for Metro capital grant funding programs, starting with the 2017 grant cycles.

None of the cities in the project area have adopted complete streets policies.

Metro Active Transportation Strategic Plan (ATSP)

Adopted in 2016, the ATSP sets goals and objectives for implementing active transportation improvements across Los Angeles County. The plan established existing conditions and defined implementation steps, funding strategies, and performance metrics for the countywide active transportation network. Relevant goals of the ATSP include the following:

- Improve access to transit
- Establish active transportation modes as integral elements of the countywide transportation system
- Enhance safety, remove barriers to access, or correct unsafe conditions in areas of heavy traffic, high transit use, dense bicycle and pedestrian activity
- Promote multiple clean transportation options to reduce criteria pollutants, greenhouse gas emissions, and improve air quality
- Improve public health through traffic safety, reduced exposure to pollutants, design and infrastructure that encourage residents to use active transportation as a way to integrate physical activity into their daily lives
- Foster healthy, equitable, and economically vibrant communities where all residents have greater transportation choices & access to key destinations, such as jobs, medical facilities, schools, and recreation

3.1-1.3 Local Regulations

South Bay Bicycle Master Plan (SBBMP)

The SBBMP is a multi-city bicycle master plan developed in 2011 by the Los Angeles County Bicycle Coalition (LACBC) and the South Bay Bicycle Coalition (SBBC) with the common goal of improving the safety and convenience of bicycling in the South Bay Region. Seven member cities of the South Bay Cities Council of Government were involved in the development of the SBBMP, including El Segundo, Gardena, Hermosa Beach, Lawndale, Manhattan Beach, Redondo Beach, and Torrance. Relevant policies are described in Table 3.1-1 below.

Table 3.1-1. South Bay Bicycle Master Plan

Code/Goal/Policy	Description
South Bay Bicycle Master Plan	
Policy 1.1.4	Review and encourage implementation of policies and facilities proposed in the SBBMP whenever planning new bicycle facilities or capital improvement projects that may be related to bicycle improvements
Objective 1.3	Increased mobility through bicycle-transit integration
Policy 1.3.1	Support the development of bicycle facilities that provide access to regional and local public transit services
Policy 1.3.2	Coordinate with transit providers to ensure bicycles can be accommodated on all forms of transit vehicles and that adequate space is devoted to their storage on board whenever possible
Policy 1.3.3	Coordinate with transit agencies to install and maintain convenient and secure short-term and long-term bike parking facilities – racks, on-demand bike lockers, in-station bike storage, and staffed or automated bicycle parking facilities – at transit stops, statins, and terminals
Policy 1.4.8	Work with Metro to provide bicycle parking in proximity to bus stops and other transit facilities

Source: LACBC and SBBC, 2011

City of Lawndale

The Lawndale General Plan Circulation Element was developed in 1991. The Lawndale General Plan Safety Element was adopted in 2015. These General Plan elements contains goals and policies that focus on transportation and are described in Table 3.1-2.

Table 3.1-2. City of Lawndale – Relevant Regulations

Code/Goal/Policy	Description
City of Lawndale General Plan Circulation Element	
Policy 1B	Provide necessary facilities to balance all travel modes, users, and for a variety of trip purposes. Transportation modes are prioritized in the following order: vehicles, public transit, pedestrians, bicycles where sufficient ROW exists, and freight
Policy 3A	Require or provide adequate traffic safety measures on all roadways
Policy 4A	Reduce daily and peak hour vehicle trips
Policy 5A	Work with regional transportation agencies to establish criteria to implement transit improvements and develop short- and long-term transit service plans, corridor improvements, transit centers, park and ride lots, and the preservation of rights-of-way for commuter rail stations
Policy 5D	Work with regional transportation agencies to plan and implement a commuter rail system, including routes, location of stops, service schedules, feeder bus routes, parking needs, a transit terminal/park and ride lot, and funding
City of Lawndale General Plan Safety Element	
Policy SAF-4.4	Provision of adequate access for emergency vehicles and evacuation in all new developments

Source: City of Lawndale, 1991a; 2015

City of Redondo Beach

The Redondo Beach General Plan Circulation Element was adopted in 2009 and the Redondo Beach General Plan Safety Element was last updated in 1993. These General Plan elements contains goals and policies that focus on transportation and are described in Table 3.1-3.

Table 3.1-3. City of Redondo Beach – Relevant Regulations

Code/Goal/Policy	Description
City of Redondo Beach General Plan Circulation Element	
Goal G1	Address the root causes of trip generation rather than simply reacting to the consequences
Goal G4	Allow for safe and convenient walking, biking, or taking transit
Goal G16	Provide reliable, safe fixed-route transit
Policy P31	Extend Metro's Green Line
Policy P32	Create multi-modal transit hubs
Policy P33	Enhance transit wayfinding and signage at transit stops
City of Redondo Beach General Plan Safety Element	
Objective 10.10	Minimization of the noise of railroad transit, both freight and passenger, on residential uses and other sensitive land uses
Policy 10.10.1	Work with railroad operators to establish operational restrictions during the early morning and late evening hours to reduce adverse noise impacts in residential areas and other noise-sensitive areas
Policy 10.10.2	Install noise mitigation features where operations impact existing adjacent residential or other noise-sensitive uses
Policy 12.1.3	Assess the potential impacts of development to the circulation system as it relates to fire prevention, including emergency response times

Source: Redondo Beach, 1993f, 2009a

City of Torrance – General Plan Circulation and Infrastructure Element

The Torrance General Plan Circulation and Infrastructure Element and Torrance General Plan Safety Element were adopted in 2010 and the Hawthorne Boulevard Corridor Specific Plan was adopted in 1996. These plans contain goals and policies that focus on transportation and are described in Table 3.1-4.

Table 3.1-4. City of Torrance – Relevant Regulations

Code/Goal/Policy	Description
City of Torrance General Plan Circulation and Infrastructure Element	
Objective CI-7	Expansion and optimization of local and regional bus and other transit systems
Policy CI-3.4	Encourage the use of regional rail, buses, bicycling, carpools, and vanpools for work trips
Policy CI-4.1	Protect residential neighborhoods from cut-through traffic by improving signage, guiding traffic away from residential areas, and employing appropriate traffic-calming methods
Policy CI-7.2	Coordinate transit planning with regional and county transportation agencies
Policy CI-7.3	Support and encourage the use of public transit
Policy CI-7.4	Establish a transit center
Policy CI-7.5	Provide attractive and appropriate transit amenities
Policy CI-7.9	Support light rail usage by providing connections to transfer opportunities through the Torrance Transit System
Policy CI-7.10	Implement signal prioritization to support public transit and provide more efficient transit services
City of Torrance General Plan Safety Element	
Objective S-6	Provision of a high level of fire, police, and emergency medical services
Policy S-6.5	Provide for a maximum 6-minute Fire Department response time
Hawthorne Boulevard Corridor Specific Plans	
Goal 1E	Maximize opportunities for alternative modes of transportation and maintain mobility
Policy 6-1	Maintain or improve the existing peak traffic level of service
Policy 6-2	Minimize potential conflicts between through traffic on Hawthorne Boulevard and turning traffic, between vehicles and pedestrians, and between traffic and stopped transit vehicles
Policy 6-4	Avoid the intrusion of through traffic in residential areas
Objective 7A	Transit service which enhances mobility in the corridor and serves as a convenient alternative to automobile travel
Policy 7-1	Coordinate local and regional transit service operating in the corridor in order to maximize the service provided and to optimize convenience to the user
Policy 7-5	Establish shuttle services that enhance corridor carrying capacity and accessibility to adjacent land uses
Objective 8A	Reduce the dependence on single-occupant vehicles for circulation in the corridor

Source: Torrance; 1996, 2010a; 2010f

3.1-2 Methodology

The impacts section addresses the impacts of the Proposed Project and Options based on an analysis of the components of the transportation network described in the existing conditions section. The analysis shall determine the potential impacts of the Proposed Project and Options on the transportation network in the Resource Study Areas (RSA).

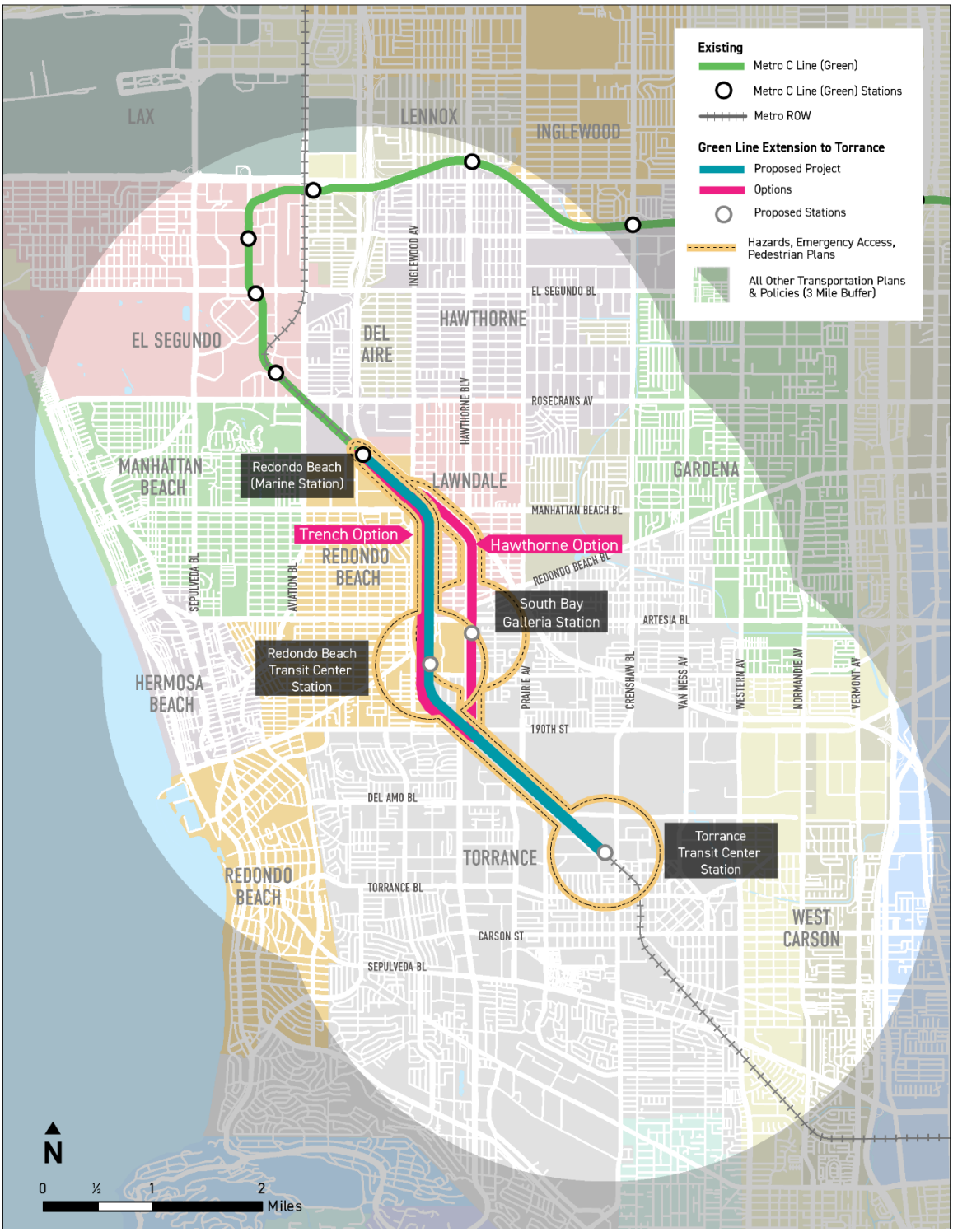
3.1-2.1 Resource Study Area

The RSAs for transportation encompasses the areas in which there may be foreseeable effects of the Proposed Project and Options on transportation safety, emergency access, and on plans or policies regarding the effectiveness of the circulation system inclusive of bicycle paths, pedestrian access, and public transportation.

The RSAs vary in area and distance from the alignments because the potential for impacts can affect a broader or more focused area depending on the impact criteria and thresholds of significance. Figure 3.1-1 shows the RSAs in relation to the Proposed Project and Options. The following RSAs were developed based on the area with the most potential for significant impacts:

- The RSA for assessing potential hazards regarding the conditions of transportation safety and emergency access is within 500 feet of the track alignment and extending out one half-mile from each station
- The RSA for assessing potential conflicts with plans and policies regarding the circulation system is a 3-mile radius from each proposed station

Figure 3.1-1 Resource Study Area



Source: Fehr & Peers, 2022

3.1-2.2 Program, Plan, Ordinance, or Policy Conflict

Consistency with respect to alterations to the transportation network will be assessed against programs, plans, ordinances, and policies identified in the regulatory section of this report. Project consistency is defined as the furtherance of goals and objectives from existing programs, plans, ordinances, and policies through development of the Proposed Project. If the Proposed Project or Options are determined to conflict with an existing program, plan, ordinance, or policy – i.e., it will impede achievement of existing goals and objectives – the Proposed Project and Options will be found to result in a significant impact.

3.1-2.3 CEQA Guidelines Section 15064.3, subdivision (b) Conflict

Per CEQA Guidelines Section 15064.3(b)(2), transportation projects that reduce, or have no impact on, VMT should be presumed to cause a less than significant transportation impact and do not require VMT analysis. OPR's Technical Advisory on Evaluating Transportation Impacts in CEQA explains with respect to public transit projects as follows:

> Transit and active transportation projects generally reduce VMT and therefore are presumed to cause a less-than-significant impact on transportation. This presumption may apply to all passenger rail projects, bus and bus rapid transit projects, and bicycle and pedestrian infrastructure projects. Streamlining transit and active transportation projects aligns with each of the three statutory goals contained in SB 743 by reducing GHG emissions, increasing multimodal transportation networks, and facilitating mixed use development (OPR, 2018b).

As a passenger rail project, the C Line (Green) Extension to Torrance is expected to reduce VMT, resulting only in localized travel pattern shifts as residents shift their commutes and other automobile trips to the nearest transit station parking lot, or use other means such as walking or bicycling to reach stations. It is presumed that the Proposed Project's impact is **less than significant.**

3.1-2.4 Increased Hazards Due to Geometric Design Feature or Incompatible Use

Impacts regarding the potential increase of hazards due to a geometric design feature generally relate to the design of access points to and from the Proposed Project site, and may include safety, operational, or capacity impacts. Impacts can be related to vehicle/vehicle, vehicle/bicycle, or vehicle/pedestrian conflicts as well as to operational delays caused by vehicles slowing and/or queuing to access the Proposed Project site. These conflicts may be created by the Proposed Project alignment itself or station driveway configurations in areas of inadequate visibility, adjacent to bicycle or pedestrian facilities, or too close to busy or congested intersections. Geometric design hazards such as visibility/line of sight, sharp curves, curb radii, roadway and pedestrian lighting, and conflict points between different modes will be evaluated to determine if the project introduces hazards. As described in Section 3.1-2.1, the RSA for geometric hazards is within a half mile of each station or 500 feet from the alignment between stations, where the physical footprint and related network alterations would be found.

3.1-2.5 Emergency Access

Adequacy of emergency access will be evaluated using available data including the location of existing emergency support facilities, such as fire stations. The impact analysis for construction would consider temporary street or lane closures and the ability of emergency responder to navigate through or around these closures. If the project is determined to result in inadequate emergency access, a significant transportation impact will be found.

3.1-2.6 Significance Thresholds

Based upon the thresholds of significance contained in Appendix G of the CEQA Guidelines, implementation of the Proposed Project would result in a significant impact if the Proposed Project would:

a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.

b. Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b) [increase in VMT].

c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

d. Result in inadequate emergency access.

3.1-2.7 Project Features

As described in Chapter 2, Project Description, a number of features have been incorporated into the project to ensure compliance with the laws, guidelines, or best practices of federal, state, local, and regional agencies. The following project features have been developed for transportation.

PF-T-1. Construction Traffic Management Plan (CTMP)

Metro Rail Design Criteria requires that contractors develop a CTMP prior to the initiation of localized construction activities. Per Metro standard practice, this CTMP (inclusive of street closure information, detour plans, haul routes, and a staging plan) shall be prepared and submitted to the Cities of Lawndale, Redondo Beach, and Torrance for review. For the Hawthorne Option, it would also be submitted to Caltrans. Caltrans would also review selected areas of the Proposed Project or Trench Option, such as bridge construction over Artesia Boulevard. The CTMPs shall be based on the nature and timing of the specific construction activities at each of the construction sites. This coordination will ensure construction activities of the concurrent related projects and associated hauling activities are managed in collaboration with one another and the Proposed Project. The CTMPs may be updated as construction progresses to reflect progress at the various construction sites. The CTMPs will include, but not be limited to, the following elements, as appropriate:

- As traffic lane, parking lane, sidewalk closures and full road closures are anticipated, worksite traffic control plans, approved by the local jurisdictions and Caltrans, shall be developed and implemented to route vehicular traffic, bicyclists, and pedestrians around any such closures.
- As partial and full street closures are anticipated at various locations during portions of the Project construction, detour plans, approved by the local jurisdictions, shall be developed and implemented to route vehicular traffic, pedestrians and bicyclists to alternative routes during these periods, including maintaining access for these modes across Hawthorne Boulevard during construction.
- Ensure that vehicle and pedestrian access will remain available from at least one entry and egress point for properties in proximity to the alignments and component sites during construction with access to businesses maintained during normal business hours; nighttime closures may be possible and accordingly arranged with property owners.
- Coordinate with the city and emergency service providers to ensure emergency access is provided to the alignments and component sites and neighboring land uses. Emergency access points will be marked accordingly in consultation with local fire departments, as applicable.

- Provide off-site truck staging in a legal area furnished by the construction truck contractor.
- Schedule deliveries and pick-ups of construction materials during non-peak travel periods to the extent possible and coordinate to reduce the potential of trucks waiting to load or unload for protracted periods.

3.1-3 Affected Environment / Existing Conditions

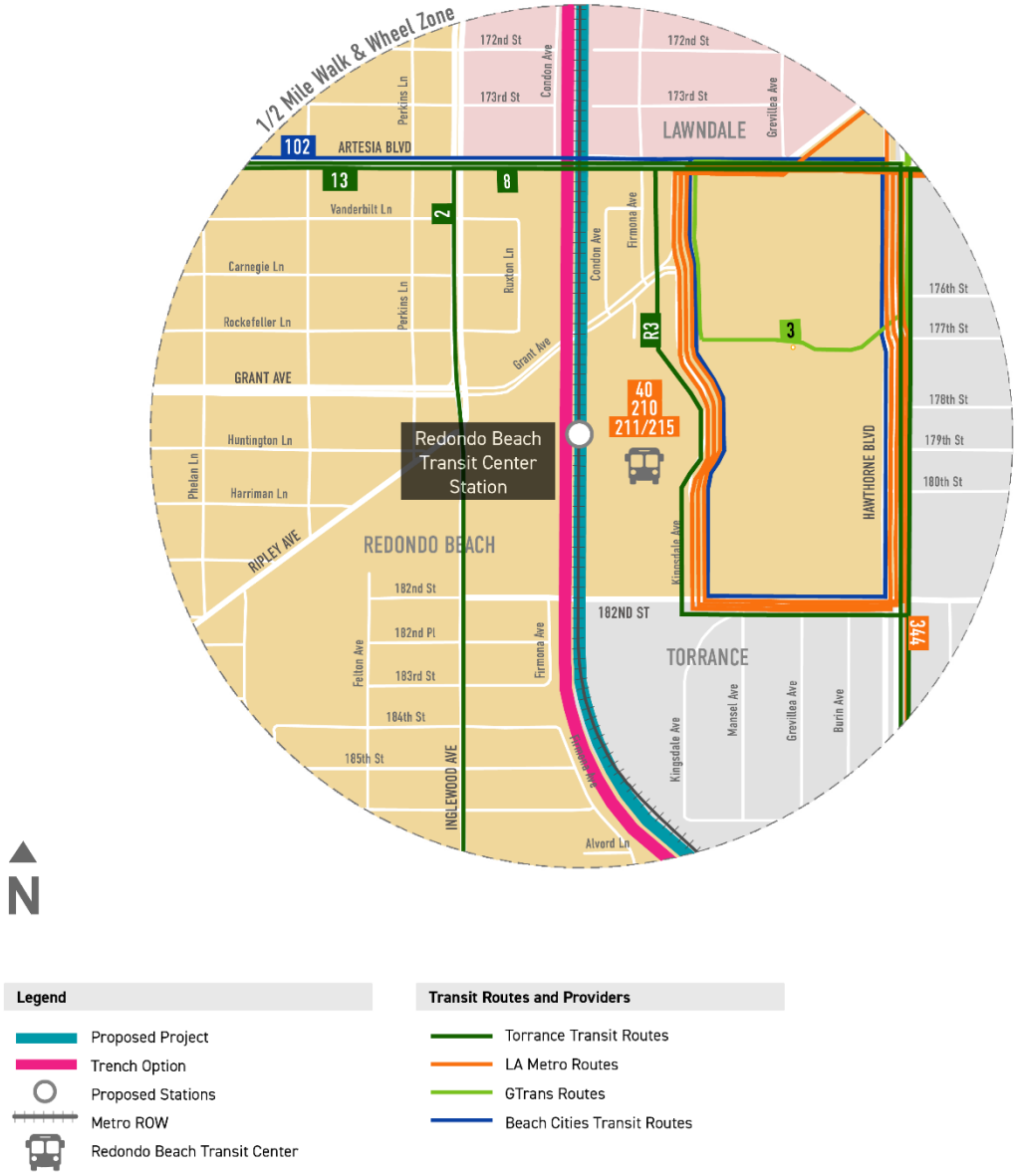
This section presents information about the affected environment and existing transportation conditions in the RSAs under the base year (2021) conditions. The transportation conditions discussed below include transit systems, street and highway systems, parking, and pedestrian and bicycle facilities.

3.1-3.1 Base Year Transit Service

The RSAs are served by several regional and local transit agencies providing both rail and bus services. Metro provides light rail service via the C Line (Green), which operates in the median of the Interstate 105 (I-105) Freeway and to its current terminus at the Redondo Beach (Marine) Station. Bus service in the RSA is provided by Metro, Beach Cities Transit, Los Angeles Department of Transportation (LADOT) Commuter Express, Gardena Transit (GTrans), and Torrance Transit. Service types provided include rapid, express, limited, and local lines. Community-based shuttle service was previously provided by Lawndale Beat, but it was suspended during the COVID-19 pandemic.

Public transit lines that serve RSAs are shown by proposed stations in Figure 3.1-2 through Figure 3.1-4, the larger 3-mile radius around the RSAs in Figure 3.1-5 and are summarized in Table 3.1-5.

Figure 3.1-2 Proposed Project and Trench Option Study Area Base Year Transit Lines (Redondo Beach TC Station)

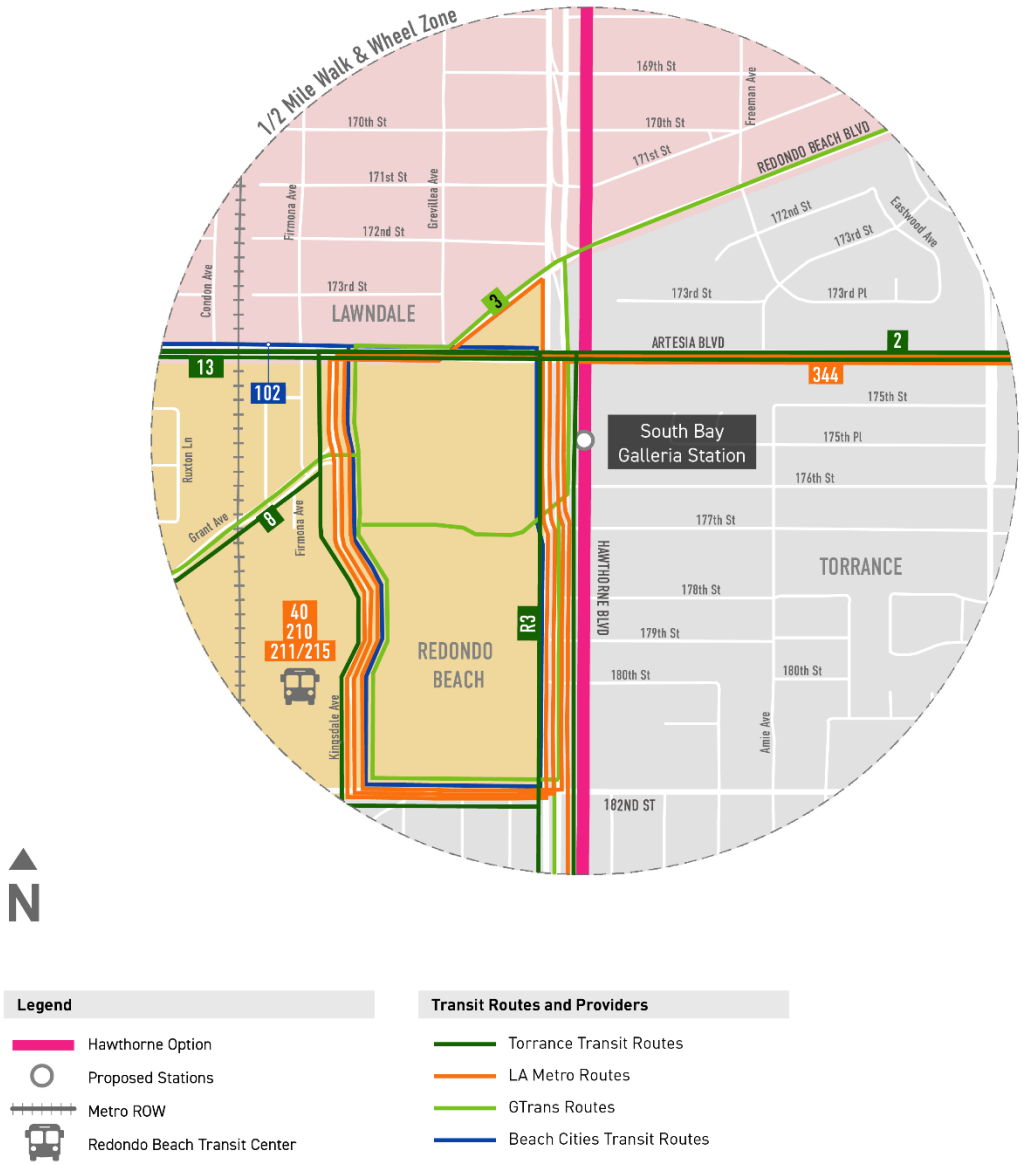


Source: Fehr & Peers / Cityworks Design, 2022; Metro, 2022; Cities of Torrance, Lawndale, Gardena, Redondo Beach, 2022

Figure 3.1-3 Proposed Project and Trench Option Study Area Base Year Transit Lines (Torrance TC Station)

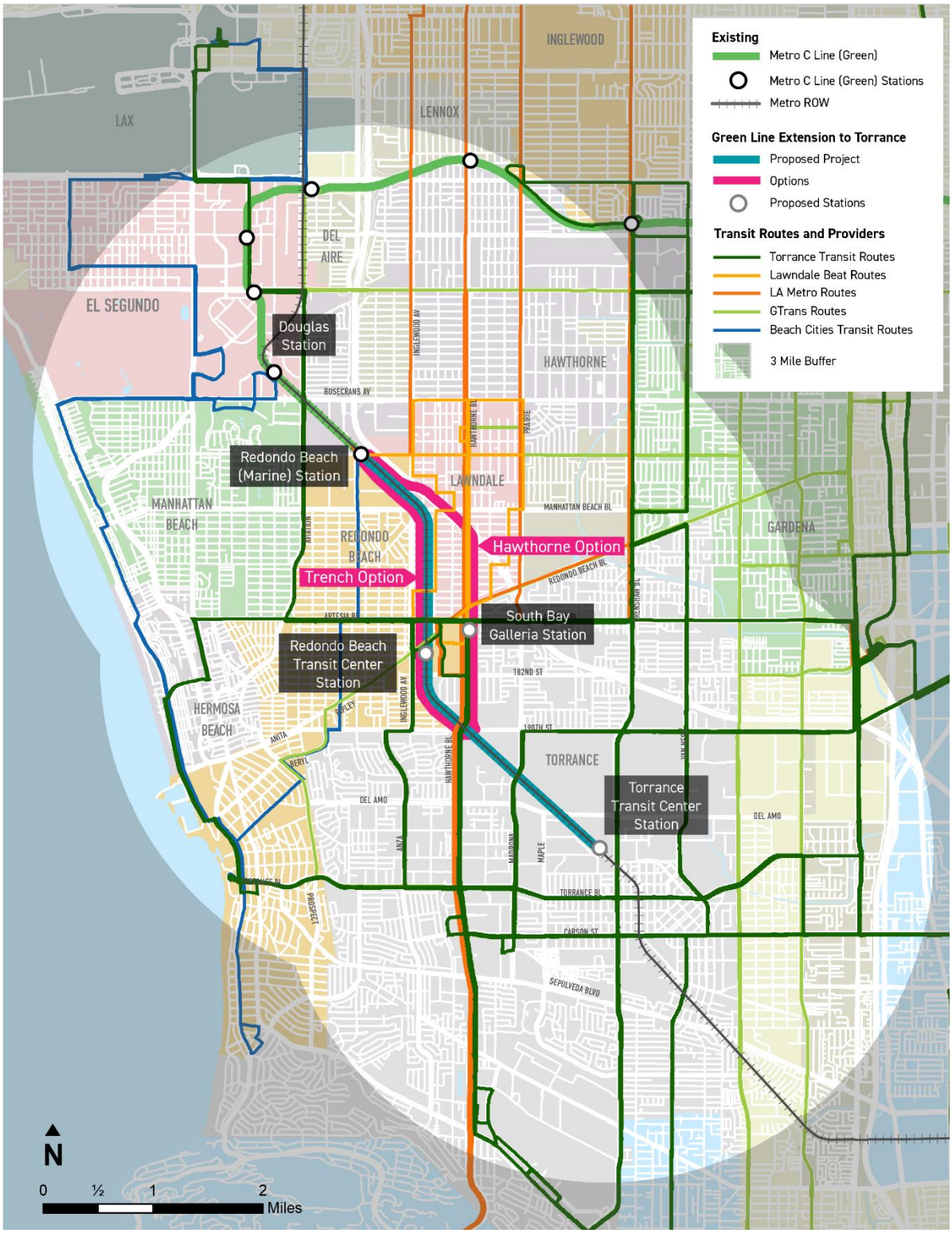
Source: Fehr & Peers / Cityworks Design, 2022; Metro, 2022; City of Torrance, 2022

Figure 3.1-4 Hawthorne Option Study Area Base Year Transit Lines (South Bay Galleria Station)



Source: Fehr & Peers, 2022; Metro, 2022; Cities of Torrance, Lawndale, Gardena, Redondo Beach, 2022

Figure 3.1-5 Base Year Transit Service within Three Miles of the Project



Source: Fehr & Peers, 2022; Metro, 2022; Cities of Torrance, Lawndale, Gardena, Redondo Beach, 2022

Table 3.1-5 Project Study Area Base Year Transit Lines and Operators

Transit Agency	Route Number	Service Type	Pre-COVID Average Peak Period Headways	Proposed Metro NextGen Peak Period Headways
Metro	40	Late Night	15	10
Metro	120	Local	41	30
Metro	125	Local	27	20
Metro	126	Local	57	*Discontinued*
Metro	130	Local	35	30
Metro	204	Local	13	5
Metro	205	Local	37	30
Metro	206	Local	14	10
Metro	210	Local	21	10
Metro	211	Local	38	40
Metro	212	Local	13	7.5
Metro	215	Local	38	40
Metro	232	Local	22	15
Metro	344	Local	33	30
Metro	460	Express	25	30
Metro	550	Express	36	30
Metro	625	Shuttle	26	*Discontinued*
Metro Rapid	740	Rapid	23	*Discontinued*
Metro Rapid	710	Rapid	17	*Discontinued*
Metro Rapid	754	Rapid	9	10
Metro Micro Pilot LAX/Inglewood Service Area north of El Segundo Bl	N/A	On-Demand Van	N/A	*Not Applicable*
Beach Cities Transit	102	Local	30	*Not Applicable*
Beach Cities Transit	109	Local	45	*Not Applicable*
LADOT Commuter Express	438	Express	13	*Not Applicable*
LADOT Commuter Express	574	Express	32	*Not Applicable*
GTrans (Gardena)	1X	Express	30	*Not Applicable*
Gtrans (Gardena)	2	Local	15	*Not Applicable*
Gtrans (Gardena)	3	Local	15	*Not Applicable*
Gtrans (Gardena)	4	Local	50	*Not Applicable*
Gtrans (Gardena)	5	Local	30	*Not Applicable*
Lawndale Beat[1]	EX	Shuttle	40	*Not Applicable*
Lawndale Beat[1]	RES	Shuttle	50	*Not Applicable*
Torrance Transit	1	Local	40	*Not Applicable*
Torrance Transit	2	Local	64	*Not Applicable*
Torrance Transit	3/Rapid 3	Local	25	*Not Applicable*
Torrance Transit	4X	Express	30	*Not Applicable*
Torrance Transit	5	Local	60	*Not Applicable*
Torrance Transit	6	Local	40	*Not Applicable*
Torrance Transit	7	Local	60	*Not Applicable*
Torrance Transit	8	Local	30	*Not Applicable*
Torrance Transit	9	Local	60	*Not Applicable*
Torrance Transit	10	Local	28	*Not Applicable*

Source: Fehr & Peers, 2022; Transit Service Providers

[1] Lawndale Beat was suspended during the COVID-19 pandemic.

3.1-3.2 Programmed Transit Improvements

The following Programmed Transit Improvements[2] are included in the RSAs:

- K Line (Crenshaw) Extension to Los Angeles International Airport (LAX) (Under Construction)
- C Line (Green) Extension to Torrance (Proposed Project)
- NextGen Bus

Additionally, the 2020 LRTP identifies, as Action 1.2i, "implementation of future BRT corridors identified in BRT Vision and Principles Study." Metro's BRT Vision and Principles Study provides the foundation for assignment of Measure M funds for the Countywide BRT Expansion program, additionally identifies Hawthorne Boulevard from the City of Inglewood to the City of Torrance as a Top 30 corridor. The Measure R and Measure M expenditure plans include allocation of funds for general BRT projects throughout the County, though there is not defined allocation to the Hawthorne Boulevard project in particular.

More detail regarding planned transit and other transportation improvements in the region can be found in the introduction to Chapter 3, Environmental Impacts.

3.1-3.3 Traffic

The following is a summary of the existing roadway system and traffic conditions in the RSAs. Descriptions of existing conditions are provided for major arterials and freeways in the RSA, along with selected on- and off-ramps.

3.1-3.4 Regional Roadway Network

The transportation network within the RSAs include a network of roadways that provide local and sub-regional access between cities, along with two freeways that provide regional access throughout Los Angeles County and Southern California. The major roadway facilities within the RSAs are described below.

3.1-3.5 Freeways

The key freeways in the RSAs are as follows:

- I-105 (Century Freeway) – The Century Freeway is an east-west freeway with three mixed-flow lanes in each direction. It extends from LAX east to the City of Norwalk. High occupancy vehicle (HOV) lanes for both the eastbound and westbound direction are provided to the east of Aviation Boulevard. The existing Metro C Line (Green) operates in the median of the freeway east of Aviation Boulevard. Within the Project Study Area, I-105 has an interchange with the I-405 Freeway and local interchanges at Sepulveda Boulevard and Imperial Highway.
- I-405 (San Diego Freeway) – The San Diego Freeway is a north-south freeway with four to six mixed-flow lanes and one HOV lane in each direction. The facility is a "belt" type interstate freeway, with a northern terminus at an interchange with the I-5 Freeway in the San Fernando Valley and a southern terminus also with the I-5 Freeway at an interchange in Irvine. Within the Project Study Area, I-405 has an interchange with I-105 and also has interchanges at Century Boulevard, La Cienega

[2] A programmed transit improvement is a transit improvement planned and adopted by a transit-providing agency but not yet fully implemented at the time of the baseline conditions

Boulevard, El Segundo Boulevard, Rosecrans Avenue, Inglewood Avenue, Hawthorne Boulevard, Redondo Beach Boulevard, Artesia Boulevard, and Crenshaw Boulevard.

3.1-3.6 Arterial Network

Key north-south and east-west arterials in the RSAs are listed below (along with the jurisdictions through which they run) and shown in Figure 3.1-6. Table 3.1-6 provides key characteristics for RSA arterials, such as number of lanes, length, jurisdiction, and surrounding land uses. Each local jurisdiction has a specific naming scheme for the classes of roadways within its local limits. Common classifications include arterials, secondary arterials, and collector roadways.

Major North-South Arterials (listed from west to east):

- Inglewood Avenue – Communities of Del Aire and Lennox (unincorporated Los Angeles County) and Cities of Hawthorne, Lawndale, and Redondo Beach
- Hawthorne Boulevard (also designated SR-107 between I-405 and SR-1) – Cities of Lawndale, Redondo Beach, and Torrance
- Madrona Avenue/ Prairie Avenue – Cities of Torrance and Lawndale
- Crenshaw Boulevard – City of Torrance

Major East-West Arterials (listed from north to south):

- Manhattan Beach Boulevard – Cities of Manhattan Beach, Lawndale, and Redondo Beach
- Artesia Boulevard (SR-91) – Cities of Manhattan Beach, Lawndale, Redondo Beach, and Torrance
- Ripley Avenue/ Redondo Beach Boulevard: Cities of Redondo Beach and Lawndale
- 190th Street – Cities of Redondo Beach and Torrance
- Del Amo Boulevard – City of Torrance
- Torrance Boulevard – City of Torrance

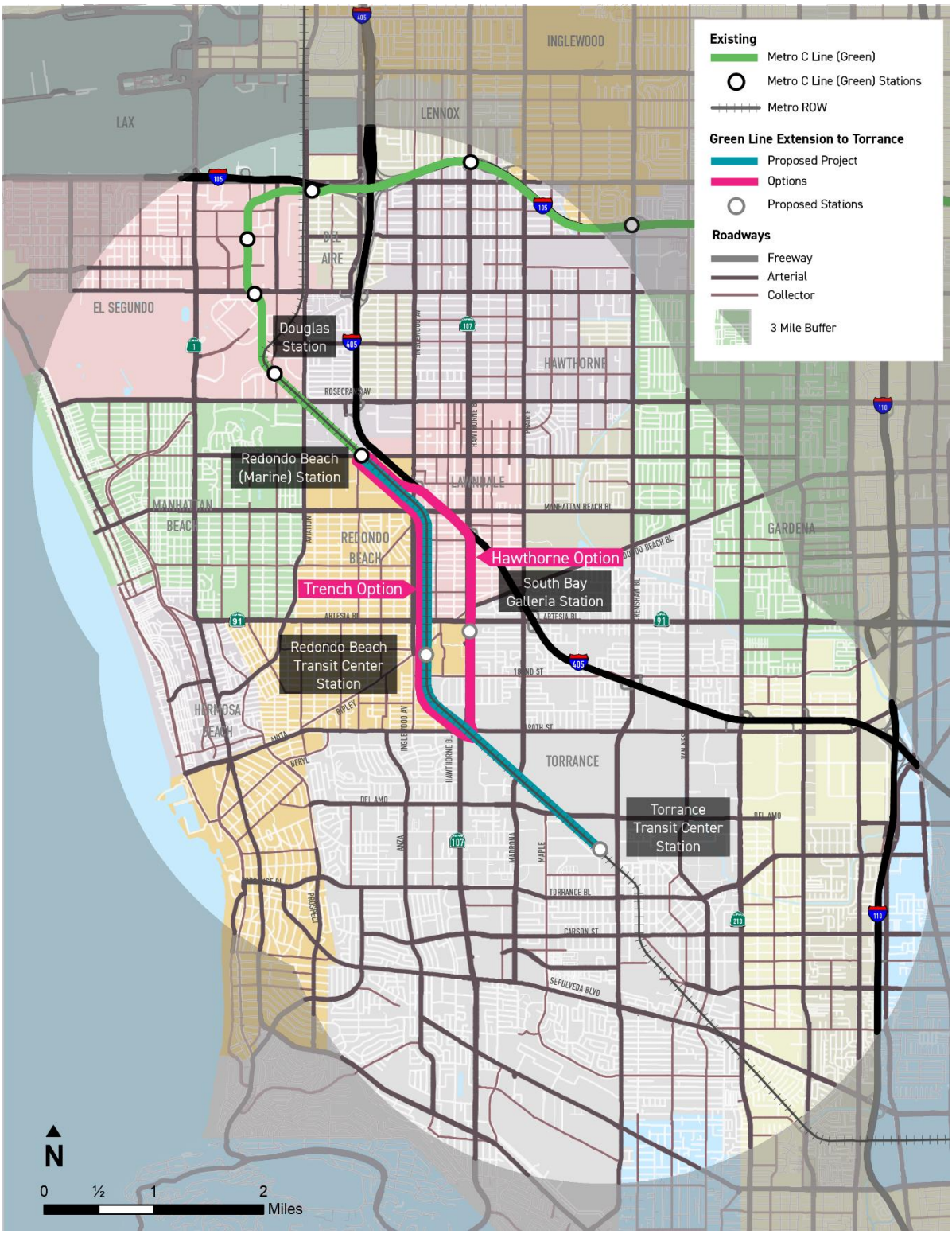
3.1-3.7 Planned Roadway Improvements

Metro's 2020 LRTP, *Our Next LA*, includes funding for planned roadway improvement projects within the RSAs, which includes various ramp and interchange improvements along the I-405 and I-105 freeways. This project and the other roadway improvements in the Project Study Area are included in the future year conditions. Study area projects expected to be completed before the operation of the Proposed Project included in *Our Next LA* include I-105 ExpressLanes from I-405 to I-605.

3.1-3.8 Roadway Operations and LOS

Consistent with SB 375 and Section 15064.3 of the CEQA Guidelines, LOS on roadway segments and at intersections within the RSAs are not required to be evaluated within the context of this EIR.

Figure 3.1-6 Project Study Area Base Year Roadways and Classifications



Source: Fehr & Peers, 2022

Table 3.1-6 Project Study Area Base Year Roadways-Key Characteristics

Arterial	Direction	Jurisdiction	Study Area Extent	Study Area Length (mi)	Lanes in Study Area
Inglewood Ave	North-South	Del Aire (Unincorporated) Lennox (Unincorporated) Hawthorne Lawndale Redondo Beach	El Segundo Blvd – 190th St	4.0	El Segundo Blvd – Manhattan Beach Blvd: 4 lanes Manhattan Beach Blvd – Artesia Blvd: 6 lanes Artesia Blvd – 190th St: 4 lanes
Hawthorne Blvd	North-South	Lawndale Redondo Beach Torrance Caltrans	Imperial Hwy – Pacific Coast Hwy	8.6	Imperial Hwy – 159th St: 6 lanes 159th St – Redondo Beach Blvd: 7 lanes (4 SB, 3 NB) Redondo Beach Blvd – Lomita Blvd: 8 lanes Lomita Blvd – Pacific Coast Hwy: 7 lanes (3 SB, 4 NB)
Prairie Ave/ Madrona Ave	North-South	Hawthorne Torrance Lawndale	Imperial Hwy – Sepulveda Blvd	7.4	Imperial Hwy – Rosecrans Ave: 6 lanes Rosecrans Ave – Manhattan Beach Blvd: 5 lanes (2 SB, 3 NB) Manhattan Beach Blvd – 190th St: 5 lanes (2 NB/SB, 1 center turn lane) 190th St – Sepulveda Blvd: 6 lanes
Crenshaw Blvd	North-South	Hawthorne Gardena Torrance	El Segundo Blvd – Pacific Coast Hwy	8.7	El Segundo Blvd – Pacific Coast Hwy: 6 lanes
Manhattan Beach Blvd	East-West	Manhattan Beach Lawndale Redondo Beach	Manhattan Ave - Van Ness Ave	5.3	Manhattan Ave – Pacific Ave: 2 lanes Pacific Ave – Aviation Blvd: 4 lanes Aviation Blvd – Inglewood Ave: 6 lanes Inglewood Ave – Van Ness Ave: 4 lanes
Artesia Blvd	East-West	Manhattan Beach Lawndale Redondo Beach Torrance Caltrans	Pacific Coast Hwy – Normandie Ave	5.5	Sepulveda Blvd – Normandie Ave: 4 lanes (typ. 6 lanes near major intersections)
Redondo Beach Blvd	East-West	Redondo Beach Lawndale	Artesia Blvd – Western Ave	2.8	Artesia Blvd – Western Ave: 2 lanes
190th St	East-West	Redondo Beach Torrance	Anita St - Vermont Ave	5.1	Anita St – Hawthorne Blvd: 4 lanes Hawthorne Blvd– Vermont Ave: 6 lanes

Arterial	Direction	Jurisdiction	Study Area Extent	Study Area Length (mi)	Lanes in Study Area
Del Amo Blvd	East-West	Torrance	Diamond St – Western Ave	4.2	Diamond St – Prospect Ave: 2 lanes Prospect Ave – Western Ave: 4 lanes
Torrance Blvd	East-West	Torrance	Catalina Ave – Vermont Ave	5.8	Catalina Ave – Anza Ave: 4 lanes Anza Ave – Madrona Ave: 6 lanes Madrona Ave – Crenshaw Blvd: 4 lanes plus frontage road Crenshaw Blvd – Vermont Ave: 4 lanes

Source: Fehr & Peers, 2021

3.1-3.9 Pedestrian Facilities

The pedestrian circulation system varies across the RSA, depending on the density, mix of land uses and vehicular circulation patterns. In some areas, pedestrian flow is impeded due to missing or narrow sidewalks and/or obstructions, such as: utility poles, faded crosswalk markings and overgrown landscaping.

The RSA for potential pedestrian hazards is approximately one half-mile radius around proposed stations and 500 feet on either side of the proposed alignment. Existing pedestrian conditions within the RSA were qualitatively assessed for potential hazards considering the conditions of transportation safety and emergency access. The following summarizes the analysis results for the study locations:

- **Redondo Beach Transit Center (TC) Station (Proposed Project and Trench Option) –** Figure 3.1-7 shows the existing pedestrian conditions around the proposed station south of the intersection of Grant and Kingsdale Avenues. Pedestrian crossing is allowed across all legs of the intersection and continuous sidewalks adjacent to landscaped parkways are also provided. At the southbound approach to the intersection on Kingsdale Avenue, a channelized, uncontrolled right turn is a potential conflict location for pedestrians. A pedestrian refuge island is provided for pedestrians crossing the north leg of this intersection. However, the crosswalk and island are located immediately following the right turn but before the stop sign for right-turning vehicles. The wide curb radius at the southbound right slip lane encourages fast vehicle speeds on the turn directly into the crosswalk. On 182nd Street between Hawthorne Boulevard and the existing freight railroad tracks east of Firmona Avenue, sidewalks are discontinuous. Sidewalks are present on both sides of the street on 182nd Street between Inglewood Avenue and Firmona Avenue and again between Hawthorne Boulevard and Amie Avenue. Following Grant Avenue southbound away from the station entrance, sidewalks are present on both sides of the street throughout the immediate station area west to Inglewood Avenue. However, while Grant Avenue passes through a residential neighborhood immediately west of the proposed station entrance, it also crosses under a rail bridge west of Condon Avenue, under which a narrow sidewalk is hemmed in by high concrete walls. Along Hawthorne Boulevard between 169th Street and 182nd Street, sidewalks are present on both sides of the street. Station access from Hawthorne Boulevard between Artesia Boulevard and 182nd Street lacks a direct east-west pedestrian route through the South Bay Galleria parking lot, as

sidewalks are not continuous. Curb ramps may not be ADA compliant, particularly along 182nd Street, Grant Avenue, and Kingsdale Avenue.

- **South Bay Galleria Station (Hawthorne Option)** – Under the Hawthorne Option, this station replaces the Redondo Beach TC Station (although the Redondo Beach TC itself would remain). As shown in Figure 3.1-9, this station would be in the median of Hawthorne Boulevard immediately south of the intersection with Artesia Boulevard, with a passenger entry plaza at grade and an elevated station platform in line with the elevated guideway. The South Bay Galleria Station would be accessed from the existing crosswalks at the intersection of Artesia Boulevard. The Project additionally proposes a new signalized mid-block crossing at the south end of the station approximately 360 feet south of the Artesia Boulevard intersection and immediately north of the existing South Bay Galleria driveway, which would provide a coordinated signal for pedestrians crossing to and from the median plaza from either side of Hawthorne Boulevard. Although Hawthorne Boulevard features sidewalks for the entire length of the RSA, widths vary significantly block to block. Many intersections feature wide right turn lanes and shallow curb radii that permit vehicles to turn at high speed. The South Bay Galleria Station would be approximately one mile from the Redondo Beach Transit Center, on the opposite side of the South Bay Galleria. Buses that stop on Hawthorne Boulevard adjacent to the South Bay Galleria Station would likely stop at the Redondo Beach Transit Center, providing a connection for patrons that need to access both.
- **Torrance TC Station (Proposed Project)** – The Torrance TC is adjacent to the intersection of Crenshaw Boulevard and Maricopa Street. Figure 3.1-8 shows the existing pedestrian conditions around the proposed station. Pedestrian access to and through existing Torrance TC. At the intersection of Crenshaw Boulevard and Maricopa Street sidewalks are provided on all approaches and directions, but no pedestrian crossing is allowed across the north leg of the intersection. Curb ramps may not be ADA compliant. Along Maricopa Street, the sidewalk on the north side of the road discontinues west of the existing driveway to the site, resuming approximately 1,650 feet west at the intersection with Hickory Street. Sidewalk is present on the south side of Maricopa Street west to Maple Street, just outside the station area. Along Alaska Avenue, sidewalks are not present on the east side of the street adjacent to the future station site. Sidewalks are present on the west side of Alaska Avenue north of Maricopa Street until the existing BNSF railroad crossing, after which they discontinue. On Crenshaw Boulevard, sidewalks are present on both sides of the street. The nearest crosswalk north of the intersection of Crenshaw Boulevard and Maricopa Street can be found at the intersection at Crenshaw Boulevard and West 208th Street, approximately 1,600 feet north. That intersection is signalized and provides a crosswalk along the north and east legs of the intersection. Continuing north, crosswalks are provided on all four legs of the intersection at Crenshaw Boulevard and Del Amo Boulevard; however, sidewalks are not present on Del Amo Boulevard west of Crenshaw Boulevard.
- **182nd Street between Inglewood Avenue and Prairie Avenue**– Sidewalks are discontinuous in some areas and signalized or marked pedestrian crossings are located at the intersections noted below. The only signalized intersections in the RSA are at Inglewood Avenue, Hawthorne Boulevard, and Prairie Avenue.

  - Inglewood Avenue (signalized, south and west legs)
  - Hawthorne Boulevard (signalized, all four legs)
  - Bailey Drive (unsignalized mid-block crossing 182nd)
  - Prairie Avenue (signalized, all four legs)

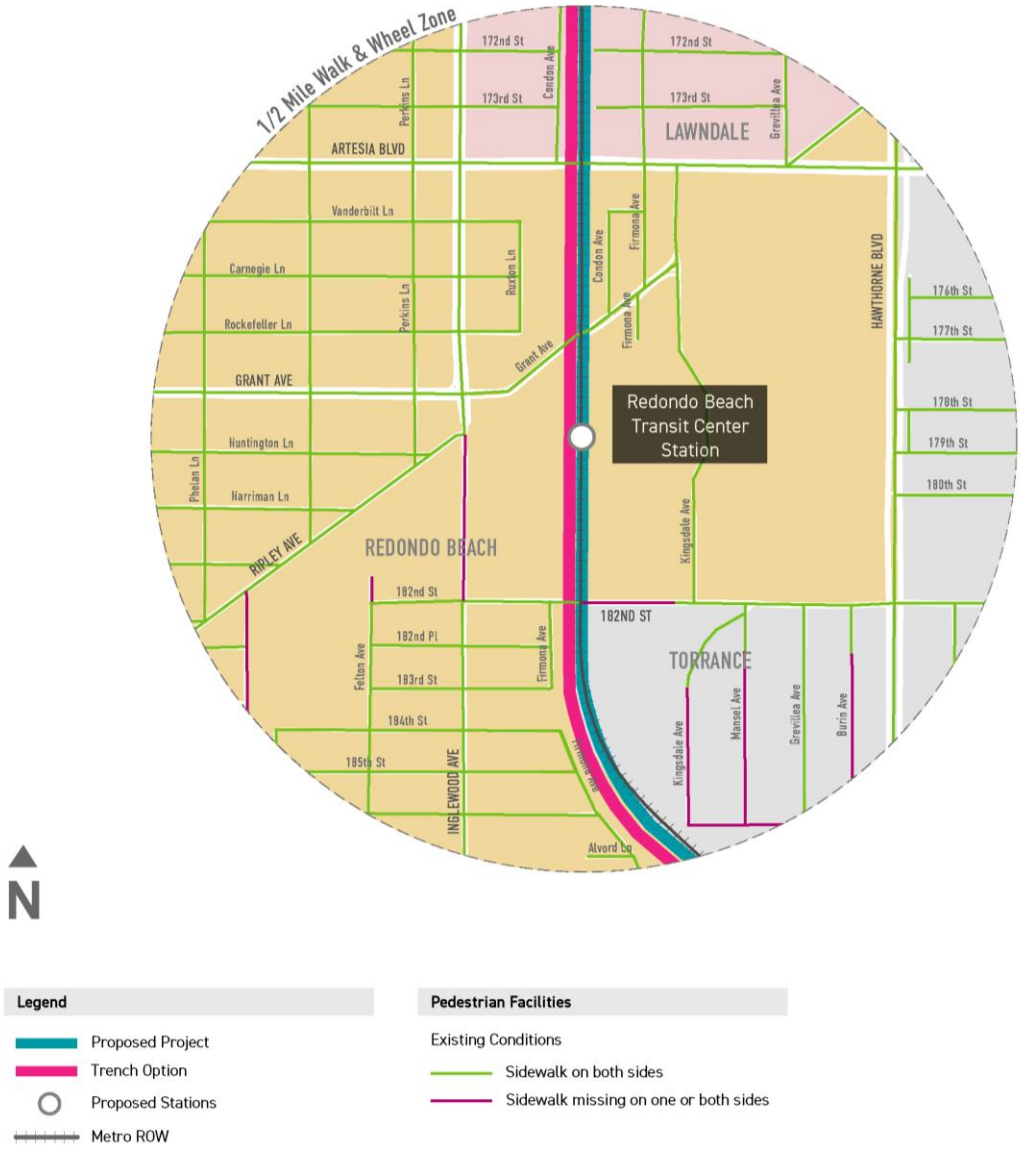
> **Hawthorne Boulevard between I-405 and 190th Street** – Sidewalks are provided on both sides of Hawthorne Boulevard. Signalized or marked pedestrian crossings are located at regular intervals every few hundred feet along Hawthorne Boulevard north of Artesia Boulevard; south of the Artesia Boulevard intersection the marked crossings are more widely spaced.

- 162nd Street (signalized, all four legs)
- 164th Street (unsignalized east-west across Hawthorne Boulevard, north leg)
- 166th Street (signalized, all four legs)
- Midblock between 167th and 168th Street (signalized east-west across Hawthorne Boulevard)
- 169th Street (signalized, all four legs)
- 171st Street (unsignalized east-west across Hawthorne Boulevard)
- Redondo Beach Boulevard (signalized, all four legs)
- Artesia Boulevard (signalized, all four legs)
- 177th Street (signalized, east, west, and south legs)
- 182nd Street (signalized, all four legs)
- 186th Street (signalized, all four legs)
- 190th Street (signalized, east, west, and south legs)

> **Inglewood Avenue between 172nd Street and 185th Street** - Sidewalks are available on both sides of the street north of Grant Avenue. South of Grant Avenue and north of 182nd Street, the sidewalk discontinues on the east side of the street. Marked pedestrian crossings include:

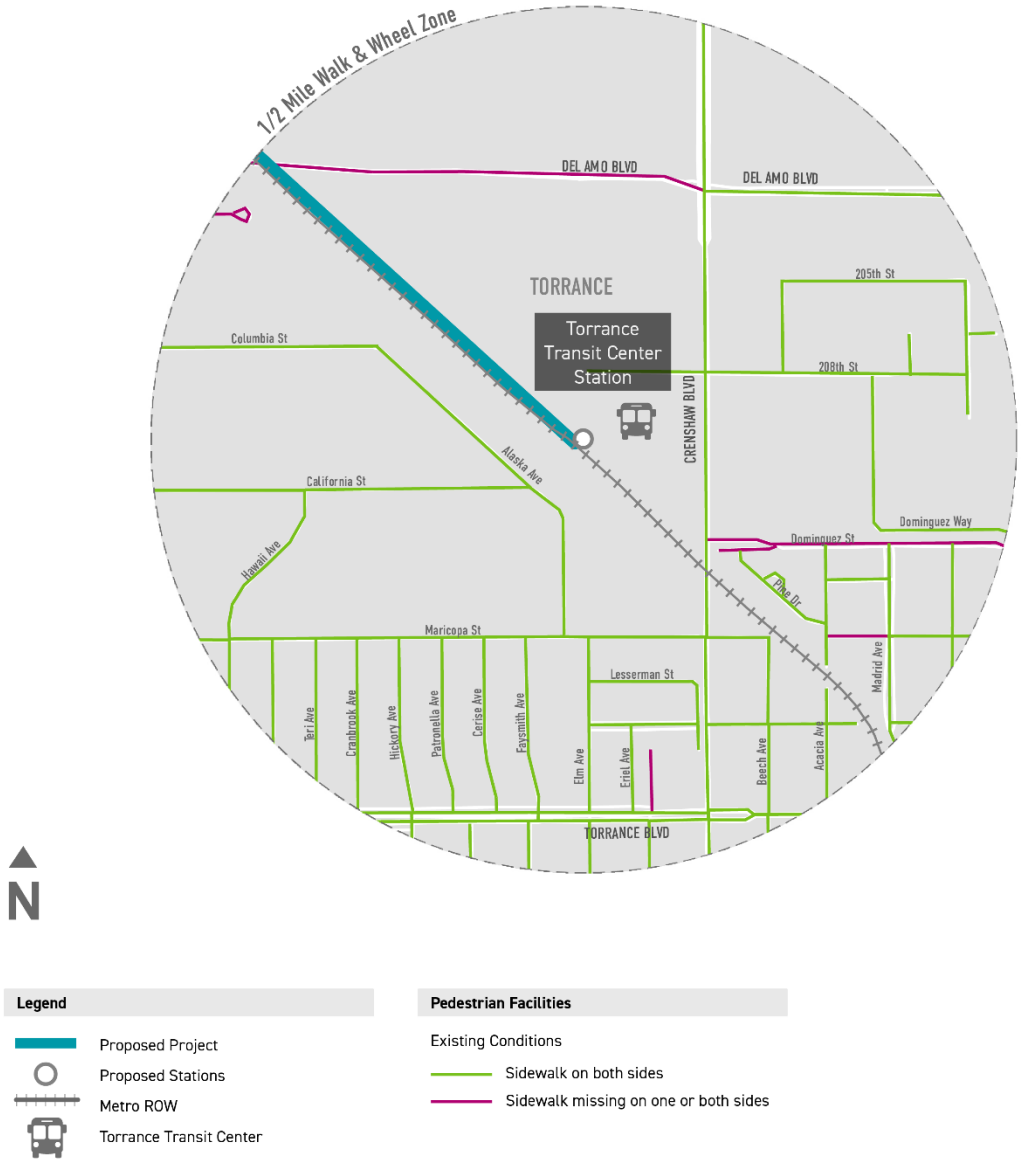
- Artesia Boulevard (signalized, north, south, and west legs)
- Grant Avenue (signalized, all four legs)
- Ripley Avenue (unsignalized, west leg only)
- 182nd Street (signalized, south and west legs)

Figure 3.1-7 Base Year Pedestrian Facilities (Redondo Beach TC Station)



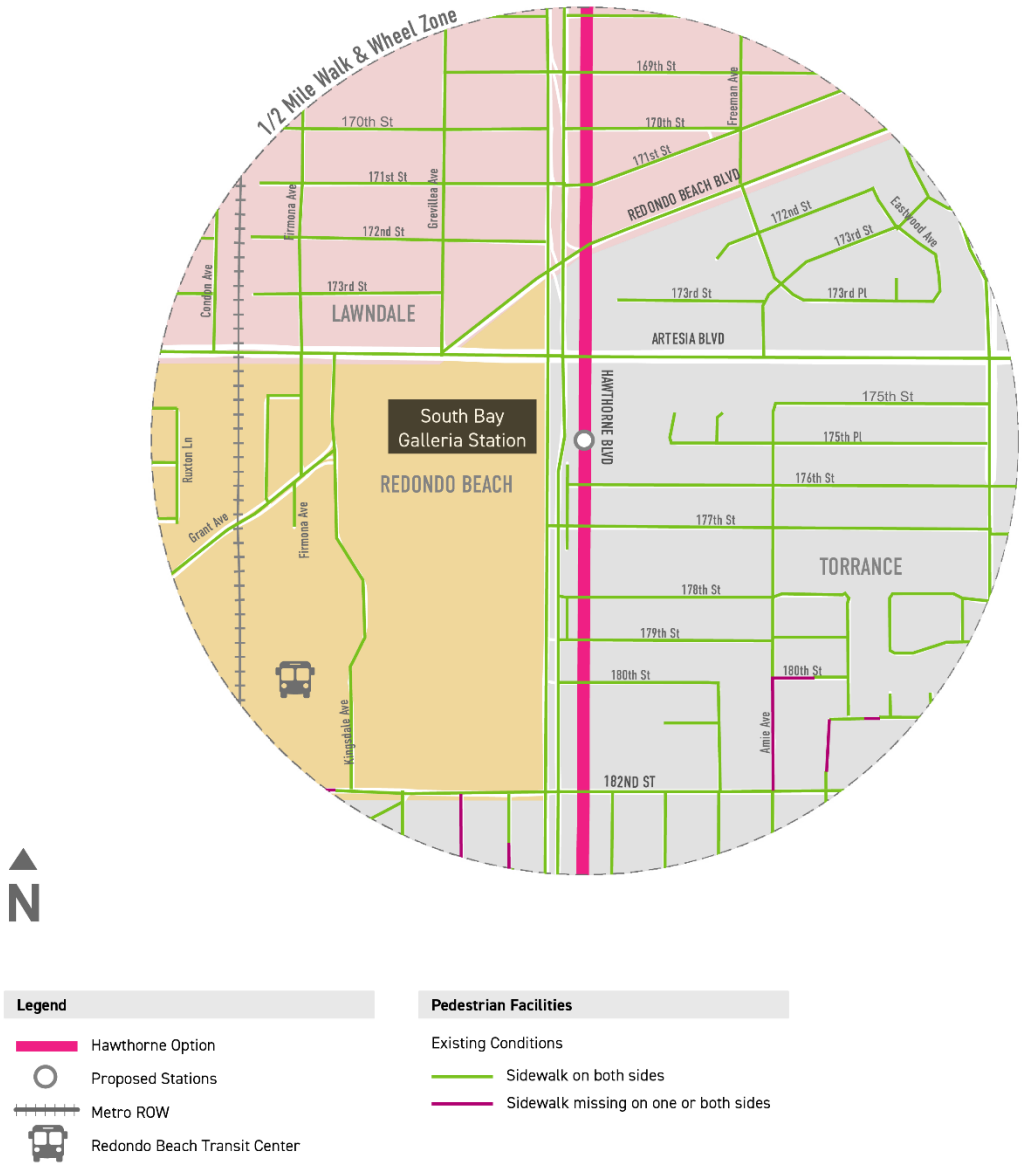
Source: Fehr & Peers, 2022

Figure 3.1-8 Base Year Pedestrian Facilities (Torrance TC Station)



Source: Fehr & Peers, 2022

Figure 3.1-9 Base Year Pedestrian Facilities (South Bay Galleria Station)



Source: Fehr & Peers, 2022

3.1-3.10 Bicycle Facilities

Bicycle facilities are classified based on the 2020 Caltrans HDM terminology:

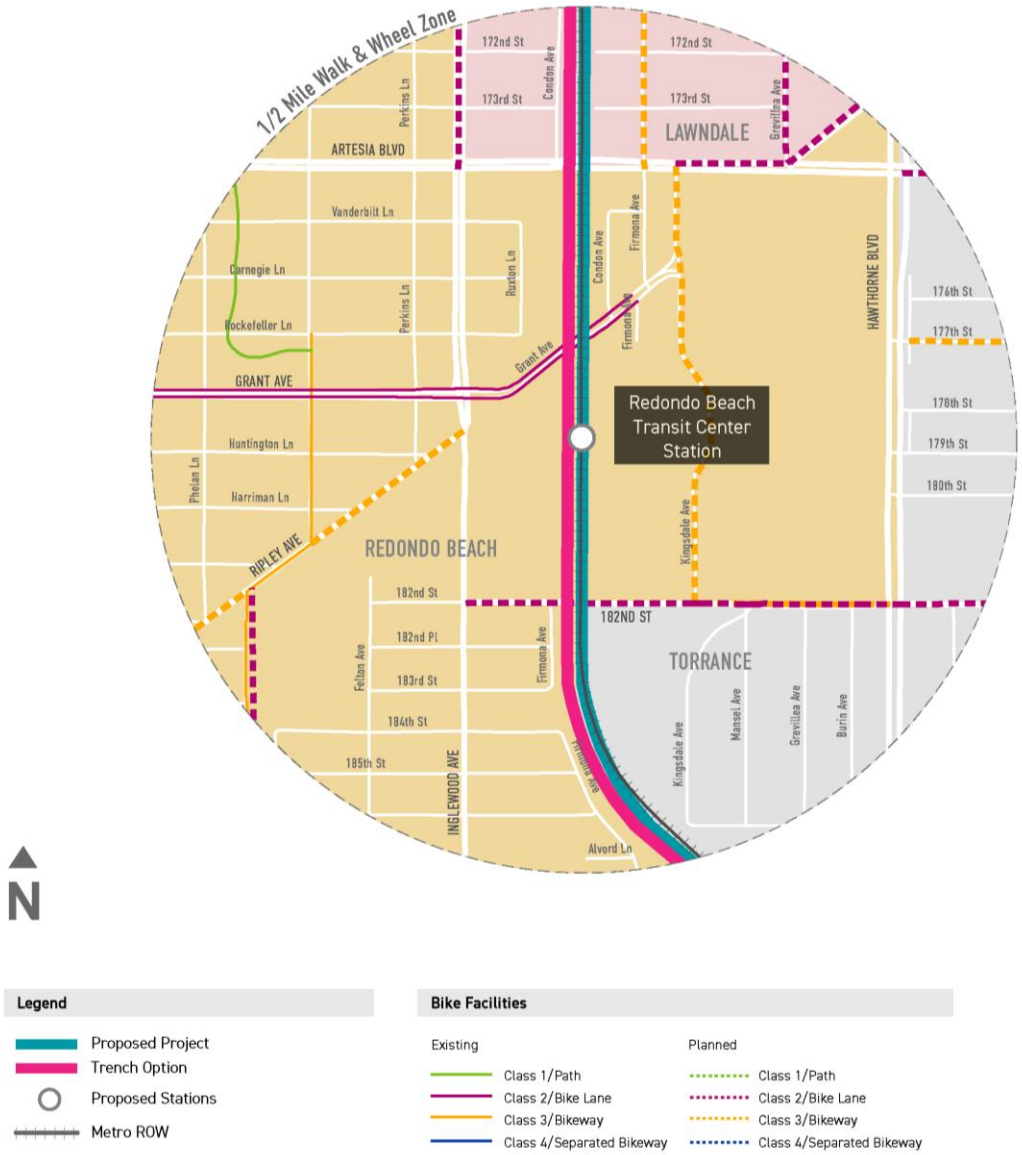
- **Class I Bikeway (Bike Path)** – A completely separate ROW for the exclusive use of bicycles and pedestrians, with vehicle and pedestrian crossflows minimized
- **Class II Bikeway (Bike Lane)** – A restricted ROW designated for the use of bicycles, with a striped lane on a street or a highway. Vehicle parking along with vehicle and pedestrian crossflows are permitted
- **Class III Bikeway (Bike Route)** – A ROW designated by signs or pavement markings for shared use with pedestrians and motor vehicles
- **Class IV Bikeway (Separated Bikeway)** – A ROW for the exclusive use of bicycles which provides a required separation between the bikeway and through vehicular traffic

The base year and planned bicycle facilities in the RSA are illustrated by station area in Figure 3.1-10 through Figure 3.1-12**,** and for the larger 3-mile study area in Figure 3.1-13.

Base year facilities in or near proposed station areas are described below.

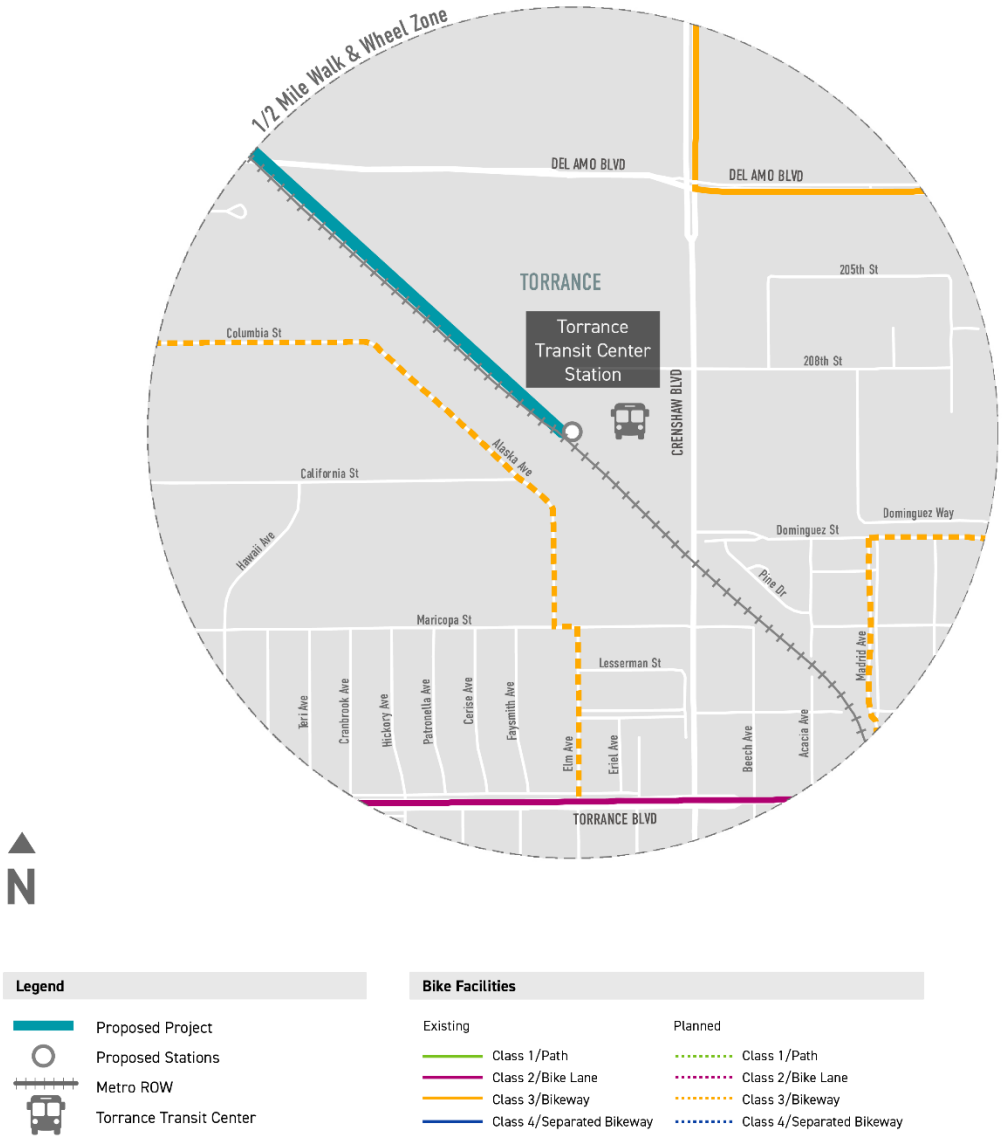
- **Redondo Beach TC (Proposed Project and Trench Option)** – A bike lane is located on Grant Avenue, beginning at Firmona Avenue immediately adjacent to the proposed station site, and continuing west to Harkness Lane
- **South Bay Galleria Station (Hawthorne Option)** – A bike lane is located on Grant Avenue, beginning at Firmona Avenue immediately adjacent to the proposed station site, and continuing west to Harkness Lane. A bike route is located on Redondo Beach Boulevard, starting from Hawthorne Boulevard and heading east to the City of Gardena (marked by a sign only), and on Prairie Avenue/Madrona Avenue (marked by a sign only), starting at Artesia Boulevard and heading south to Sepulveda Boulevard.
- **Torrance TC** (**Proposed Project)** – Within the station area, a bike lane is located south of the station on Torrance Boulevard, providing east-west connectivity across the City of Torrance. Class III facilities are located on Crenshaw Boulevard north of Del Amo Boulevard, and on Del Amo Boulevard east of Crenshaw Boulevard. There are no existing bicycle facilities providing direct access to the proposed station site.

Figure 3.1-10 Base Year and Planned Bicycle Facilities (Redondo Beach TC Station)



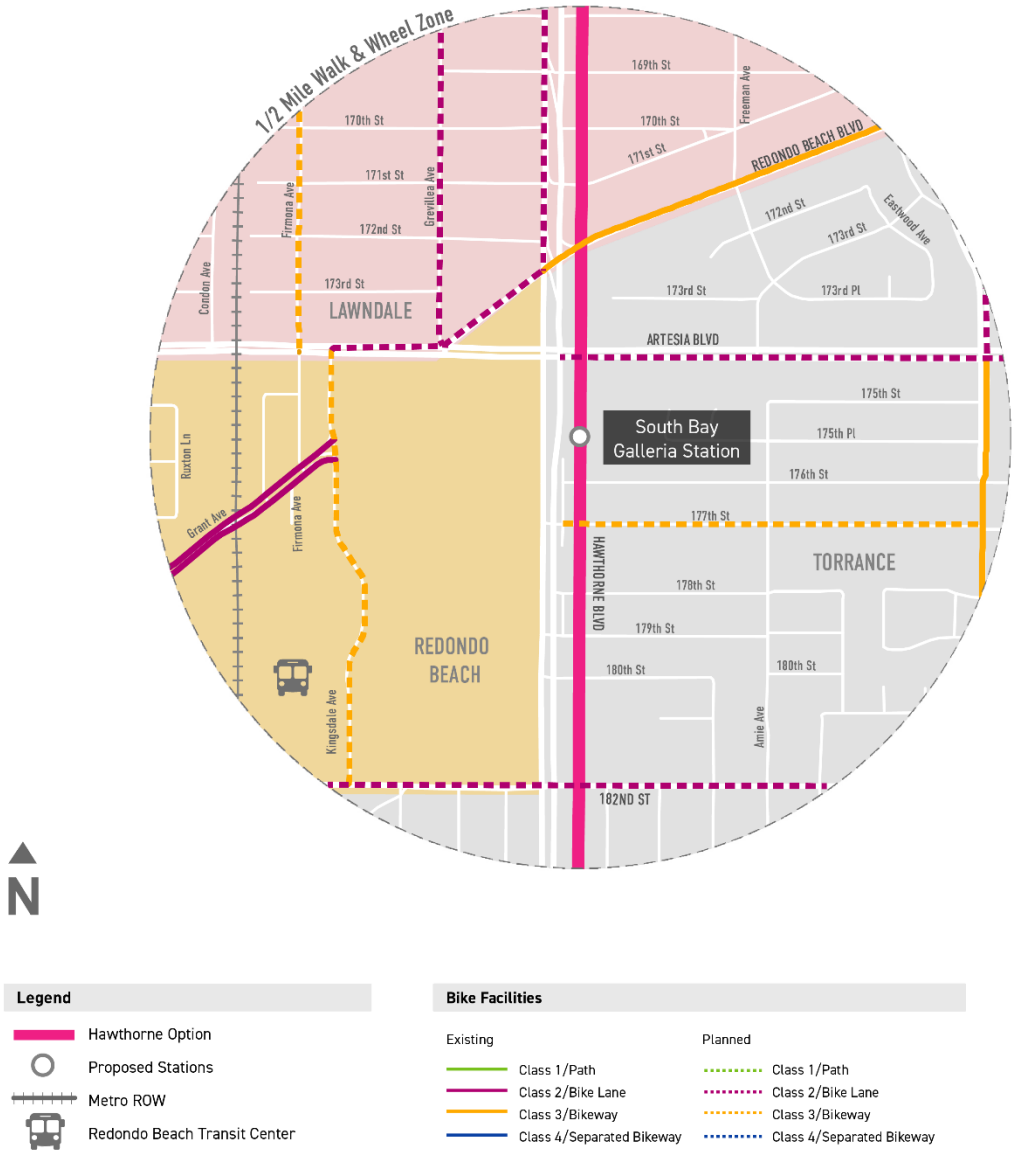
Source: Fehr & Peers / Cityworks Design, 2022

Figure 3.1-11 Base Year and Planned Bicycle Facilities (Torrance TC Station)



Source: Fehr & Peers / Cityworks Design, 2022

Figure 3.1-12 Existing and Planned Bicycle Facilities (South Bay Galleria Station)



Source: Fehr & Peers / Cityworks Design, 2022

Figure 3.1-13 Base Year Bicycle Facilities within Three Miles of the Project

Source: Fehr & Peers / Cityworks Design, 2022

3.1-3.11 Safety

The Proposed Project would cross the following streets at-grade:

- 170th Street, between Condon Avenue and Firmona Avenue, at the site of an existing freight rail at-grade crossing
- 182nd Street, between Inglewood Avenue and Hawthorne Boulevard, east of Firmona Avenue and west of El Nido Park, at the site of an existing freight rail at-grade crossing

In both locations, the existing freight rail crossing is located on a straight segment of roadway with clear visibility and is equipped with a crosswalk sign, flashing lights, and gate arms. No existing freight grade crossings will be closed or grade separated.

Under the Trench Option, the Project would cross the same streets in a grade-separated trench that would maintain the existing freight rail crossings at-grade. There is no change to the number of existing freight grade crossings in the RSA.

The Hawthorne Option would run in an elevated structure along Hawthorne Boulevard between I-405 and 190th Street where the option rejoins the Proposed Project alignment, with no at-grade segments. However, the Hawthorne Option includes support columns and other infrastructure in the median of Hawthorne Boulevard and reconfiguration of certain median areas and intersections. Existing freight grade crossings along the Metro ROW would remain except for the segment south of 190th Street.

3.1-3.12 Collisions

A collision analysis was conducted for each station area to evaluate collision patterns around the proposed stations. Vehicle-on-vehicle and pedestrian- and bicycle-involved collisions for the five years from 2014 – 2018 were included in the analysis. Figure 3.1-14, Figure 3.1-15, and Figure 3.1-16 show the pedestrian, bicycle, and vehicle-only collisions respectively for the combined study area.

To provide context of the area, Table 3.1-7 compares the rate of serious injuries and fatalities per 100 million VMT (five year rolling average to 2017) for the jurisdictions in the RSA with the SCAG region and Los Angeles County.

Table 3.1-7 Study Jurisdictions Severe and Fatal Collision Rates

Jurisdiction	Serious Injuries per 100M VMT	Fatalities per 100M VMT
SCAG Region	3.37	0.96
Los Angeles County	3.92	0.88
Lawndale	6.71	0.00
Redondo Beach	3.36	0.83
Torrance	1.66	0.70

Source: Transportation Injury Mapping System (TIMS) California Safety PM Target Setting Support Tool, 2022

Redondo Beach TC Station (Proposed Project and Trench Option)

Within the half-mile station area, a total of 32 pedestrian-involved collisions and 15 bicycle-involved collisions resulting in at least one report of pain occurred between 2014 and 2018. Among the pedestrian-involved collisions, two resulted in fatalities and three resulted in serious injuries. Both fatalities occurred on Hawthorne Boulevard, as did two of the three collisions resulting in severe injury. Among the bicycle-involved collisions, one resulted in a fatality, and none resulted in severe injury. The fatality occurred on Artesia Boulevard west of Inglewood Avenue.

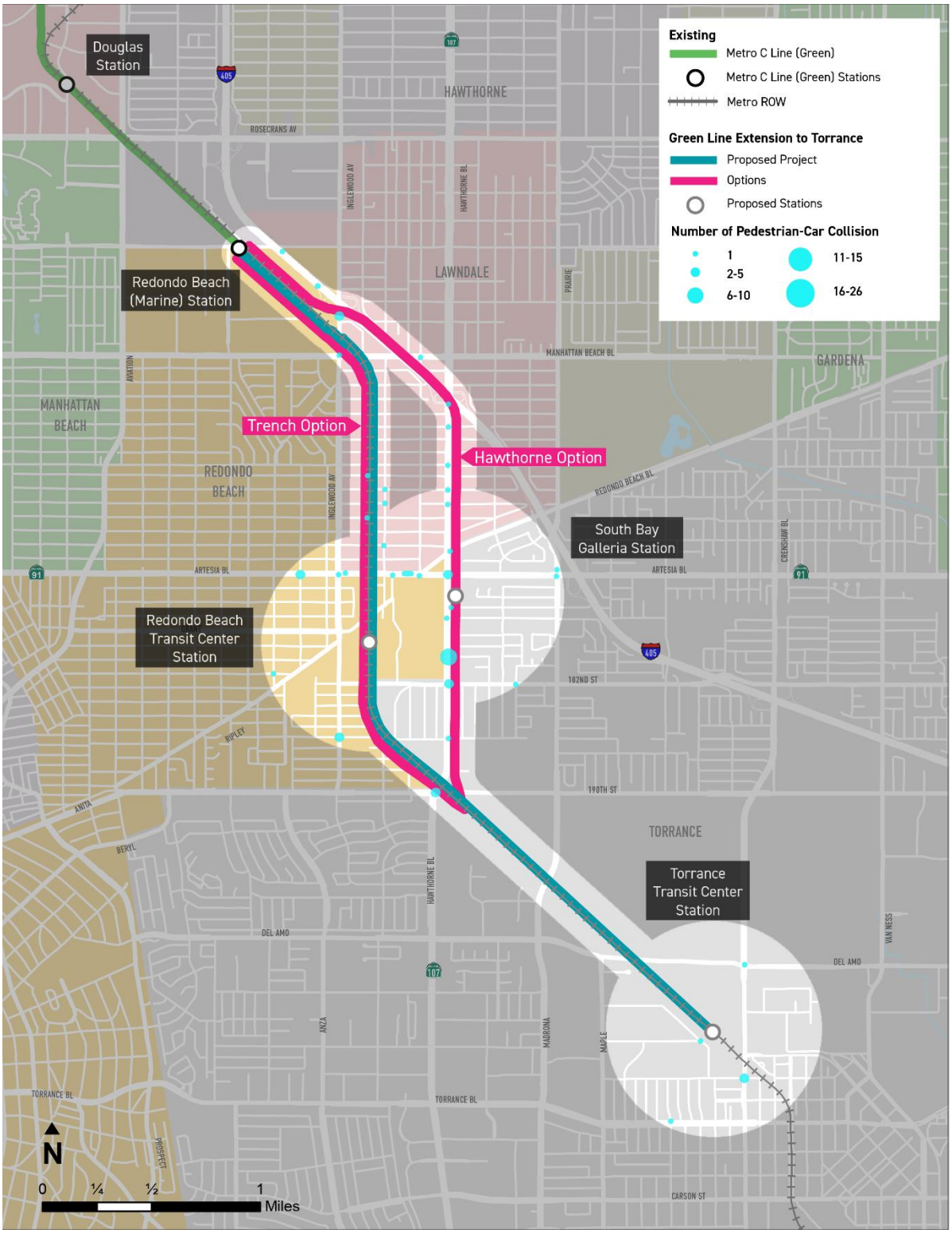
South Bay Galleria Station (Hawthorne Option)

Within the station area, a total of 30 pedestrian-involved collisions and 22 bicycle-involved collisions resulting in at least one report of pain occurred between 2014 and 2018. Among the pedestrian-involved collisions, two resulted in fatalities and six resulted in serious injuries. Both fatalities occurred on Hawthorne Boulevard, as did two collisions resulting in severe injury. The other collisions resulting in severe injury occurred on Artesia Boulevard at the intersection with Prairie Avenue, on 182nd Street east of Hawthorne Boulevard, on Hawthorne Boulevard north of the proposed station area, and in the neighborhood north of the South Bay Galleria. Among the bicycle-involved collisions, none resulted in fatalities or severe injury.

Torrance TC Station (Proposed Project)

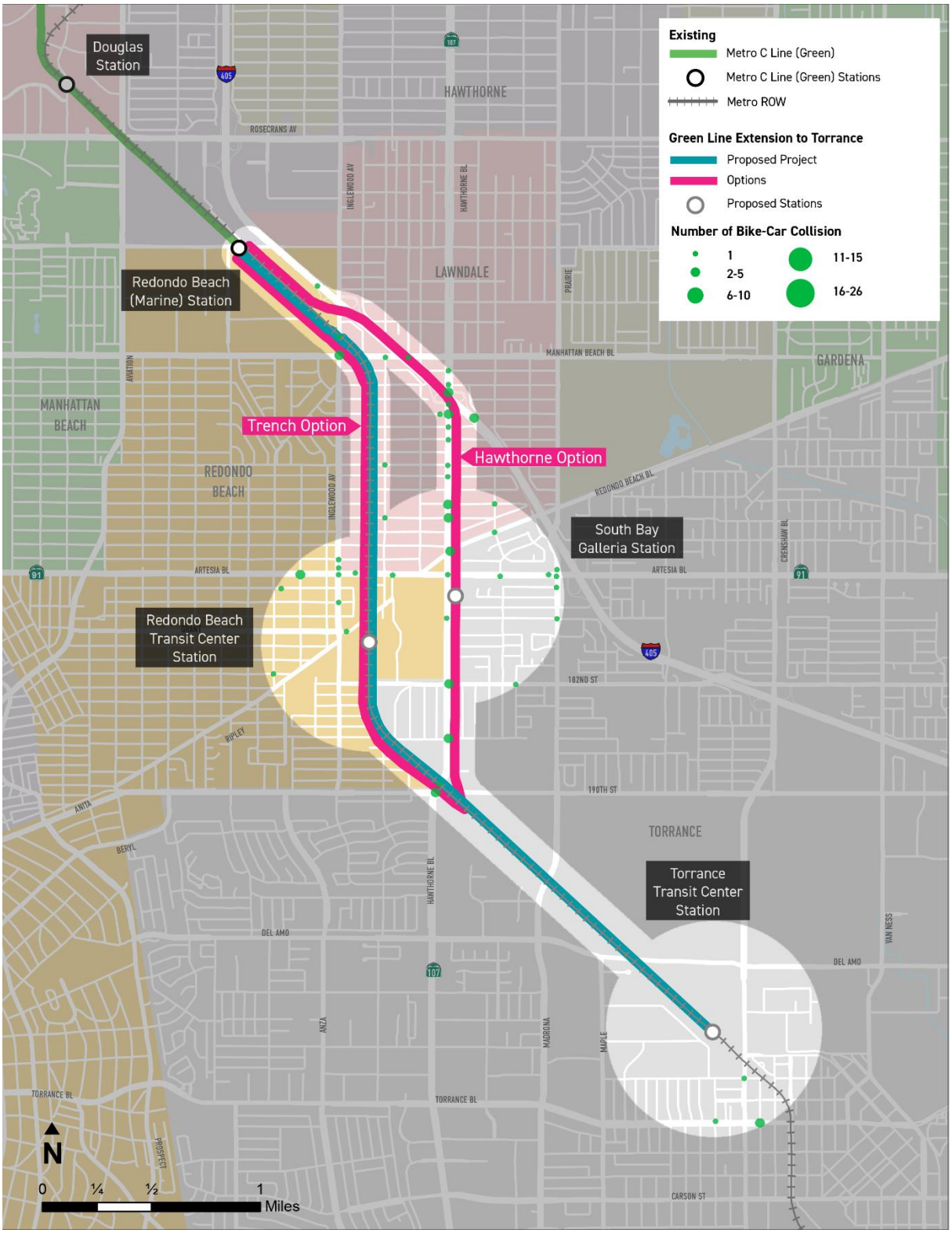
Within the station area, a total of nine pedestrian- or bicycle-involved collisions occurred between 2014 and 2018. No pedestrian-involved collisions resulted in fatalities. Both pedestrian-involved collisions resulting in severe injury occurred at the intersection of Crenshaw Boulevard and Del Amo Boulevard.

Figure 3.1-14 Vehicle-Pedestrian Collisions in Combined Project Study Area (2014-2018)



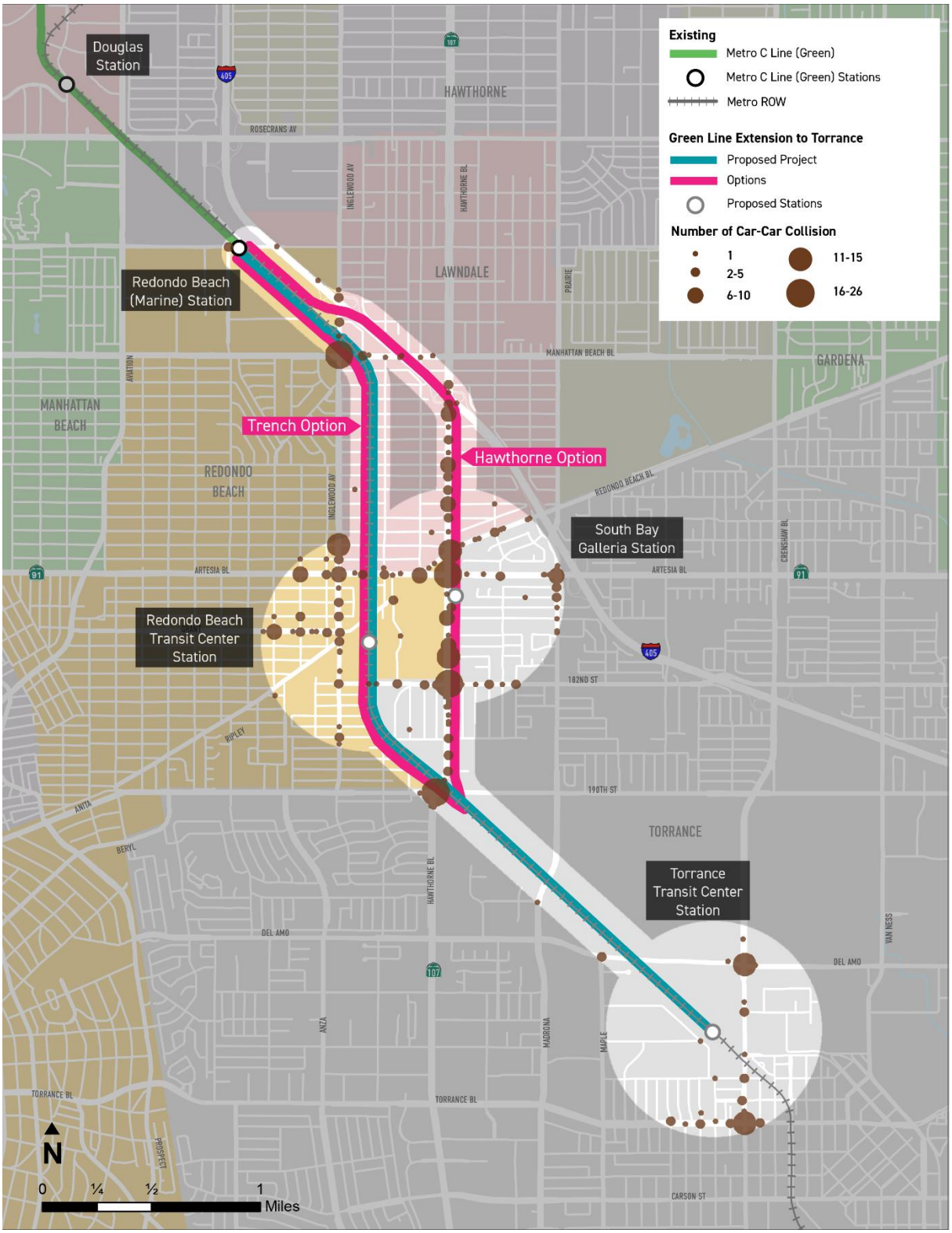
Source: Fehr & Peers, 2022

Figure 3.1-15 Vehicle-Bicycle Collisions in Combined Project Study Area (2014-2018)



Source: Fehr & Peers, 2022

Figure 3.1-16 Vehicle-Vehicle Collisions in Combined Project Study Area (2014-2018)



Source: Fehr & Peers, 2022

3.1-3.13 Emergency Services

The Project Study Area is located within the Los Angeles County Emergency Medical Service (EMS) Service Planning Area (SPA) 8. Per the 2018 Los Angeles County EMS System Report (Los Angeles County, 2019), SPA 8 accounted for 15% of County population, 15% of hospitals, and 19% of EMS calls, indicating that EMS calls in the area are higher than should be expected given the population.

The City of Lawndale fire services are provided by the Los Angeles County Fire Department (LACoFD), which had an average response time of six minutes and five seconds as of 2013 (Los Angeles County, 2013).

The City of Redondo Beach fire services are provided by the Redondo Beach Fire Department (RBFD). The city is served by three fire stations. The closest fire station to the Redondo Beach station is Fire Station 2, located west of the South Bay Galleria at Mackay Lane and Grant Avenue (this would also be the closest City of Redondo Beach fire station to the Hawthorne Option's South Bay Galleria Station). During the 2018-2019 fiscal year, RBFD responded to 7,270 emergency incidents. The average response time of all calls was four minutes and 16 seconds (City of Redondo Beach, 2020a).

The City of Torrance fire services are provided by the Torrance Fire Department (FD). The city is served by six fire stations. The closest fire station to the Torrance TC station is Fire Station 1, located south of the station at Crenshaw Boulevard and Carson Boulevard. Per Torrance FD, response time for the first unit on scene averaged seven minutes and 24 seconds. The overall department standard for EMS calls is six minutes and four seconds and for Fire/Special Operations is six minutes and 24 seconds (City of Torrance FD, 2022).

Other local fire departments within the RSA include the El Segundo Fire Department and the Manhattan Beach Fire Department. Fire stations within the RSA include, from north to south:

- Los Angeles County Fire Department Station 160, located at Rosecrans Avenue east of Aviation Boulevard
- Manhattan Beach Fire Foundation, located at Rosecrans Avenue west of Douglas Street
- Los Angeles County Fire Department Station 21, located at 147th Street east of Hawthorne Boulevard
- Manhattan Beach Station 2, located at Rowell Avenue and Manhattan Beach Boulevard
- Redondo Beach Station 2, located at Mackay Lane and Grant Avenue
- Torrance Fire Department Station 3, located west of the I-405 along 182nd Street
- Torrance Fire Department Station 5, located west of Hawthorne Boulevard along Del Amo Circle
- Torrance Fire Department Station 1, located at Crenshaw Boulevard and Carson Boulevard

3.1-4 Environmental Impacts

3.1-4.1 Will the Proposed Project conflict with a program, plan ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

This section evaluates the consistency of the Proposed Project with local plans and policies. Relevant design standards from the regulatory framework, such as ADA or the MUTCD, are addressed under the evaluation of geometric hazards. Relevant plans, goals, policies and/or objectives that affect transportation and mobility in the cities of Lawndale, Redondo Beach, and Torrance are evaluated, with a detailed breakdown by document in Appendix 3.1-A, Transportation Policy Analysis.

3.1-4.1.1 Construction Impacts

Less than Significant Impact. Given the temporary nature of construction, it is not expected that construction of the Proposed Project would preclude any programs, plan ordinances, or policies addressing the circulation system. Construction will temporarily reduce travel lanes or potentially temporarily close access through railroad crossings, for which traffic may be detoured to another parallel route (for example, with a closure at 170th Street, traffic would detour to 162nd Street or Artesia Boulevard).

- Transit: These closures do not directly affect any existing transit routes and also would not preclude transit service from being detoured to maintain operation. Construction of the project does not preclude jurisdictions from providing or expanding transit options.
- Roadway: The closures would not cause neighborhood cut-through traffic as, pursuant to PF-T-1, detour routes would be designated arterial streets, motorists would be alerted to the detours via signage, and the affected streets are not major corridors themselves.
- Bicycling: Construction would not preclude the planning or implementation of any known planned bicycle routes or facilities, because no facilities were identified directly on the streets that would be affected by construction.
- Walking: Construction could temporarily close walking access through at grade crossings on 170th or 182nd Street. However, walking detour routes would be accommodated within PF-T-1.

Pursuant to PF-T-1, prior to the initiation of localized construction activities for the Proposed Project, CTMPs would be prepared, detailing street closure information, detour plans, haul routes, and a staging plan to ensure safe access or alternate routes of travel for all road users and transit are provided. Thus, there would be a **less than significant impact** with regards to conflicts a program, plan, or policy addressing the circulation system during construction.

TRENCH OPTION

Less than Significant Impact. The construction of the proposed Trench Option does not introduce potential conflicts with programs, plans, ordinances, or policies. The location of construction activities is the same as the Proposed Project. However, it is anticipated that alternating full closures would occur under the Trench Option compared with the Proposed Project, where there will be only partial closures for most of its construction period. Construction of the bridges crossing the trenches would be phased so as not to simultaneously close parallel adjacent crossings. Construction of the Trench Option is estimated to take two years longer than the construction of the Proposed Project. Construction of the trench crossings would take longer than the at-grade crossing construction, the difference between the two is estimated on the order of months. As with the Proposed Project, PF-T-1 would ensure safe access or alternate routes of travel for all road users and transit are provided.

Thus, there would be a less than significant impact with regards to conflicts a program, plan, or policy addressing the circulation system during construction and thus would have a **less than significant impact**.

HAWTHORNE OPTION

Less than Significant Impact. The Hawthorne Option is similar to the Proposed Project in its relationship to programs, plans, ordinances, and policies, despite following a different alignment along I-405 and Hawthorne Boulevard. The following impacts could occur during the construction of the Hawthorne Option:

- Transit: During construction some existing bus stops may need to be temporarily relocated; this is a common practice and is communicated in advance to passengers and posted with signs. Because the project would be constructed in phases, it is anticipated that bus service would be maintained with stop relocations shifting in response to construction stages. Construction would not preclude planning for or expanding transit options.
- Roadways: The construction would occur in stages that would temporarily reduce travel lanes on Hawthorne Boulevard progressively in segments along the alignment. Additionally, there could be short-term closures of freeway shoulder and/or travel lanes and select ramps on I-405. Although these activities would temporarily reduce travel efficiency, alternate routes are available for travelers through the area on parallel major roadways. Pursuant to PF-T-1, during construction, access to businesses would be maintained during business hours, and access would remain to neighborhoods, although some detours may be required and would be signed. The project could temporarily increase the potential for neighborhood cut-through traffic, which would be addressed through the use of signed detours and other strategies to be included in the CTMPs.
- Bicycling and Walking: Similarly, access to bicycle routes and pedestrian facilities would remain during construction although some alternate routes for pedestrians may be required during construction on the east side of Hawthorne Boulevard when curb work would encroach on the sidewalk. Construction of the project would not preclude jurisdictions from planning or implementing improved bicycling and walking infrastructure. No existing or planned bicycle facilities are directly on the streets affected by construction. Small segments of intersecting bikeways, for example, on 190th Street immediately east of Hawthorne Boulevard, may be temporarily shifted, reduced, or closed during construction. Typically, signage warning road users to share the lane with bicyclists is provided for the reduced segment; the bike lane on either side of the construction activity would remain unaffected by the construction.

As with the Proposed Project, PF-T-1 would ensure safe access or alternate routes of travel for all road users and transit are provided. Thus, there would be a less than significant impact with regards to conflicts a program, plan, or policy addressing the circulation system during construction and thus there would be a **less than significant impact**.

3.1-4.1.2 Operational Impacts

Less than Significant Impact. The Proposed Project introduces a new transit option consistent with several local jurisdictions' policy objectives, provides for new bicycling and walking infrastructure along the ROW, and offers an alternative to driving that is anticipated to reduce vehicle trips. Because of this, the Proposed Project would have a **less than significant impact**. More detail on evaluating potential conflicts with policies is described by topic below: Transit, Roadways, Bicycling and Walking.

Policies Addressing Transit

Less than Significant Impact. Policies adopted by the affected jurisdictions regarding transit can be summarized as providing and expanding reliable and safe fixed-route transit. The Proposed Project extends Metro's access to the regional rail transit network and increases connections throughout the study area and to other areas of Los Angeles County. There are examples of specific policies, such as the City of Redondo Beach 2009 Circulation Element which specifically identify the extension of the Metro Green Line (now the C Line) and to create multi-modal transit hubs; similar language is included in the circulation elements for the cities of Lawndale and Torrance. The incorporation of the Proposed Project could cause minor alterations to existing bus routes to connect to stations to improve mobility and access to transit, these minor alterations would not frustrate any transit goals, policies, or plans adopted by the affected jurisdictions. The Proposed Project is therefore not inconsistent with related policies regarding transit.

Relevant regulatory plans, policies, and ordinances set forth by Metro, discussed in Section 2.2.16, include the 2020 LRTP, TOC Implementation Plan, Sustainability Strategic Plan, Goods Movement Strategic Plan, Measure M Expenditure Plan, BRT Vision & Principles Study, 2014 SRTP, Grade Crossing Safety Policy, FLM Strategic Plan, Complete Streets Policy, Vision 2028 Plan, Next Gen Bus Study, and ATSP. The Proposed Project is consistent with and would not conflict with Metro's plans.

Policies Addressing Roadways

Less than Significant Impact. Policies addressing the roadway network include maintaining or improving safe travel, protecting neighborhoods from cut-through traffic and excessive speeds, and maintaining efficient intersection operations. Above all, the changes in California State Law adopted in response to SB 743 provide that jurisdictions shall not treat traffic delay as a significant environmental effect and should instead evaluate the effects of development, plans, and transportation projects based on VMT. As a new transit option, the Project is determined to be consistent with any plan, policy, or ordinance related to VMT reduction because transit provides an alternative to single-occupant vehicle trips and therefore reduce VMT.

The Proposed Project is primarily located within an existing railroad right-of-way and directly intersects the roadway network at-grade only at two locations, 170th Street, between Condon Avenue and Firmona Avenue, and 182nd Street, between Kingsdale Avenue and Firmona Avenue. At these and all other freight crossings paralleling the Proposed Project locations, the Project would include "quiet zone ready" rail grade crossing safety features (discussed further in Chapter 2, Project Description and Section 3.6, Noise and Vibration) to protect roadway users from approaching trains, consistent with policies that call for roadway and pedestrian safety.

The Proposed Project does not conflict with policies to protect neighborhoods from cut-through traffic or unsafe speeds because it does not preclude cities or jurisdictions from implementing measures to deter such traffic behavior. The Project itself is not anticipated to attract cut-through traffic as the proposed stations are intended to be locally serving and are located on and near major corridors providing connections in all directions.

Although vehicle delay at grade crossing locations would increase incrementally as a result of increased train frequency, the Proposed Project is not assumed to conflict with policies to maintain intersection operations because rail transit provides an alternative to driving for many trips which would otherwise increase automobile travel and thus intersection delay. Likewise, the City of Redondo Beach 2009

Circulation Element clearly addresses such a fundamental issue with Goal G1 which states, "Address the root causes of trip generation rather than simply reacting to the consequences."

Policies Addressing Bicycling and Walking

Less than Significant Impact. Policies and plans regarding bicycling and walking include development of future bicycle lanes, improving bicycle-transit integration including multimodal hubs and bicycle parking facilities near transit, and minimizing conflicts between vehicles and pedestrians. The South Bay Bicycle Master Plan proposes a bicycle facility along the Metro ROW; a multi-use path is incorporated in the Proposed Project parallel to the Metro ROW and therefore the Proposed Project is consistent with the South Bay Bicycle Master Plan. The Proposed Project does not preclude the construction of any other bicycle or pedestrian infrastructure and is therefore consistent with policies and plans regarding bicycle infrastructure. The Proposed Project increases frequency of trains at existing at-grade rail crossings at 170th Street and 182nd Street. These "quiet zone ready" crossings (discussed further in Chapter 2, Project Description and Section 3.6, Noise and Vibration) would include safety features to protect bicyclists and pedestrians from collision with trains including gates across the sidewalk.

TRENCH OPTION

Less than Significant Impact. The operation of the Trench Option has a similar relationship to programs, plans, ordinances and policies as the Proposed Project and would thus have a **less than significant impact**. The following would be unique to the Trench Option relative to the Proposed Project:

- Transit: The Trench Option achieves the same regional transit goals as the Proposed Project and would have the same effects on connecting to existing and future transit lines.
- Roadways: The Trench Option reduces the potential effects on the roadway circulation network compared to the Proposed Project by grade-separating the light rail crossings at 170th Street and 182nd Street and therefore fully eliminates potential traffic delay as a result of the Project. The existing freight at-grade crossing would remain.
- Bicycling and Walking: The Trench Option has the same effect on policies and plans as the Proposed Project. The Trench Option proposes an at-grade multi-use path along the ROW. The Trench Option does not preclude the planning or implementation of any bicycling or pedestrian infrastructure. The Trench Option grade-separates the high-frequency light rail and therefore reduces potential for train conflict at 170th Street and 182nd Street, although the existing at-grade freight crossing would remain. Safety measures such as fences and signage would protect pedestrians along the alignment from potentially falling into the trench.

HAWTHORNE OPTION

Less than Significant Impact. The operation of the Hawthorne Option would not conflict with programs, plans, ordinances and policies regarding the circulation system and would thus have a **less than significant impact**. The following would be unique to the Hawthorne Option relative to the Proposed Project:

- Transit: The Hawthorne Option achieves the same regional transit goals as the Proposed Project and would have the same effects on connecting to existing and future transit lines.
- Roadways: The Hawthorne Option would generally limit the Project's potential effect on roadway efficiency by removing any potential at-grade crossing delay between the light rail and other modes. The Hawthorne Option may have incremental localized effects on delay at intersections where turn

pocket capacity would be reduced to accommodate the elevated structure; for example, at the intersection of Hawthorne Boulevard and 177th Street, the northbound left turn pocket would be reduced from two lanes to one longer lane. At certain locations, such as Hawthorne Boulevard at 180th Street, existing median access for left turns would be permanently closed and detoured to neighboring intersections, while the intersection at 179th Street would instead become fully signalized, which improves traffic safety and accessibility. Based on the advanced conceptual engineering, these roadway alterations in combination with the improved transit option as an alternative to driving is not anticipated to significant effect on traffic efficiency.

- Bicycling and Walking: The Hawthorne Option would not conflict with plans and policies regarding bicycling and walking. The Hawthorne Option does not preclude construction of a multi-use path along the Metro ROW, though such a path would not be part of the Hawthorne Option as it is the Proposed Project and Trench Option. The Hawthorne Option does not preclude the planning or implementation of any bicycling or pedestrian infrastructure. The Hawthorne Option would maintain or improve sidewalks along Hawthorne Boulevard and provide new signalized pedestrian crossings at several locations where either an unsignalized crossing or no crossing is currently provided, including at 164th Street in Lawndale and a mid-block crossing south of the proposed South Bay Galleria Station. Such improvements would be consistent with policies to improve mobility, access and safety by signalizing pedestrian crossings across Hawthorne Boulevard. The Hawthorne Option would include bicycle parking at the South Bay Galleria Station, further supporting these policies and objectives.

3.1-4.2 Will the Proposed Project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b) [increase in VMT]?

3.1-4.2.1 Construction Impacts

Less than Significant Impact. Due to the temporary nature of construction traffic associated with the Proposed Project, a substantial increase in VMT[3] would not be anticipated to result from construction. Given the temporary nature of construction industry jobs, the relatively large regional construction industry, and the total number of construction workers needed during any construction phase, it is likely that the labor force from within the region would be sufficient to complete the majority of project construction without a substantial influx of new workers and their families, and would not result in a substantial increase in VMT. Therefore, construction of the Proposed Project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3 and a **less than significant impact** would occur under the Proposed Project.

TRENCH OPTION

Less than Significant Impact. The construction of the Trench Option is similar to the Proposed Project in terms of consistency with CEQA Guidelines Section 15064.3 subdivision (b), and therefore a **less than significant impact** would occur under the Trench Option.

3 For the purposes of this section, VMT refers to the amount and distance of automobile travel attributable to a project. The term "automobile" refers to on-road passenger vehicles, specifically cars and light trucks. Heavy-duty truck VMT could be included for modeling convenience and ease of calculation (for example, where models or data provide combined auto and heavy truck VMT..

HAWTHORNE OPTION

Less than Significant Impact. The construction of the Hawthorne Option is similar to the Proposed Project in terms of consistency with CEQA Guidelines Section 15064.3 subdivision (b), and therefore a **less than significant impact** would occur under the Hawthorne Option.

3.1-4.2.2 Operational Impacts

Less than Significant Impact. Per CEQA Guidelines Section 15064.3, Subdivision (b), transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. As a non-automobile modal option, the Proposed Project is determined to cause a less than significant transportation impact. The Proposed Project is expected to result in either a positive or neutral effect on vehicle miles traveled, resulting in consistency with CEQA Guidelines Section 15064.3, Subdivision (b) and a **less than significant impact**.

TRENCH OPTION

Less than Significant Impact. CEQA Guidelines Section 15064.3, Subdivision (b) impacts for the Trench Option are expected to be the same as those for the Proposed Project because the fundamental nature of the project remains a transit line with service that should reduce or have a neutral effect on VMT and a **less than significant impact**.

HAWTHORNE OPTION

Less than Significant Impact. CEQA Guidelines Section 15064.3, Subdivision (b) impacts for the Hawthorne Option are expected to be the same as those for the Proposed Project because the fundamental nature of the project remains a transit line with service that should reduce or have a neutral effect on VMT and a **less than significant impact**.

3.1-4.3 Will the Proposed Project substantially increase hazards due to a geometric design feature or incompatible uses?

This section discusses the potential increase of hazards due to a geometric design feature of the Project. Impacts regarding the potential increase of hazards generally relate to degradation of pedestrian, bicycle, or vehicle safety conditions, or the introduction of obstructions that result in decreased visibility of other road users or key roadway infrastructure, such as traffic signals. These impacts are typically evaluated for permanent conditions after project completion but can also be evaluated for temporary conditions during project construction.

The Proposed Project (including its Options) and the proposed stations will be designed to meet relevant standards, including CAMUTCD, HDM, ADA, and Metro's Grade Crossing Safety Policy.

Pedestrian Access

Existing pedestrian conditions have the potential to be affected where retaining walls or at-grade crossings are modified or introduced to the corridor. Such situations will be addressed with Project design features and are discussed below.

Visibility of Cars, Pedestrians, and Bicyclists

The primary project features with the potential to affect the visibility of cars or pedestrians and bicyclists in adjacent crosswalks are elevated guideways, bridges, and support columns introduced in or over the roadway. Elevated rail guideways, bridges, and support columns located off-street are less

likely to affect visibility of pedestrians but could obstruct view of traffic signals and are also evaluated below.

3.1-4.3.1 Construction Impacts

Less than Significant Impact. Proposed Project construction would introduce partial and full street closures and closed worksites on streets for construction activities, such as foundations and steel erection. Construction worksites would be fenced, and lane closures and associated lane tapers, temporary advance warning signs, detour signs, etc., would be implemented in accordance with the CAMUTCD Part 6 (Temporary Traffic Control) to ensure that no significant geometric design hazards are introduced during the construction period. As elements such as columns are constructed, the potential for visibility obstructions for road users could be introduced. PF-T-1 would be compliant with the CAMUTCD and would provide for safe separation of road users from construction activities, ensure visibility of pedestrians and at marked or signalized crossings meets engineering standards, and if necessary, detour vehicles, pedestrians, and/or bicyclists along a safer route, minimizing inconvenience to the extent practical.

Because construction activity varies based on many different factors, and the construction zone typically includes a larger area than the completed project in order to provide sufficient safe zones and shifting of traffic, the effects of construction are addressed related to transit, vehicular traffic, and bicycling and walking, below:

- Transit: During construction some existing bus stops may need to be temporarily relocated; this is a common practice and is communicated in advance to passengers and posted with signs. Because the project would be constructed in phases, bus service should be maintained with stop relocations shifting in response to construction stages. Relocated stops are typically determined by the transit agency or in coordination with the project construction team and would be selected to maintain visibility of waiting passengers by the bus operator and ensure that passengers are able to safely get to and from the stop through any nearby construction zone. Relocated stops even in a construction zone are required to maintain ADA compliance.
- Roadways: The construction would occur in stages that would temporarily reduce travel lanes while temporary structures are built for elevated guideway segments or at-grade crossings. Lane reductions must maintain minimum dimensions and geometry based on the roadway type, maximum design vehicle size, and other factors defined in engineering standards including the HDM and CAMUTCD. The design of construction activities and development of the traffic management plan would ensure compliance with these standards so as not to introduce unsafe or unnavigable roadways. In cases where erection of elevated structures or other vertical obstructions would obscure visibility of a traffic signal or signage, temporary signals and signage may be placed according to the CAMUTCD.
- Bicycling and Walking: Similarly, access to bicycle routes and pedestrian facilities would remain during construction although some alternate routes for pedestrians may be required if construction zones are unable to maintain safe clearance for sidewalks, bicycle lanes, and vehicle travel lanes. The use of temporary sidewalks, barricades, and signage may be necessary at some locations to maintain pedestrian access. The use of signage indicating sharing the road between vehicles and bicycles following standard signs defined in the CAMUTCD may be required where travel lanes are narrowed and existing bicycle facilities are affected.

Thus, with PF-T-1 (as described in Section 3.1-2.7), construction of the Proposed Project would result in a **less than significant impact**.

TRENCH OPTION

Less than Significant Impact. Although the nature of the Trench Option and some of its construction methods are different than the Proposed Project, the construction impacts on the roadway and circulation network are similar to those of the Proposed Project. The Trench Option follows the same Metro ROW like the Proposed Project and would have the same potential for lane reductions or closures at the same locations, although these disruptions to the roadway network may be longer duration, as previously described. Where the Proposed Project would require construction of at-grade crossings at 170th and 182nd Streets, the Trench Option would instead require excavation at these locations the construction effects still result in partial and full road closures as the work progresses, and the potential for geometric hazards affecting transit, vehicles, bicycles and pedestrians are therefore the same. As with the Proposed Project, PF-T-1 would ensure safe access or alternate routes of travel for all road users and transit are provided and construction of the Trench Option would result in a **less than significant impact**.

HAWTHORNE OPTION

Less than Significant Impact. The Hawthorne Option would construct a fully elevated guideway along I-405 south to Hawthorne Boulevard and continuing in the median of Hawthorne Boulevard to approximately 190th Street. The construction of the elevated guideway would be staged to minimize disruptions to traffic and ensure safety for road users near the construction zones.

- Transit: During construction some existing bus stops may need to be temporarily relocated; this is a common practice and is communicated in advance to passengers and posted with signs. Because the project would be constructed in phases, bus service would be maintained with stop relocations shifting in response to construction stages. Relocated stops are typically determined by the transit agency or in coordination with the project construction team and would be selected to maintain visibility of waiting passengers by the bus operator and ensure that passengers are able to safely get to and from the stop through any nearby construction zone. Relocated stops even in a construction zone are required to maintain ADA compliance.
- Roadways: The construction would occur in stages that would temporarily reduce travel lanes on Hawthorne Boulevard in segments along the alignment. Lane reductions must maintain minimum dimensions and geometry based on the roadway type, maximum design vehicle size, and other factors defined in engineering standards including the HDM and MUTCD. The design of construction activities and development of the traffic management plan would ensure compliance with these standards so as not to introduce unsafe or unnavigable roadways. In cases where erection of elevated structures or other vertical obstructions would obscure visibility of a traffic signal or signage, temporary signals and signage may be placed according to the CAMUTCD.
- Bicycling and Walking: Similarly, access to bicycle routes and pedestrian facilities would remain during construction although some alternate routes for pedestrians may be required during construction on the east side of Hawthorne Boulevard when curb work would encroach on the sidewalk. At signalized crossings where construction of the elevated structure could encroach on pedestrian facilities or obscure views for motorists, measures such as temporary sidewalks, curb extensions, or potentially closing and detouring pedestrians to another crossing may be required. At

unsignalized crossings where visibility or safety could be affected by construction, pedestrian crossings may be closed and detoured to another location.

As with the Proposed Project, PF-T-1 would ensure safe access or alternate routes of travel for all road users and transit are provided and construction of the Hawthorne Option would result in a **less than significant impact**.

3.1-4.3.2 Operational Impacts

Less than Significant Impact. This analysis is based on the Advanced Conceptual Engineering drawings in Appendix 2-A, Selected Advanced Conceptual Engineering Drawings which detail the design of the Proposed Project structures and elements such as support columns in relation to the roadway. Per the below analysis, there would be a **less than significant impact** with regards to a geometric design hazard or incompatible use.

Pedestrian Access

Less than Significant Impact. The Proposed Project features a combination of grade-separated (elevated) and at-grade crossings, which maintain the existing at-grade crossing with alterations (typically relocating the crossing to the east or west of its existing location). Because the Proposed Project follows the Metro ROW, each grade crossing of a public roadway is discussed in the following list. Grade crossing safety equipment would be quiet zone ready and constructed as described in Chapter 2, Project Description and Section 3.6, Noise and Vibration.

- Inglewood Avenue between 156th Street and Manhattan Beach Boulevard: In existing conditions, there is no formalized pedestrian crossing across Inglewood Avenue, which would remain with the Proposed Project. For pedestrians along Inglewood Boulevard crossing the at-grade freight track, gates and warning devices would be upgraded and installed on both sides of the crossing.
- Manhattan Beach Boulevard and Condon Ave: In existing conditions, there is no formalized pedestrian crossing across Manhattan Beach Boulevard, which would remain with the Project. The Proposed Project is elevated over this crossing and the at-grade freight crossing would remain with reconfigured pedestrian crossings perpendicular to the track with gates on both sides to improve safety. When the existing freight track along the Metro ROW is relocated, a pedestrian crossing barrier and sign consistent with CAMUTCD standards would prohibit crossing of Manhattan Beach Boulevard to maintain pedestrian safety. The nearest crosswalks are 450 feet and 550 feet to the west and east, respectively.
- 159th, 160th, 161st and 162nd Streets between Inglewood Avenue and Firmona Avenue: In existing conditions, these locations are at-grade crossings of the Metro ROW freight track protected with gates, bells, flashing lights and signs and do not provide marked pedestrian street crossings. The Proposed Project is elevated above these crossings and the at-grade freight crossings would remain, relocated slightly to the west. Additionally, the Proposed Project's mixed-use path running at-grade parallel to the freight track approaches each of these streets. The Proposed Project would enhance the at-grade freight crossing protection to provide pedestrian gates and signals on both sides of the track, on both sides of each street. The multi-use path would cross each street with a signed and continental ("zebra") striped crosswalk.
- 170th Street between Condon Avenue and Firmona Avenue: In existing conditions, this location is an at-grade crossings of the Metro ROW freight track protected with gates, bells, flashing lights and signs and no marked pedestrian street crossing. The Proposed Project is at-grade at this location. The at-grade crossing would encompass both the freight and light rail with gates and other crossing

protection and feature the same pedestrian upgrades on the sidewalks on both sides of the track and both sides of 170th Street. The multi-use path would cross the street with a signed and continental ("zebra") striped crosswalk.

- Artesia Boulevard between Condon Avenue and Firmona Avenue: The Proposed Project would cross Artesia Boulevard as a bridge similar to the existing freight track and would not affect pedestrian access or safety.
- Grant Avenue between Inglewood Avenue and Condon Avenue: The Proposed Project would cross Grant Avenue on a new bridge similar to the existing freight track. At this location pedestrian access to the Redondo Beach Transit Center Station would begin from the south side of Grant Avenue continuing along the east edge of the Metro ROW south to the station. A pedestrian crossing would be provided where the station access path meets Grant Avenue across to Condon Avenue. This would be a new crossing with advance pedestrian signals to warn approaching drivers and would include sidewalk improvements for ADA-compliance. For eastbound drivers on Grant Avenue, advance warning signs would be placed prior to the rail bridges to alert drivers of the pedestrian crossing.
- 182nd Street between Firmona Avenue and Kingsdale Avenue: In existing conditions, this location is an at-grade crossing of the freight track in the Metro ROW protected with gates, bells, flashing lights and signs. The Proposed Project is at-grade at this location. The at-grade crossing would encompass both the freight and light rail with gates and other crossing protection and feature the same pedestrian upgrades on the sidewalks on both sides of the track and both sides of 182nd Street. The multi-use path would cross the street with a signed and continental ("zebra") striped crosswalk.

Visibility Obstructions

Less than Significant Impact. Visual hazards may result from support columns near corners that obstruct the view of crossing pedestrians or overhead bridges that obstruct the view of a traffic signal within the required vehicle stopping distance defined by CAMUTCD Table 4D-2. The Proposed Project is not anticipated to result in either of these visual hazards. There are no support columns near intersections that would obstruct a motorist's view of a crossing pedestrian. Additionally, bridges or columns of the Proposed Project are not expected to degrade visibility, as they are sufficiently high or not within stopping distance of any signalized intersections. The proposed bridges over the noted roadways have the following characteristics that could impair visibility:

- Inglewood Avenue between 156th Street and Manhattan Beach Boulevard: The light rail elevated structure is located approximately 500 feet from the nearest signal or marked crossing in either direction, which is greater than the required stopping distance and therefore not a visual obstruction of signals and intersection activity. At this location, the existing at-grade freight crossing would be shifted north of its current location and result in the at-grade rail being just north of the elevated structure; the Proposed Project would reconstruct the advance railroad warning devices, signage, and striping for northbound traffic in advance of the light rail bridge, and gates on both sides of the crossing. Additionally, a raised curb median would be constructed leading both sides of the at-grade crossing to prevent vehicles from driving around the gates and to restrict turning movements to and from driveways on both sides of the crossing to prevent potential turning conflicts or conflicts with trains.
- Manhattan Beach Boulevard and Condon Avenue: This intersection is unsignalized with an eastbound left-turn pocket on Manhattan Beach Boulevard to access Condon Avenue. Under the

Proposed Project, the at-grade freight crossing would be relocated slightly east of its present location with the light rail elevated structure directly over the at-grade track. To accommodate this overlap, the elevated structure would use straddle-bent columns on either side of the freight track in the road median. The columns are not considered a visibility obstruction because pedestrian crossings of Manhattan Beach Boulevard would be prohibited at this location as described above. The left-turn pocket would be reconfigured to designate a limit line in advance of the at-grade crossing when the warning devices are active; once vehicles safely proceed east of the crossing to turn left, there is clear visibility of oncoming traffic and the crosswalk across Condon Avenue.

- 159th Street, 160th Street, 161st Street, 162nd Street: The light rail elevated structure at these locations would not obstruct the view of the at-grade railroad crossing signals or warning signs for the pedestrian crossing. The support columns for the elevated structure would be located behind the sidewalk on either side, allowing oncoming drivers to see pedestrians approaching the multi-use path crossing. The multi-use path would feature warning signs and vertical delineators to warn users of the approaching crossing and the need to stop and yield to traffic on the street.
- Artesia Boulevard between Condon Avenue and Firmona Avenue: The bridge structure over Artesia Boulevard is located approximately 500 feet from the nearest signal, which is greater than the required stopping distance. There is an existing rail bridge at this location.
- Grant Avenue between Inglewood Avenue and Condon Avenue: The bridge structure over Grant Avenue is located approximately 800 feet from the nearest existing signal, which is greater than the required stopping distance. At the intersection of Condon Avenue, the Proposed Project would implement a new pedestrian crossing to access the Redondo Beach TC Station to the south; in order to provide sufficient visibility for this crossing, advance warning signage would be provided, consistent with the CAMUTCD, west of the bridge for eastbound vehicles.
- Hawthorne Boulevard and 190th Street: The proposed bridge structures crossing these roadways are located further from the downstream signal of interest than the existing freight track bridges. The grade of the roadway is also sufficiently below the existing bridge to provide a clear view of the signal. Thus, the proposed structures would not worsen existing sight conditions.

TRENCH OPTION

Less than Significant Impact. Under the Trench Option, all light rail crossings discussed as part of the Proposed Project would be grade-separated below the roadway thus precluding any potential visual obstructions or geometric hazards related to the light rail. Roadways crossing the trench would be reconstructed as bridges over the trench with safe clearance and barriers to prevent road users from entering the trench. The conditions related to the freight rail crossings, the multi-use path, and how they intersect public roadways are all the same as the Proposed Project. Each freight crossing location would be upgraded with railroad crossing gates and warning devices consistent with the Proposed Project and following the same CAMUTCD standards. Therefore, there would be a **less than significant** impact with regards to geometric hazards.

HAWTHORNE OPTION

Less than Significant Impact. The evaluation of the Hawthorne Option potential for geometric hazards differs from the Proposed Project because much of the elevated structure is in the median of Hawthorne Boulevard following the roadway. Intersecting east-west streets with signals where the elevated structure is low enough to obscure visibility would be reconfigured with signals to be visible approaching the structure. The elevation of the light rail structure compared with the road grade varies

and each location would be designed following CAMUTCD standards for visibility of signals and signs. Due to the width and typical speeds on Hawthorne Boulevard, the majority of pedestrian crossings are signalized. The Hawthorne Option upgrades select unsignalized locations to become signalized intersections or to include mid-block pedestrian crossings. Therefore, there would be a **less than significant** impact with regards to geometric hazards.

PEDESTRIAN ACCESS

Less than Significant Impact. The following locations along the Hawthorne Option alignment provide a marked pedestrian crossing:

- 162nd Street: The Hawthorne Option is not expected to introduce new pedestrian hazards at this signalized intersection; the elevated structure and columns do not obscure the view of signals for motorists or introduce potential pedestrian-vehicle conflicts.
- 164th Street: The Hawthorne Option would upgrade this unsignalized intersection to a signalized one which would improve the safety for pedestrians and eliminate potential geometric hazards with vehicles.
- 166th Street: The Hawthorne Option is not expected to introduce new pedestrian hazards at this signalized intersection; the elevated structure and columns do not obscure the view of signals for motorists or introduce potential pedestrian-vehicle conflicts.
- Midblock south of 167th Street: The Hawthorne Option is not expected to introduce new pedestrian hazards at this signalized mid-block crossing; the elevated structure and columns do not obscure the view of signals for motorists or introduce potential pedestrian-vehicle conflicts.
- 169th Street: The Hawthorne Option is not expected to introduce new pedestrian hazards at this signalized intersection; the elevated structure and columns do not obscure the view of signals for motorists or introduce potential pedestrian-vehicle conflicts.
- 171st Street: Although this pedestrian crossing is unsignalized, the Hawthorne Option is not expected to introduce new hazards. The elevated structure does not obscure the view of pedestrians approaching the crossing. There is a column for the elevated structure in the median near the crossing, but the median is over 50 feet wide and the column only seven feet wide in the center of the median, allowing sufficient visibility for pedestrians approaching or waiting to cross.
- Redondo Beach Boulevard: The Hawthorne Option is not expected to introduce new pedestrian hazards at this signalized intersection. Although the project includes several support columns and bents on either side of the intersection, pedestrian crossings are all signalized and traffic movements are separated by protected left-turn phases.
- Artesia Boulevard: The Hawthorne Option is not expected to introduce new pedestrian hazards at this signalized intersection. Although the project includes several support columns and bents on either side of the intersection, pedestrian crossings are all signalized and traffic movements are separated by protected left-turn phases. This location is the main access point for the South Bay Galleria Station.
- South Bay Galleria Station Mid-Block Crossing: The Hawthorne Option would construct a new signalized mid-block crossing approximately 360 feet south of Artesia Boulevard, at the south end of the station. The signalized crossing would be located in advance of the South Bay Galleria mall driveway, with a curb extension to repurpose the southbound right turn pocket into the Galleria as a designated bus stop for connecting buses. Southbound through and right-turning traffic would be

controlled by a pedestrian-activated signal to provide safe crossing. This configuration would also improve pedestrian crossing safety along Hawthorne Boulevard at this location by reconfiguring and slowing an existing high-speed and wide right turn movement into the Galleria driveway. On the east side of Hawthorne Boulevard, the crossing would be aligned just prior to (south of) the driveway closest to the Sizzler restaurant, safely separating pedestrians from traffic potentially turning into or out of the driveway.

- 177th Street: The Hawthorne Option is not expected to introduce new pedestrian hazards at this signalized intersection; the elevated structure and columns do not obscure the view of signals for motorists or introduce potential pedestrian-vehicle conflicts.
- 179th Street: The Hawthorne Option would upgrade this unsignalized intersection to a signalized one which provides a new pedestrian crossing of Hawthorne Boulevard and signalizes left-turning traffic in and out of a busy series of shopping centers on the west side of Hawthorne Boulevard. This improvement also would absorb traffic currently allowed to make an unsignalized left tun at 180th Street, where the median would be permanently closed.
- 182nd Street: The Hawthorne Option is not expected to introduce new pedestrian hazards at this signalized intersection; the elevated structure and columns do not obscure the view of signals for motorists or introduce potential pedestrian-vehicle conflicts.
- 186th Street: The Hawthorne Option is not expected to introduce new pedestrian hazards at this signalized intersection; the elevated structure and columns do not obscure the view of signals for motorists or introduce potential pedestrian-vehicle conflicts.

Visibility Obstructions

Less than Significant Impact. The proposed elevated light rail structure at the following locations where the structure crosses the traveled way was closely evaluated for its potential to result in a geometric hazard regarding the visibility of traffic signals:

- Inglewood Avenue at I-405 Freeway Southbound Ramps: The elevated structure would cross Inglewood Avenue between the I-405 southbound ramps and 156th Street. The southbound off-ramp is a signalized intersection less than 200 feet north of the proposed overhead structure. Although the distance to the signal is less than the required stopping distance at 35 MPH (325 feet, according to CAMUTCD Table 4D-2), the lowest point of the elevated structure is approximately 30 feet above the surface, which is sufficiently high to provide clear visibility of the signal.
- I-405 Freeway Southbound Off-Ramp at Hawthorne Boulevard: Based on an evaluation of the first point where the signal enters the straight-ahead line of sight, there is no potential for an overhead light rail structure at the proposed height (approximately 30 feet) to impact signal visibility. Additionally, the column placement in relation to the ramps would not obstruct visibility of potential hazards ahead.
- Southbound Hawthorne Boulevard at 162nd Street: The elevation to the bottom of the proposed light rail bridge over the intersection of Hawthorne Boulevard and 162nd Street exceeds that of the existing mast arm-supported signal for southbound traffic. The proposed height from the existing ground to the bottom of the light rail structure at this location is approximately 25 feet. The height of the signal (based on design standards) is estimated to be 23 feet.
- Eastbound and Westbound 186th Street at Hawthorne Boulevard: As currently exists, the eastbound and westbound approaches are controlled by high-mount signal heads. The proposed light rail

structure would obstruct the line of sight to the signal heads. To provide sufficient visibility of the signals, they would be located on the approach (near)-side of the elevated structure.

In addition to these locations, the light rail elevated structure would modify the median angled parking zones provided in the City of Lawndale between 162nd Street and 171st Street. In general, the median parking zones are maintained in a similar condition, with the removal of selected parking spaces to accommodate column placement and required clearances around fixed objects. Columns would have a minimum of 18 inches set back from the face of curb in all directions and would not introduce a geometric hazard for vehicles. Access to the median parking is provided by an additional lane to the left of the general travel lanes with a curb providing separation from through traffic. Where space permits, these conditions are maintained; in select locations the separation may be narrowed to use flexible vertical delineators.

Because of the elevated structure column placement, the left turn lanes through this segment, which typically diverge at an angle from the through lanes towards the center of the median, are re-aligned parallel to the through lanes in a more traditional configuration. This change in turn lane alignment may require left turn phases to be split at each intersection to avoid turning conflicts where the path of travel would overlap with the opposing direction. Such changes to signal operation would be determined during the final engineering stage and follow CAMUTCD standards. The column placement at each intersection would not create a visibility obstruction for turning traffic; furthermore, pedestrian movements are restricted during protected left turn phases. Finally, under the Project conditions no unsignalized left turns would remain between 162nd and 170th Streets; the unsignalized intersection at 164th would become signalized; all other streets not explicitly listed are right-in/right-out streets where they intersect Hawthorne Boulevard. The unsignalized southbound left turn to 171st Street would remain similar to its existing condition and elevated structure columns would not obstruct drivers view of oncoming traffic based on the median width and lane configuration.

South of 171st Street, the Hawthorne Option modifies left turn lanes to accommodate the elevated structure column placement and in select locations alters existing unsignalized median access to maintain safe conditions as follows:

- Redondo Beach Boulevard: Northbound and southbound left turn lanes are slightly realigned to accommodate column placement. The columns do not introduce visibility obstructions because the turning movements are protected phases and no opposing movements are permitted.
- Artesia Boulevard: Southbound left turn lanes are realigned underneath the elevated structure between straddle-bent columns. The column width is sufficiently narrow to provide the required 18-inch clearance from the face of curb in all directions. The columns on either side of the intersection do not introduce visibility obstructions because the turning movements are protected phases and no opposing movements are permitted.
- South Bay Galleria Driveway: As discussed under Pedestrian Access, a signalized pedestrian crossing would be implemented immediately north of the Galleria driveway to provide direct pedestrian access between the south end of the station and connecting bus services or points south on Hawthorne Boulevard. To provide a safe environment, the signal and traffic limit line would hold southbound traffic ahead of the driveway and would close the southbound right turn pocket, making the lane closest to the curb into a shared through-right lane. The existing southbound right turn pocket is shared with a major bus stop served by at least four bus lines. Although bus stops commonly share space with turn pockets, implementation of a curb extension and reallocation of the turn lane into a bus turnout creates a safer condition to reduce potential conflicts between

buses and other vehicles and improve visibility of pedestrians walking south along Hawthorne Boulevard across the Galleria driveway.

- 177th Street: Northbound and southbound left turn lanes would be realigned, and the northbound left turn pocket would be reduced from two lanes to one. The columns do not introduce visibility obstructions because the turning movements are protected phases and no opposing movements are permitted.
- 179th Street: The Hawthorne Option would upgrade this unsignalized intersection to a signalized one which provides a new pedestrian crossing of Hawthorne Boulevard and signalizes left-turning traffic in and out of a busy series of shopping centers on the west side of Hawthorne Boulevard. This improvement also would absorb traffic currently allowed to make an unsignalized left tun at 180th Street, where the median would be permanently closed. Signalization is a Project design feature because the column placement through this segment would otherwise create visual obstructions that would prevent drivers from seeing oncoming traffic in an uncontrolled left. The signal allows drivers to make safe, protected left turns.
- 180th Street: The Hawthorne Option would permanently close the median at this location and require left turning traffic to either continue north to the newly signalized intersection at 179th Street, or south to the existing signalized intersection at 182nd Street. Both locations would permit drivers to make a U-turn to access 180th Street or the shopping plaza. This closure is a design feature because the column placement through this segment would otherwise create visual obstructions that would prevent drivers from seeing oncoming traffic in an uncontrolled left.
- 182nd Street: Hawthorne Option alterations to this intersection are primarily curb relocation and do not substantially alter the existing condition or introduce visibility obstructions.
- 186th Street: The northbound left turn lane would be realigned to accommodate column placement, shifting the lane west in the place of the existing median and placing it immediately adjacent to the southbound travel lanes, with the columns located approximately where the existing left turn pocket is. The column would be sized to provide a minimum 18-inch clearance from face of curb on all sides. Flexible vertical delineators would be provided between the northbound left turn lane and the southbound travel lane to provide additional visual clarity.
- South of 186th Street median access: Immediately south of 186th Street an unsignalized southbound left turn is provided to access businesses on the east side of Hawthorne Boulevard. Under the Hawthorne Option, the column design at this location would utilize straddle-bents to maximize visibility for the southbound left turn and of those vehicles by northbound traffic. Analysis of the cone of visibility for drivers at this location determined that locating the columns 18 inches from the west edge of the median would provide a sufficient view for southbound drivers to make the unsignalized turn.

3.1-4.4 Will the Proposed Project result in inadequate emergency access?

3.1-4.4.1 Construction Impacts

Less Than Significant Impact. Proposed Project construction would occur in various phases, which would have different effects on the street system. Any temporary full or partial street closures during construction would, by necessity, increase traffic volumes on the detour routes, which could increase traffic congestion on those routes. However, the Proposed Project alignment is located in an established urban area that is well-served by the surrounding roadway network, and multiple routes exist parallel to the affected streets. Emergency vehicle drivers normally have a variety of options for avoiding traffic,

such as using sirens to clear a path of travel, driving in the lanes of opposing traffic or center turn lanes, and bypassing signals and stopped traffic. Implementation of CTMPs, as part of PF-T-1 and outlined in Section 3.1-2.7, would further ensure adequate emergency access is maintained in and around the Proposed Project construction and component sites throughout all construction activities. Therefore, there would be a **less than significant** impact.

TRENCH OPTION

Less Than Significant Impact. Although the nature of the Trench Option and its construction is different than the Proposed Project, the construction impacts on the roadway and circulation network are similar to the Proposed Project and are likewise less than significant. The Trench Option follows the same Metro ROW like the Proposed Project and would have the potential for lane reductions or closures at the same locations during construction, although these disruptions to the roadway network would be longer duration. Where the Proposed Project would require construction of at-grade crossings at 170th and 182nd Streets, the Trench Option would instead require excavation at these locations and the construction would still result in partial and full road closures as the work progresses. The CTMPs prepared pursuant to PF-T-1 (described in Section 3.1-2.7) would ensure adequate emergency access is maintained. Therefore, there would be a **less than significant** impact.

HAWTHORNE OPTION

Less Than Significant Impact. Although the nature of the Hawthorne Option and its construction is different than the Proposed Project, the construction impacts on the roadway and circulation network are fundamentally similar to the Proposed Project. Construction of the elevated guideway would require temporary lane reductions and some detours for access or egress from intersecting streets. At least one point of access to homes, businesses and neighborhoods would be maintained. The CTMPs prepared pursuant to PF-T-1 (described in Section 3.1-2.7) would ensure adequate emergency access is maintained in and around the Hawthorne Option alignments and component sites throughout all construction activities. Therefore, there would be a **less than significant** impact.

3.1-4.4.2 Operational Impacts

The Proposed Project would introduce gate controlled at-grade crossings (170th Street and 182nd Street), which would require emergency responders to either wait for the crossing to clear or re-route to another street. The introduction of grade crossings would not result in any permanent closures, however, as gates would only be down for temporary and intermittent periods in the relatively infrequent event that an emergency responder would use 170th Street or 182nd Street at the time of a train arrival to the grade crossing. Therefore, the Proposed Project would not result in inadequate emergency access and this impact would be **less than significant**. The Proposed Project's potential effect on emergency access is further discussed below for different emergency responders.

Emergency Vehicle Access from Fire Stations

Less than Significant. The following fire stations are located in the RSA:

- Los Angeles County Fire Department Station 160 - located at Rosecrans Avenue east of Aviation Boulevard
- Manhattan Beach Fire Foundation - located at Rosecrans Avenue west of Douglas Street
- Los Angeles County Fire Department Station 21 - located at 147th Street east of Hawthorne Boulevard

- Manhattan Beach Station 2 - located at Rowell Avenue and Manhattan Beach Boulevard
- Redondo Beach Station 2 - located at Mackay Lane and Grant Avenue
- Torrance Fire Department Station 3 - located west of the I-405 along 182nd Street
- Torrance Fire Department Station 5 - located west of Hawthorne Boulevard along Del Amo Circle
- Torrance Fire Department Station 1 - located at Crenshaw Boulevard and Carson Boulevard

The introduction of grade crossings would not result in any permanent closures, as gates would only be down for temporary and intermittent periods in the relatively infrequent event that an emergency responder would use 170th Street or 182nd Street at the time of a train arrival to the grade crossing. Therefore, the Proposed Project would not result in inadequate access for fire responders and this impact would be **less than significant**.

Emergency Vehicle Access to Emergency Rooms

Less than Significant Impact. The following emergency rooms are located in the RSA, none of which are located on streets with gated grade crossings:

- Memorial Hospital of Gardena - 1145 W Redondo Beach Boulevard, Gardena, CA 90247
- Providence Emergency Department – Torrance - 4101 Torrance Boulevard, Torrance, CA 90503
- Harbor-UCLA Medical Center Emergency Room - 1000 W Carson St, Torrance, CA 90502

The introduction of grade crossings would not result in any permanent closures, as gates would only be down for temporary and intermittent periods in the relatively unlikely event that an emergency responder would use 170th Street or 182nd Street at the time of a train arrival to the grade crossing. Therefore, the Proposed Project would not result in inadequate emergency access for emergency responders and this impact would be **less than significant**.

Police Response

Less than Significant Impact. Police departments typically assign calls to responders who are already on patrol. Thus, police response is typically not operated from a fixed point, such as a station but rather from any nearby patrol vehicle. The introduction of grade crossings would not result in any permanent closures, as gates would only be down for temporary and intermittent periods in the relatively infrequent event that an emergency responder would use 170th Street or 182nd Street at the time of a train arrival to the grade crossing. Therefore, the Proposed Project would not result in inadequate police access and this impact is expected to be **less than significant**.

TRENCH OPTION

Less than Significant Impact. Because the Trench Option fully grade-separates the light rail and maintains the existing road network above the trench, there would be no effect on emergency access as a result of the Trench Option. Existing freight rail crossings would remain at-grade and would not decrease emergency access compared to conditions without the project; the freight rail service is generally infrequent (e.g., typically one to two trains per day) and potential blocking of crossings is rare. Therefore, there would be a **less than significant impact**.

HAWTHORNE OPTION

Less than Significant Impact. Because the Hawthorne Option fully grade-separates the light rail and generally maintains the existing road network below, the Hawthorne Option would not impair

emergency access. At the intersection of Hawthorne Boulevard and 180th Street, the center median would be permanently closed, limiting direct access to 180th Street (east) or into the shopping plaza on the west. However, the intersection at 179th Street would remain with a new traffic signal, which is approximately 200 feet to the north, and 182nd Street which is approximately 630 feet to the south, ensuring that access to 180th Street (east) and the shopping plaza on the west is maintained. Therefore, there would be a **less than significant impact**.

3.1-5 Mitigation Measures

No mitigation measures are required, as there are no significant impacts on transportation.

3.1-6 Cumulative Impacts

The methodology for cumulative analysis and a description of relevant projects and projections are included in Section 3.0, Introduction. The geographic scope of the cumulative analysis for transportation is within one-half mile of the Proposed Project stations. Included in the half-mile area are the following projects:

- Manhattan Beach Boulevard Improvements
- Hawthorne Boulevard Corridor Improvement Project
- Inglewood Avenue Intersection Improvements
- Grant Avenue Signal Improvements
- Crenshaw Boulevard Intersection Improvements
- South Bay Galleria Improvement Project

3.1-6.1 Proposed Project

Under cumulative conditions, incremental improvements to roadway networks around the Proposed Project would occur, primarily consisting of intersection-level additions of turning lanes and traffic signal upgrades to improve safety (by providing separated turning phases) or traffic flow by adding turn lane capacity. Because the area is heavily developed and traffic congestion is a typical condition, jurisdictions have limited tools to address isolated traffic bottlenecks.

Projects listed above generally do not directly intersect the Proposed Project, although some are within the half-mile walkshed of stations where construction of a new turn lane could alter pedestrian crossings. The above-mentioned projects are close enough to the Metro ROW to be potentially disruptive if construction occurred concurrently, but given the shorter and more intermittent duration of the nature of these types of roadway improvement projects, overlap of construction periods would be minimal, if at all. Construction of these projects is not anticipated to be significant in duration or disruption.

Under Operational conditions, these projects are not within the footprint of the Proposed Project and would not cumulatively create new geometric hazards, obstructed visibility, or reduce emergency access. Therefore, the Proposed Project combined with past, present, and probable future projects, would not result in a cumulatively significant impact with regards to conflicts with a program, plan ordinance or policy addressing the circulation system; conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b); substantially increases in hazards due to a geometric design feature or incompatible use; or result in inadequate emergency access.

3.1-6.2 Trench Option

Under cumulative conditions, the above discussed impact areas would result in similar conclusions, therefore the Trench Option would not result in a cumulatively significant impact to transportation. The Trench Option follows the same location and footprint as the Proposed Project and therefore the potential construction and operational considerations with related projects are the same. Although some construction activities, particularly digging of the trench at roadway crossings, would take longer and require more truck hauling trips, the nature of construction and its effect to temporarily detour traffic if and when the road must be closed is the same as the Proposed Project. Under operational conditions, the Trench Option would have even less effect on the roadway network as the light rail would be fully grade-separated from all other modes.

The Trench Option combined with past, present, and probable future projects, would not result in a cumulatively significant impacts with regards to conflicts with a program, plan ordinance or policy addressing the circulation system; conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b); substantially increases in hazards due to a geometric design feature or incompatible use; or result in inadequate emergency access.

3.1-6.3 Hawthorne Option

Under cumulative conditions, incremental improvements to roadway networks around the Hawthorne Option would occur, primarily consisting of intersection-level additions of turning lanes and traffic signal upgrades as described under the Proposed Project. The I-405 Auxiliary Lanes project and the South Bay Galleria Improvement Project could be under construction at the same time as the Hawthorne Option, particularly at the same time as the adjacent South Bay Galleria Station. While the South Bay Galleria Improvement Project includes a construction traffic management plan and the I-405 Auxiliary Lanes project would also be expected to have a construction traffic management plan, coordination would need to be maintained between contractors to ensure consistency with plans and policies, avoid hazards due to geometric design features, and maintenance of emergency access. Coordination would occur via the City of Redondo Beach and Caltrans.

On Hawthorne Boulevard at 182nd Street, an identified cumulative project is proposed to construct a northbound right-turn lane would conflict with the Hawthorne Option conceptual design which requires widening of Hawthorne Boulevard to the east to accommodate the median area needed for elevated support columns while maintaining one northbound left-turn lane and four northbound through lanes. Although the roadway could be further widened at this location to maintain the planned northbound right-turn pocket, this would expand the need for property and right-of-way acquisition.

Conflicting with a planned improvement does not in and of itself constitute a significant impact. The northbound right turn pocket at the intersection of Hawthorne Boulevard and 182nd Street could be modified to address its planned goals while considering the Proposed Project's design. The Proposed Project could modify its proposed striping plan or acquire additional right-of-way. Therefore, the Hawthorne Option combined with past, present, and probable future projects, would not result in a cumulatively significant impact with regards to conflicts with a program, plan ordinance or policy addressing the circulation system; conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b); substantially increases in hazards due to a geometric design feature or incompatible use; or result in inadequate emergency access.

3.2 LAND USE AND PLANNING

This section of the Draft EIR provides an analysis of the potential impacts on land use and planning.

3.2-1 Regulatory Framework

Federal, state, regional, and local regulations concerning land use and planning are described in the following section.

3.2-1.1 Federal Regulations

There are no federal regulations governing land use.

3.2-1.2 State and Regional Regulations

Southern California Association of Governments (SCAG)

In September 2020, SCAG adopted Connect SoCal, the SCAG 2020-2045 Regional Transportation Plan (RTP)/Sustainable Communities Strategies (SCS). The following goals of Connect SoCal shape long-range strategies for transportation and land use:

- Improve mobility, accessibility, reliability, and travel safety for people and goods
- Enhance the preservation, security, and resilience of the regional transportation system
- Increase person and goods movement and travel choices within the transportation system
- Reduce greenhouse gas emissions and improve air quality
- Support healthy and equitable communities
- Adapt to a changing climate and support an integrated regional development pattern and transportation network
- Leverage new transportation technologies and data-driven solutions that result in more efficient travel
- Encourage development of diverse housing types in areas that are supported by multiple transportation options

The Connect SoCal Project List, including both funded projects through the 2019 Federal Transportation Improvements Program (FTIP) as well as strategic projects, identifies funding for the following public transit projects in the land use and planning resource study area (RSA): the Metro C Line (Green) extension to Torrance (this project), a city bus transfer station at the Redondo Beach Transit Center (TC), the Torrance TC, called the Torrance Transit Park and Ride Regional Terminal in the FTIP, and a transit service connection between Long Beach and the South Bay Galleria.

South Coast Air Quality Management District Air Quality Management Plan

The South Coast Air Quality Management District (SCAQMD), which was established in 1977 pursuant to the Lewis-Presley Air Quality Management Act, is responsible for ensuring that air quality in the South Coast Air Basin (SCAB) conforms with federal and State air pollution standards. The SCAQMD is also responsible for monitoring ambient air pollution levels throughout the Basin and for developing and implementing attainment strategies to ensure that future emissions will be within federal and State of California standards. The SCAQMD's Air Quality Management Plan (AQMP) presents strategies for achieving the air quality planning goals set forth in the Federal and California Clean Air Acts (CCAA), including a comprehensive list of pollution control measures aimed at reducing emissions. Additional

discussion of the AQMP, and Project consistency with the AQMP, is addressed in Section 3.4, Air Quality, of this Draft EIR.

3.2-1.3 Local Regulations

The RSA for the Proposed Project includes part of the Cities of Hawthorne, Lawndale, Redondo Beach, and Torrance, as shown in Figure 3-2.1. These jurisdictions have adopted plans (i.e., General Plans, Specific Plans) with policies geared primarily towards maintaining land use compatibility. Local land use goals, objectives, and policies are described in the following sections.

City of Hawthorne

The City of Hawthorne General Plan, adopted in 1990, serves as a blueprint for future growth and development. The relevant goals and policies related to land use and planning are in Table 3.2-1.

Table 3.2-1. City of Hawthorne – Relevant Regulations

Code/Goal/Policy	Description
City of Hawthorne General Plan Circulation Element	
Policy 1.16	Review and encourage the use of public transportation through the expansion of local and regional bus systems; encouragement of vanpooling, carpooling, jitneys, and the new light rail transit system; and consideration of staggered work hours for local businesses.

Source: City of Hawthorne, 1990

Zoning

Zoning provides specific regulation for development (including regulation of its physical buildout, permitted uses, and ongoing operation). As required by law, the Hawthorne General Plan Land Use Element and Zoning Ordinance should be consistent with each other to ensure that long-term goals and objectives are implemented. The Zoning Ordinance and zoning districts (e.g., zoning map) are the primary tools for implementing the Land Use Element. The current zoning districts for property within the Project are described in Section 3.2-3.

City of Lawndale

The City of Lawndale General Plan (1992), contains both Land Use and Circulation Elements that address issues relevant to the project. The City of Lawndale also has a zoning ordinance to guide land use. The 1999 Hawthorne Boulevard Specific Plan provides a vision for future development within the Hawthorne Boulevard corridor. The relevant goals and policies related to land use and planning are described in Table 3.2-2.

Table 3.2-2. City of Lawndale – Relevant Regulations

Code/Goal/Policy	Description
City of Lawndale General Plan Land Use Element	
Goal 1D	Provide for the development of public infrastructure to support existing and future residents, businesses, recreation, and other uses
Goal 1	Preserve and enhance the environment, values, aesthetic character, and image of Lawndale as a vital, attractive, desirable, and safe urban community

Code/Goal/Policy	Description
Policy 1a	Maintain the existing Residential development pattern, except in locations along major transportation corridors and public centers where Commercial or higher-density
City of Lawndale General Plan Circulation Element	
Goal 1	Provide an integrated transportation system for the safe and efficient movement of people and goods with minimal disruption to the environment within and through the City
Goal 2	Consider all modes of transportation
Goal 5	Participate in and assist with coordinating regional efforts which integrate the City's transportation system with the regional transportation system
City of Lawndale Zoning Ordinance	
Zoning Purpose	To consolidate and coordinate all existing zoning regulations and provisions into one comprehensive zoning plan in order to designate, regulate, and restrict the location and use of buildings, structures, and land for residence, commerce, trade, industry, or other purposes
Zoning Purpose	To regulate and limit the height, number of stories, and size of buildings and other structures hereafter erected or altered
Zoning Purpose	To regulate and determine the size of yards and other open spaces
Zoning Purpose	To regulate and limit the density of population and, for said purposes, to divide the city into zones of such number, shape, and area as may be deemed best suited to carry out these regulations and to provide for their enforcement
City of Lawndale Necessary Regulations	
Zoning Regulation	To encourage the most appropriate use of land
Zoning Regulation	To conserve and stabilize the value of property
Zoning Regulation	To provide adequate open spaces for light and air and to prevent and fight fires
Zoning Regulation	To prevent undue concentration of population
Zoning Regulation	To lessen congestion on streets
Zoning Regulation	To facilitate adequate provisions for community utilities and facilities, such as transportation, water, sewerage, schools, parks, and other public requirements
Zoning Regulation	To protect and promote the health, safety, and general welfare, all in accordance with the comprehensive general plan
Hawthorne Boulevard Specific Plan	
Plan's Purpose	Develop appropriate land use categories and development standards
Plan's Purpose	Ensure General Plan consistency
Plan's Purpose	Prepare design guidelines for signs, streetscape, and landscaping
Plan's Purpose	Make recommendations for circulation and other improvements
Plan's Purpose	Establish a conceptual framework for physical improvements to Hawthorne Boulevard
Plan's Purpose	Provide program and policy assistance for rehabilitating and revitalizing existing structures and businesses

Source: City of Lawndale General Plan, 1992a;1992c; 1999

City of Redondo Beach

The City of Redondo Beach General Plan, adopted in 1992, provides broad policy guidance; the following goals and policies of the Redondo Beach Land Use and Circulations Elements apply to the Project as described in Figure 3.2-3.

The City of Redondo Beach updated its 2013-2021 Housing Element in 2017. As part of the Housing Element's Housing Plan, the City of Redondo Beach identifies the South Bay Galleria as a potential site for transit-oriented development due to the anticipated C Line (Green) connection.

Zoning

The stated purposes of the Zoning Ordinance of the City of Redondo Beach are to implement the policies set forth by the City of Redondo Beach's General Plan and Land Use Plan Map, as well as to provide a guide for the growth and development of the City of Redondo Beach. The specific zoning regulations are discussed in Section 3.2-3.

Table 3.2-3. City of Redondo Beach – Relevant Regulations

Code/Goal/Policy	Description
City of Redondo Beach General Plan Land Use Element	
Goal 1D	Provide for the development of public infrastructure to support existing and future residents, businesses, recreation, and other uses
Goal 1F	Maintain the fundamental pattern of existing land uses, preserving Residential neighborhoods and Commercial and Industrial districts, while providing opportunities for intensification or reuse of selected sub-areas, which improve the definition of centers of community activity and identity
Objective 1.8	Commit lands for the continued operation of public infrastructure which supports residents, businesses, and visitors and protects them from environmental hazards
Policy 1.41.8	Integrate public transit facilities on the [South Bay Galleria] site and ensure that they are accessible by automobile, bicycle, and walking from peripheral Residential neighborhoods
City of Redondo Beach General Plan Circulation Element	
Goal 1	Reduce Trip Generation
Goal 2	Take Action on Climate Change
Goal 3	Promote Alternative Modes
Goal 4	Plan Regionally
Goal 5	Coordinate Land Use and Transportation
Goal 6	Expand Transportation Demand Management
Policy G14	Increase the provision of bike lockers, bike racks, and lighting for bike facilities
Policy G16	Provide reliable, safe fixed-route transit
Policy P13	Encourage shared parking between land uses when consistent with industry standards
Policy P14	Explore parking maximums around fixed guideway transit investment to maximize transit ridership

Code/Goal/Policy	Description
Policy P23	Focus on [bicycle and pedestrian] access at transit stations, the waterfront, South Bay Galleria, Artesia Boulevard, Riviera Village, Pacific Coast Highway retail zones, and school zones
Policy P30	Promote use of alternative transportation for short trips; conduct periodic bicycle and pedestrian counts to assess whether alternative mode use is increasing
Policy P31	Extend Metro's C Line (Green)
Policy P32	Create multi-modal transit hubs
Policy P33	Enhance transit wayfinding and signage at transit stops
Policy P35	Provide bus turnouts whenever possible so that busses do not interrupt the regular flow of vehicle traffic, particularly on Pacific Coast Highway
Policy P38	Investigate expansion of existing bus service
Policy P39	Investigate beach cities trolley.
P40	Investigate bus-only lanes during peak hours to prioritize transit patrons over single-occupant vehicles.

Source: City of Redondo Beach, 1992; 2009a, revised 2021

City of Torrance

The City of Torrance General Plan, adopted in 2010, contains both land use and circulation elements that address issues relevant to the project. The general goals described in Table 3.2-4 apply to the project:

Table 3.2-4. City of Torrance – Relevant Regulations

Code/Goal/Policy	Description
City of Torrance General Plan General Goals	
Goal	A balanced transportation system that provides for the safe, convenient, and efficient movement of people and goods throughout the city and region and an infrastructure system that supports the local economy and quality of life in Torrance.
Goal	Promote and facilitate travel by alternative modes of transportation such as walking, bicycling, and transit
Goal	Achieve a high quality of life through a balanced mix of attractive Residential neighborhoods, high-quality public services, and economically viable and attractive Commercial and Industrial areas.

Source: City of Torrance, 2010a

Zoning

The City of Torrance's Planning and Land Use Code (commonly referred to as the Zoning Code and last amended in June 2020) serves as the primary implementation tool for the General Plan. The Planning and Land Use Code is a regulatory document that establishes specific standards for the use and development of all properties in the City. The Planning and Land Use Code regulates development intensity using a variety of methods, such as setting limits on building setbacks, yard landscaping standards, and building heights. The Planning and Land Use Code also indicates which land uses are permitted in the various zones. The purpose of the Planning and Land Use Code is to provide the

economic and social advantages resulting from an orderly planned use of land resources and to conserve and promote the public health, safety, and general welfare.

Hawthorne Boulevard Corridor Specific Plan

The 1996 City of Torrance Hawthorne Boulevard Corridor Specific Plan outlines land use and transportation goals, objectives, policies, and standards for a six-mile section of the Hawthorne Boulevard Corridor. The Specific Plan acknowledges and supports transit service that enhances mobility in the corridor and serves as a convenient alternative to automobile travel. The Specific Plan includes a policy, which requires coordination with local and regional transit services operating within the corridor. This policy serves to maximize the transit service provided and transit user convenience.

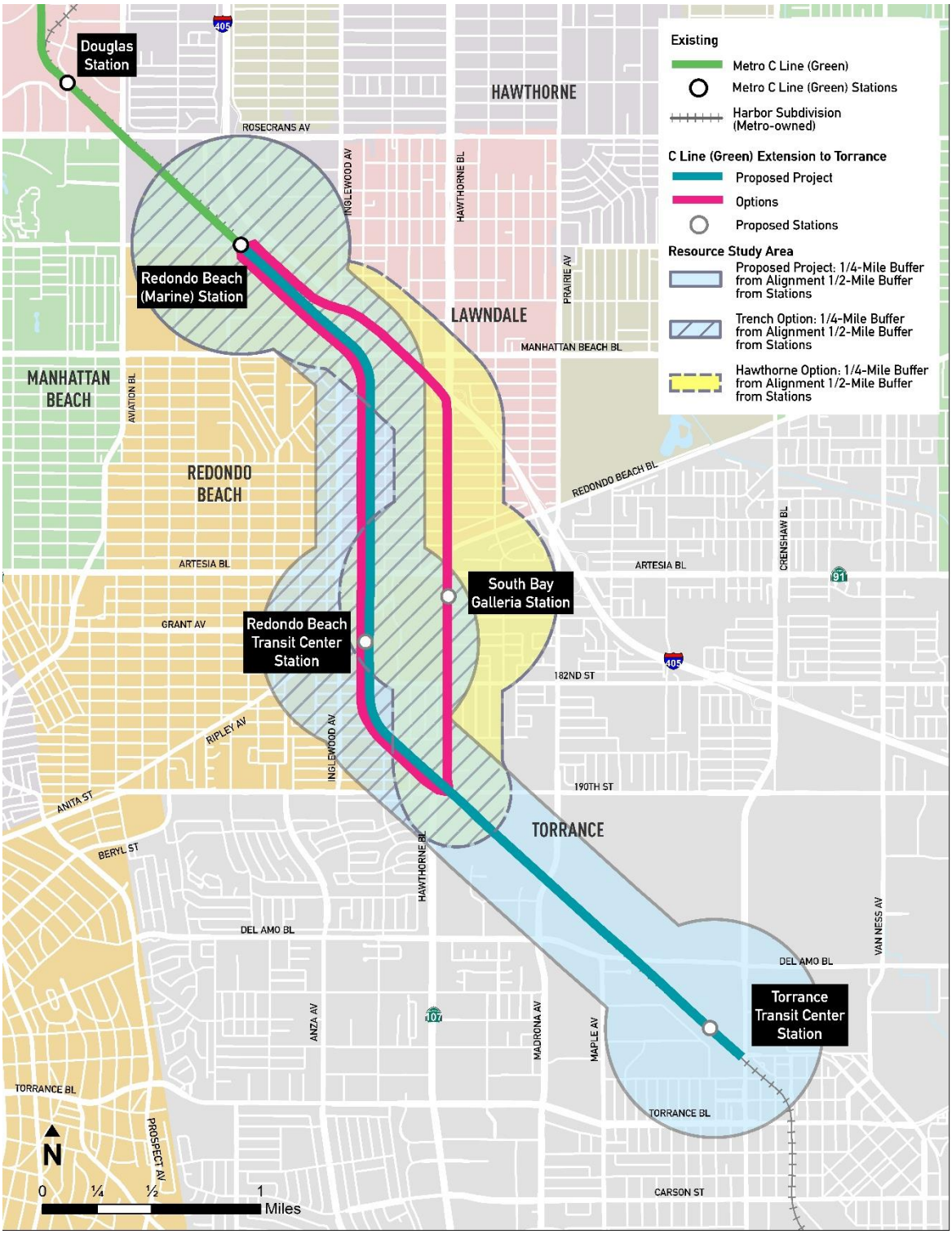
3.2-2 Methodology

The potential to physically divide an established community is assessed by determining how a project might create physical barriers that disrupt or alter the connectivity of a community. The extent of the Proposed Project's consistency with land use policies is evaluated by examining the applicable plans and policies adopted for the purpose of avoiding or mitigating an environmental effect. A project is considered consistent with land use planning policies if it meets the general intent of the plans and/or does not interfere with the goals of the plans.

3.2-2.1 Resource Study Area

The RSAs for land use and planning are defined as a quarter-mile radius on either side of the alignments for the Proposed Project and Options, and a half-mile radius around station locations. Figure 3.2-1 shows the RSAs for the Proposed Project, the Trench Option, and the Hawthorne Option.

Figure 3.2-1. Proposed Project and Trench Option – Resource Study Area



Source: STV, 2022

3.2-2.2 Significance Thresholds

Based upon the thresholds of significance contained in Appendix G of the CEQA Guidelines, implementation of the Proposed Project would result in a significant impact if the Proposed Project would:

a. Physically divide an established community.

b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

3.2-2.3 Project Features

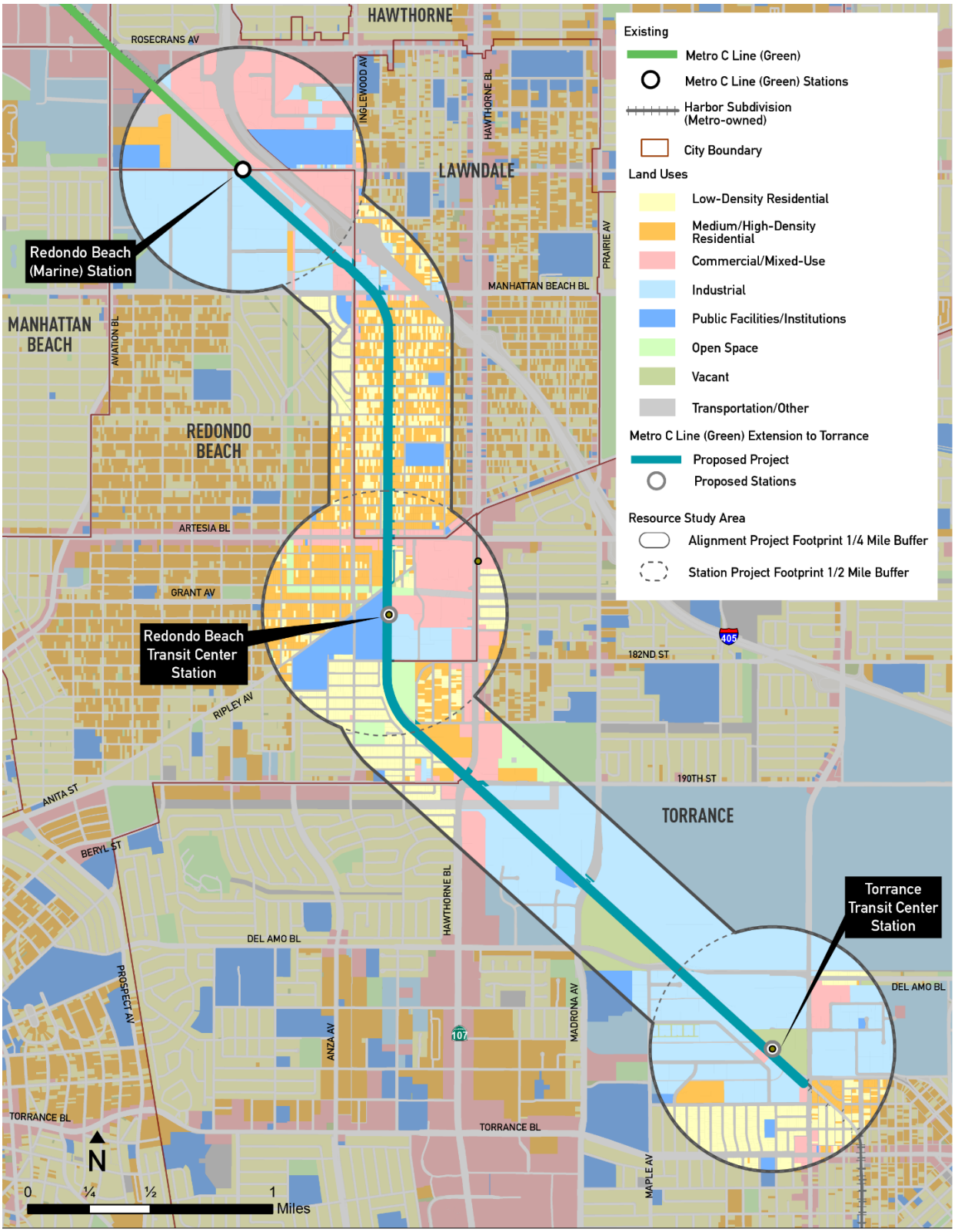
As described in Chapter 2, Project Description, a number of features have been incorporated into the project to ensure compliance with the laws, guidelines, or best practices of federal, state, local, and regional agencies. There are no specific project features for land use and planning.

3.2-3 Affected Environment / Existing Conditions

3.2-3.1 Surrounding Land Uses, Homeowners Association, and Zoning

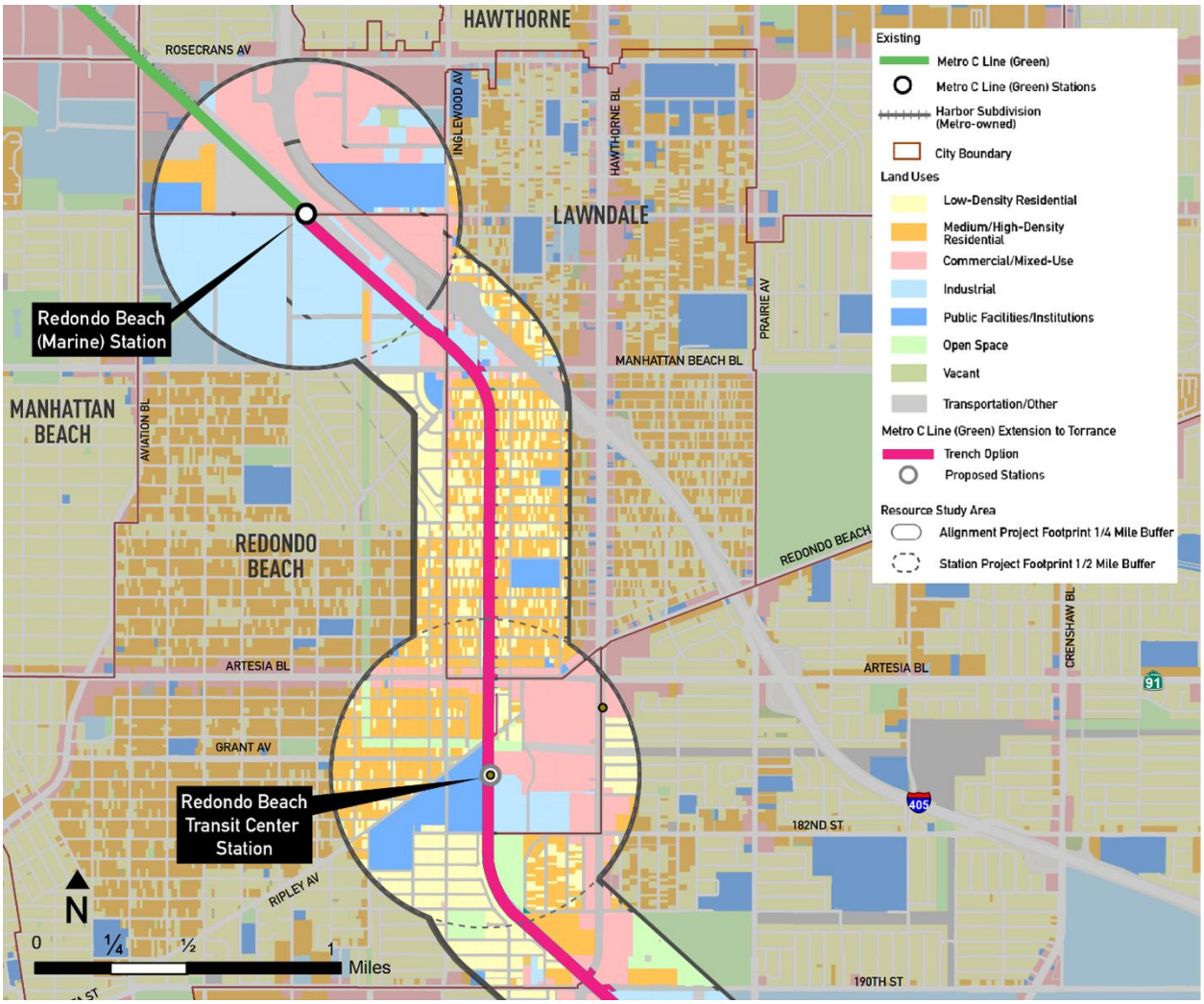
Generally, the RSAs for the Proposed Project and Options are composed of three geographic regions with distinctly different dominant land use characteristics. Although many similar land uses are represented in each geographic area, the distribution of land use types differ. This can be seen in Figure 3.2-2, Figure 3.2-3, and Figure 3.2-4 for the Proposed Project, Trench Option, and Hawthorne Option respectively. The northern area (north of Manhattan Beach Boulevard) contains a relatively high percentage of Commercial/Mixed-Use, Industrial, Transportation/Other, and Public Facilities/Institutional land uses, due to the presence of Los Angeles International Airport and an emphasis on Commercial and Industrial uses adjacent to the Metro ROW. Land uses in the central area (between Manhattan Beach Boulevard and 190th Street) along the Proposed Project and Trench Option are dominated by Residential land uses, with some Industrial, Commercial, and Transportation uses. Land uses in the central area adjacent to the Hawthorne Option are primarily Commercial with varying densities of Residential land use located adjacent to the Commercial uses. South of 190th Street, the RSAs are composed primarily of Industrial land uses and vacant land. Each of the four cities within the RSAs (the Cities of Hawthorne, Redondo Beach, Lawndale, and Torrance) have their own zoning ordinances within their municipal codes to implement their General Plan Land Use Element policies. Within the RSAs, there are a total of seven Homeowners Associations (HOA): one located in the City of Hawthorne, one in the City of Lawndale, and five in the City of Torrance.

Figure 3.2-2. Proposed Project– Existing Land Uses



Source: SCAG, 2022; STV, 2022

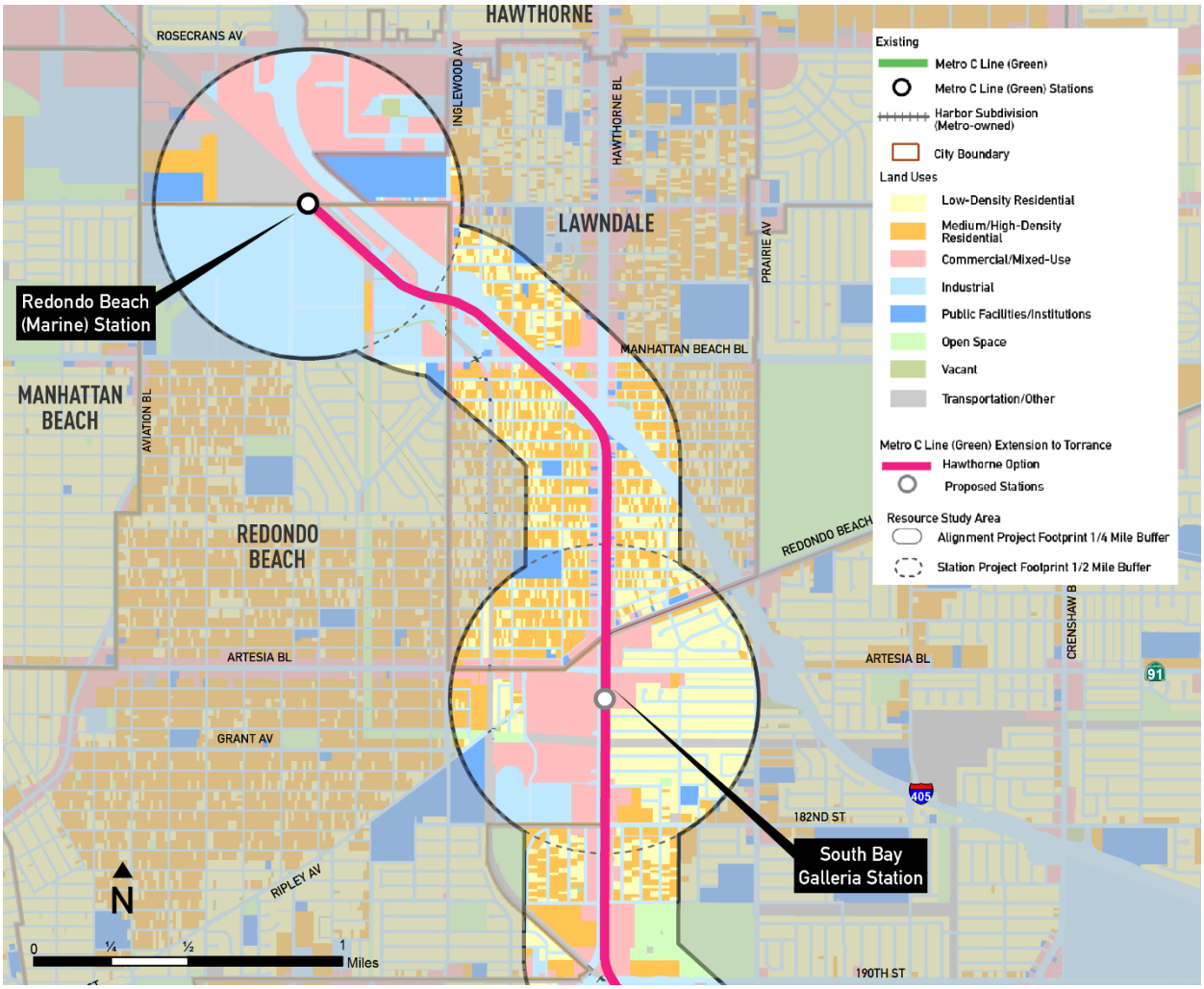
Figure 3.2-3. Trench Option – Existing Land Uses



Source: SCAG, 2022; STV, 2022

Note: The Trench Option terminates at 190th Street and the alignment becomes concurrent with the Proposed Project.

Figure 3.2-4. Hawthorne Option – Existing Land Uses



Source: SCAG, 2020; STV, 2022
Note: The Hawthorne Option terminates at 190th Street and the alignment becomes concurrent with the Proposed Project.

3.2-3.2 Land Use

The existing land uses within the RSA for Proposed Project and Trench Option are shown in Figure 3.2-5. The figure shows the percentage of land that falls under each general land use category within the RSA for the entire alignment, as well as for the portion of each city that makes up the RSA. Dominant land uses in the RSA for Proposed Project and Trench Option are Industrial (38%), Medium/High-Density Residential (15%), Commercial/Mixed Use (15%), Low-Density Residential (14%), Transportation (7%), Public Facilities/Institutions (6%), Open Space (2%) and Vacant (3%). Residential and Commercial comprise most of the land use north of 190th Street while Industrial and Vacant land make up the majority of land use south of 190th Street. Within each jurisdiction, the percent distributions vary, as shown in Figure 3.2-5. The portion of the City of Hawthorne within the RSA consists of only Commercial, Mixed Use, and Transportation land uses.

Within the RSAs, the City of Lawndale has very little industrial land use but a majority of Residential land uses, while Industrial land use is the dominant form of land use in the Cities of Redondo Beach and Torrance.

Redondo Beach (Marine) Station

The RSA of the existing Redondo Beach (Marine) Station consists of primarily Commercial/Mixed Use land uses east of I-405 and Industrial land uses west of I-405, with smaller areas of Public Facilities/Institutions, Vacant, and Residential land uses.

Redondo Beach (Marine) Station to Redondo Beach TC Station

The RSA between the existing Redondo Beach (Marine) Station and the proposed Redondo Beach TC Station is made up of almost entirely Low-Density Residential and Medium/High Density-Residential land uses, with some Commercial/Mixed land near the Redondo Beach (Marine) Station and along Artesia Boulevard, as well as some Public Facilities/Institutions land use.

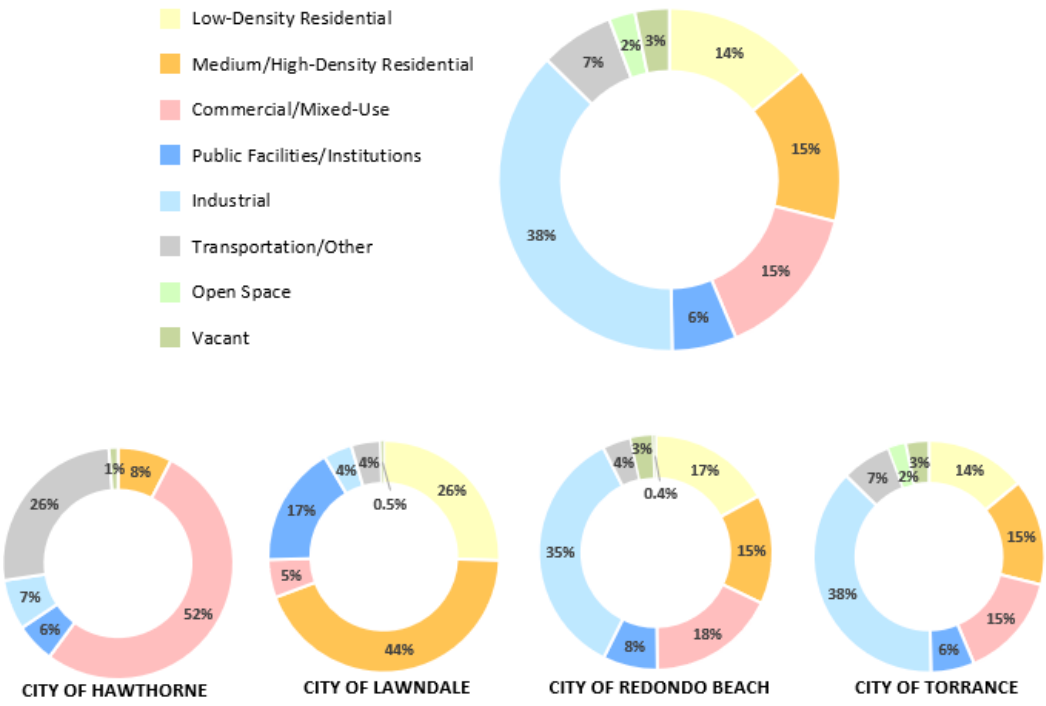
Redondo Beach TC Station

The RSAs surrounding the proposed Redondo Beach TC Station have several classifications, including Public facilities and Institutions (cemetery), Commercial (South Bay Galleria), and Medium/High-Density Residential. Hawthorne and Artesia Boulevards are surrounded by Commercial land uses, while land close to the planned station is dedicated to Industrial and Public Facilities/Institutions.

Redondo Beach TC Station to Torrance TC Station

Between the proposed Redondo Beach TC Station and the proposed Torrance TC Station, the RSA includes a mix of land uses. While the majority of the land uses are Industrial, there are also Low-Density Residential, Medium/High-Density Residential, Commercial/Mixed Use, Vacant, and Public Facilities/Institutions land uses.

Figure 3.2-5. Proposed Project and Trench Option – Percentage of Existing Land Uses in Resource Study Area



Source: SCAG, 2020; STV,2022
Note: Percentages may not add up to 100 due to rounding.

Torrance TC Station

Land uses in the RSA surrounding the proposed Torrance TC Station are primarily Industrial, with a concentration of Residential uses in the southern portion of the RSA. There is also some Commercial/Mixed Use land immediately east and a little further west of the proposed station.

3.2-3.3 Homeowners Associations

There are seven HOAs that fall at least partially within the Proposed Project and Trench Option RSA. The Fusion at South Bay HOA is located at the Fusion at South Bay townhome complex on 149th Place in the City of Hawthorne. This complex is at the western edge of the RSA between North Aviation Boulevard, the Metro ROW, and Marine Avenue. In the City of Lawndale, there is one HOA that overlaps with the RSA. This HOA, the Firmona Villas HOA, includes homes that are part of the Firmona Villas on Firmona Avenue, which lies just east of I-405 and south of West 156th Street. There are no HOAs in the City of Redondo Beach that fall within the Proposed Project and Trench Option RSA. In the City of Torrance, five HOAs overlap with the Proposed Project and Trench Option RSA. The North Torrance Neighborhood Association covers the area between the Metro ROW and Hawthorne Boulevard, and between 182nd Street and 190th Street. The West Torrance HOA extends south of 190th Street and west of Hawthorne Boulevard to the border of the RSA. The Pueblo HOA includes homes along Del Amo Boulevard from Crenshaw Boulevard to the west, to the edge of the RSA to the east. The Belmar North HOA consists of the collection of homes that lie between Hawaii Street and Alaska Avenue to the west and east, and California Street and Maricopa Street to the north and south. Finally, the Old Torrance HOA is bordered by Crenshaw Boulevard to the west and Dominguez Street to the north, extending to the edge of the RSA.

3.2-3.4 Zoning

The zoning maps for each city are shown in Figure 3.2-6, Figure 3.2-7, Figure 3.2-8, and Figure 3.2-9.

City of Hawthorne

The RSA within the City of Hawthorne is near the Redondo Beach (Marine) Station, and is zoned mostly Regional Commercial, Regional Commercial/Mixed Use, and General Industrial. Some parcels are also zoned under the Willow Glen Specific Plan.

City of Redondo Beach

The City of Redondo Beach has various zoning classifications in the RSA. The zoning near the Redondo Beach (Marine) Station is predominantly Industrial and Industrial-Commercial, with a small amount of land zoned for Parks, Recreation, and Open Space, and Commercial. The zoning between the Redondo Beach (Marine) Station and the proposed Redondo Beach TC is Single Family and Low-Density Multi-Family Residential. The zoning around Redondo Beach TC has several classifications, including Public Facilities & Institutions (cemetery), Commercial (South Bay Galleria), and Medium/High-density Residential. Continuing south along Proposed Project and Trench Option, the City of Redondo Beach zoning classification is primarily Single Family Residential.

City of Lawndale

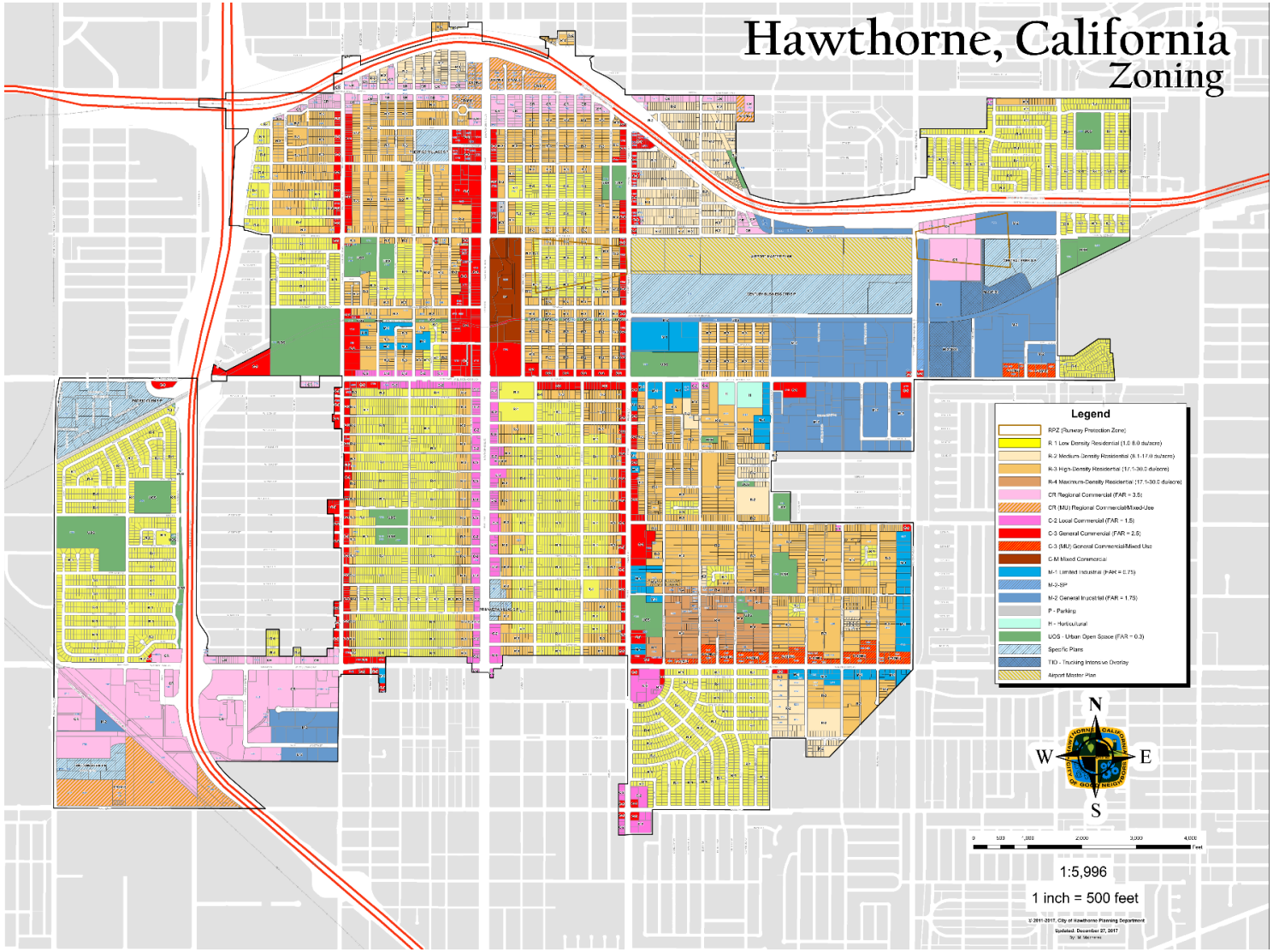
A small portion of the City of Lawndale lies within the Redondo Beach (Marine) Station RSA with parcels zoned Light Industrial, Institutional, and Commercial Manufacturing. The area of the City of Lawndale near the Redondo Beach TC has General Commercial, Single Family Residential, Two-Family Residential, and Limited Multiple Residence classifications. The zoning classifications along the remainder of the RSAs for Proposed Project, Trench Option, and Hawthorne Option in the City of Lawndale are primarily

Residential, including Single Family Residential, Two-Family Residential, and Limited Multiple Family Residential.

City of Torrance

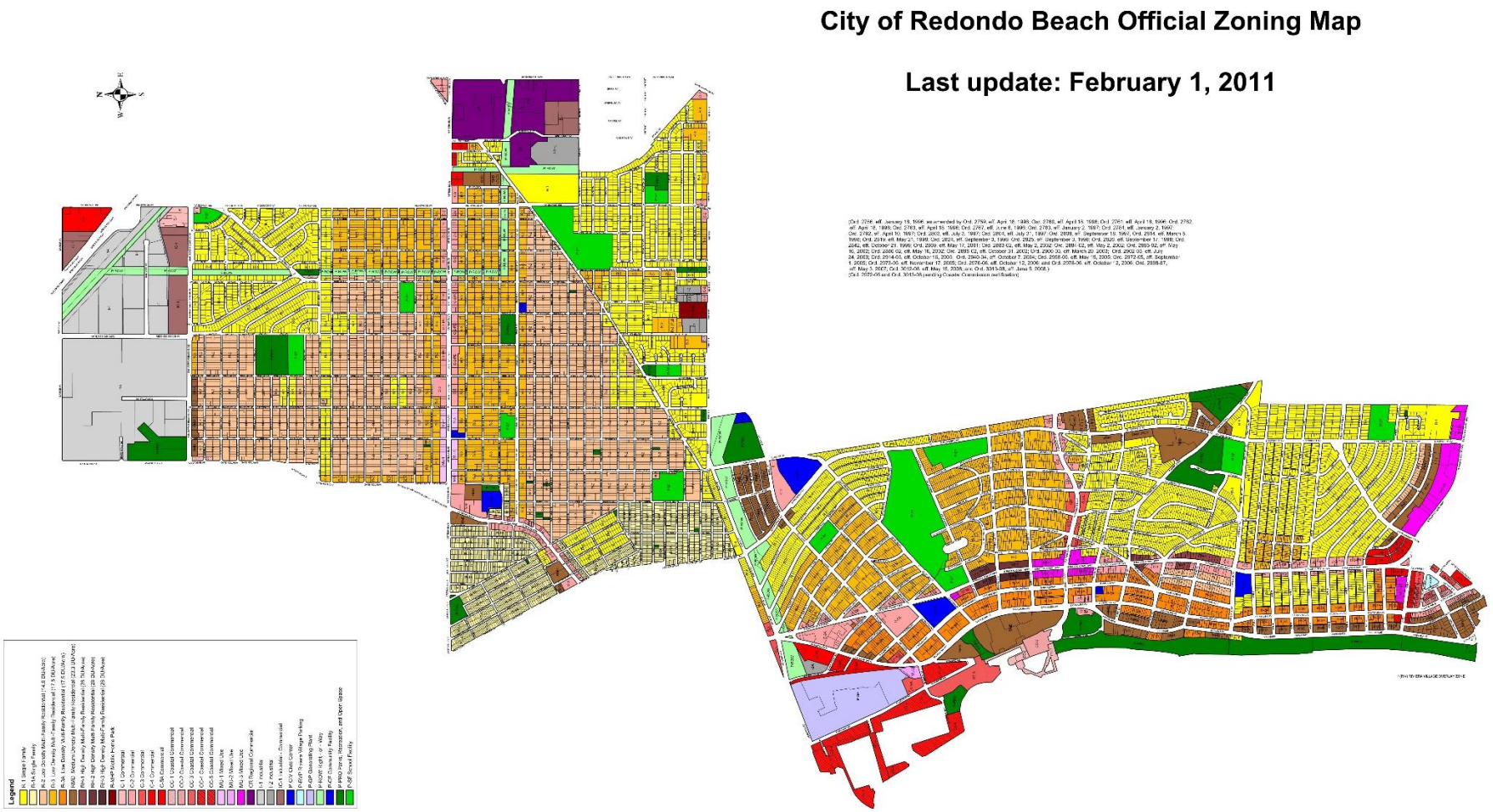
From Artesia Boulevard to 182nd Street, the Proposed Project and Trench Option RSA includes a small portion of land in the City of Torrance which is zoned primarily Residential and Commercial. The Proposed Project and Trench Option abuts the border of the City of Torrance to the west from 182nd Street to 190th Street where land is primarily zoned Public Use and Residential to the east, along with some recreational land (El Nido Park). The primary zoning classifications along the alignment from 190th Street to the Torrance TC are Heavy Manufacturing and Residential zones, including Single Family, Two-Family, and Limited Multiple Family, and some Commercial zones along Hawthorne Boulevard.

Figure 3.2-6. City of Hawthorne – Zoning



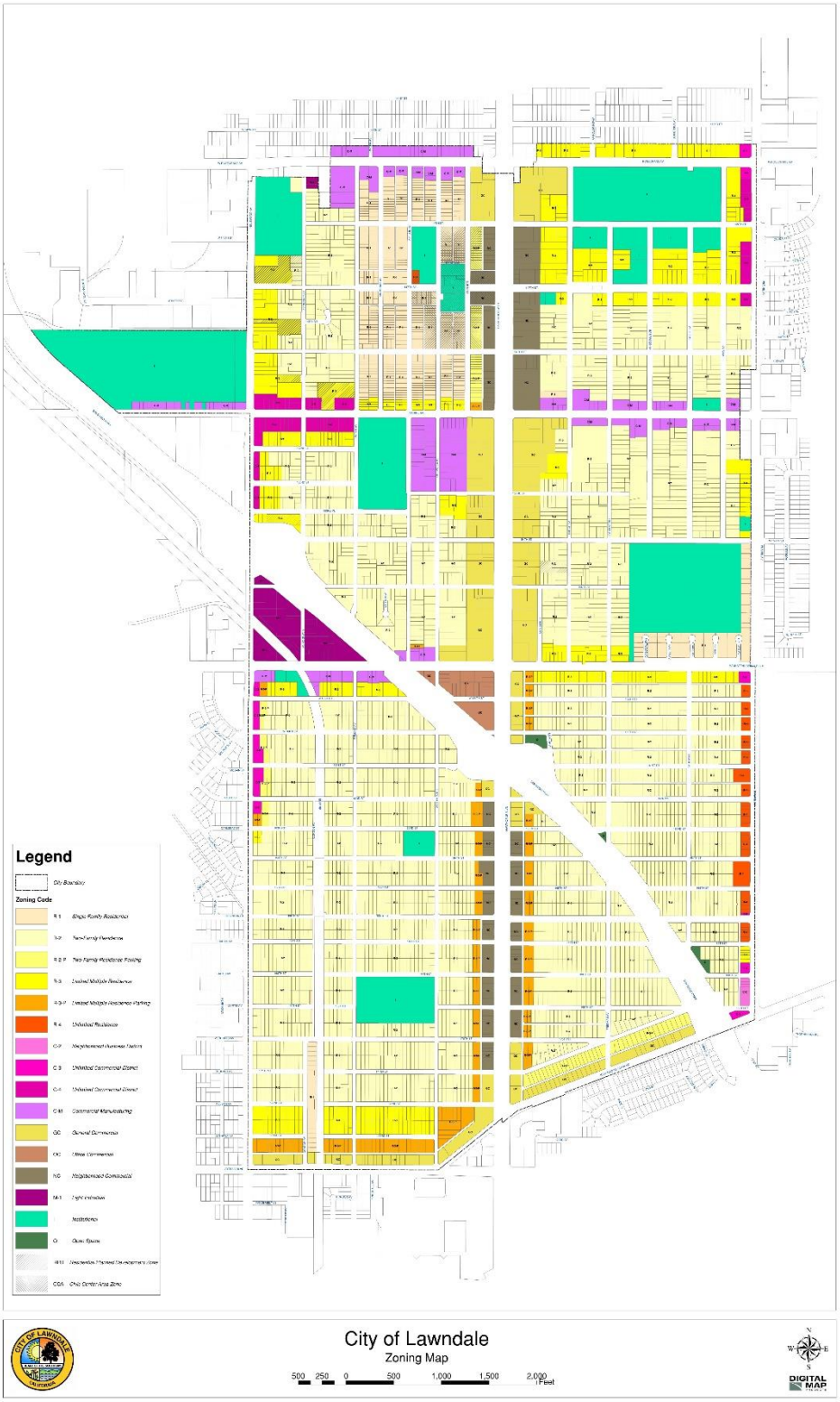
Source: City of Hawthorne, 2019

Figure 3.2-7. City of Redondo Beach – Zoning



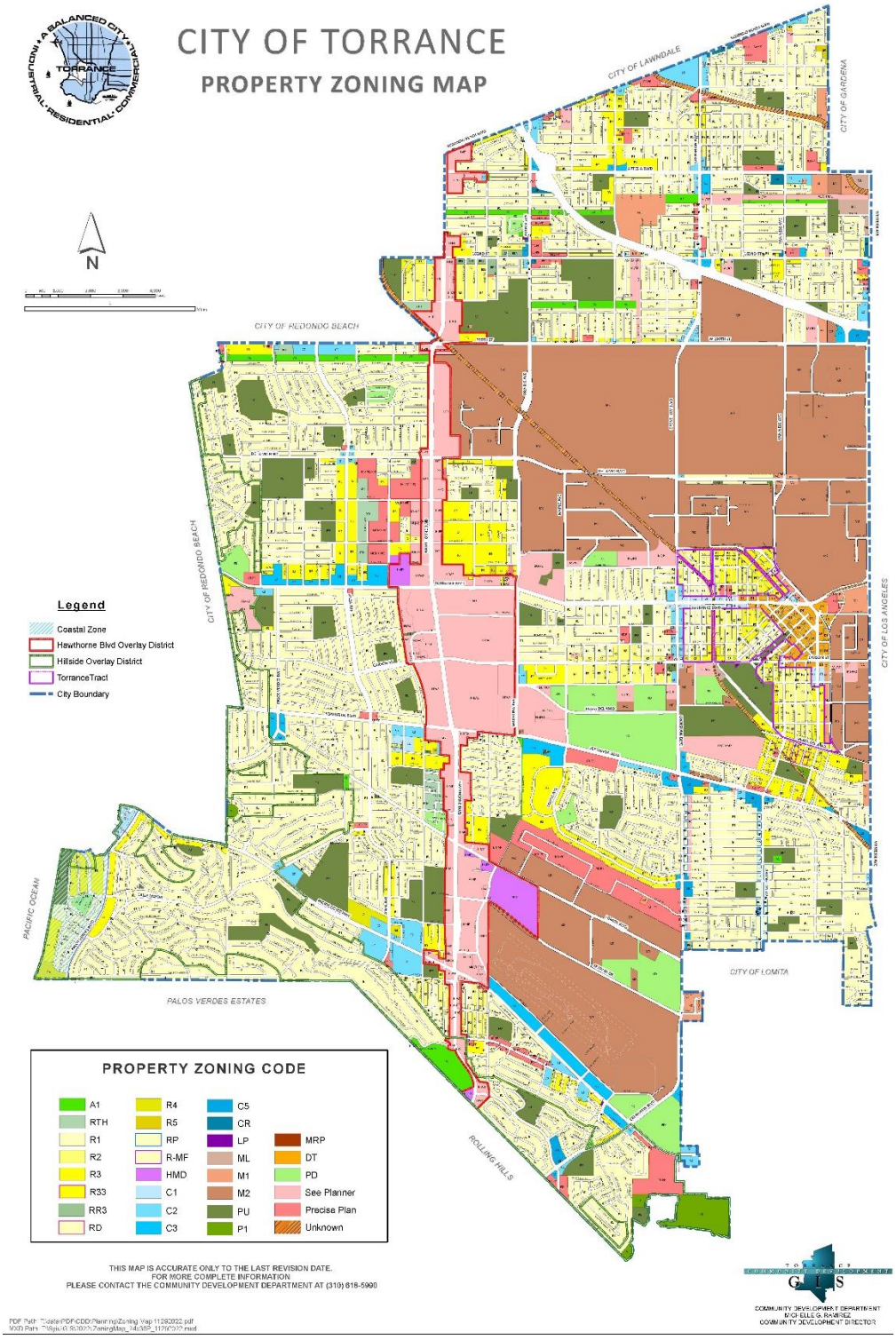
Source: City of Redondo Beach, 2011

Figure 3.2-8. City of Lawndale – Zoning



Source: City of Lawndale, 2004

Figure 3.2-9. City of Torrance – Zoning



Source: City of Torrance, 2022

3.2-3.4.1 Trench Option

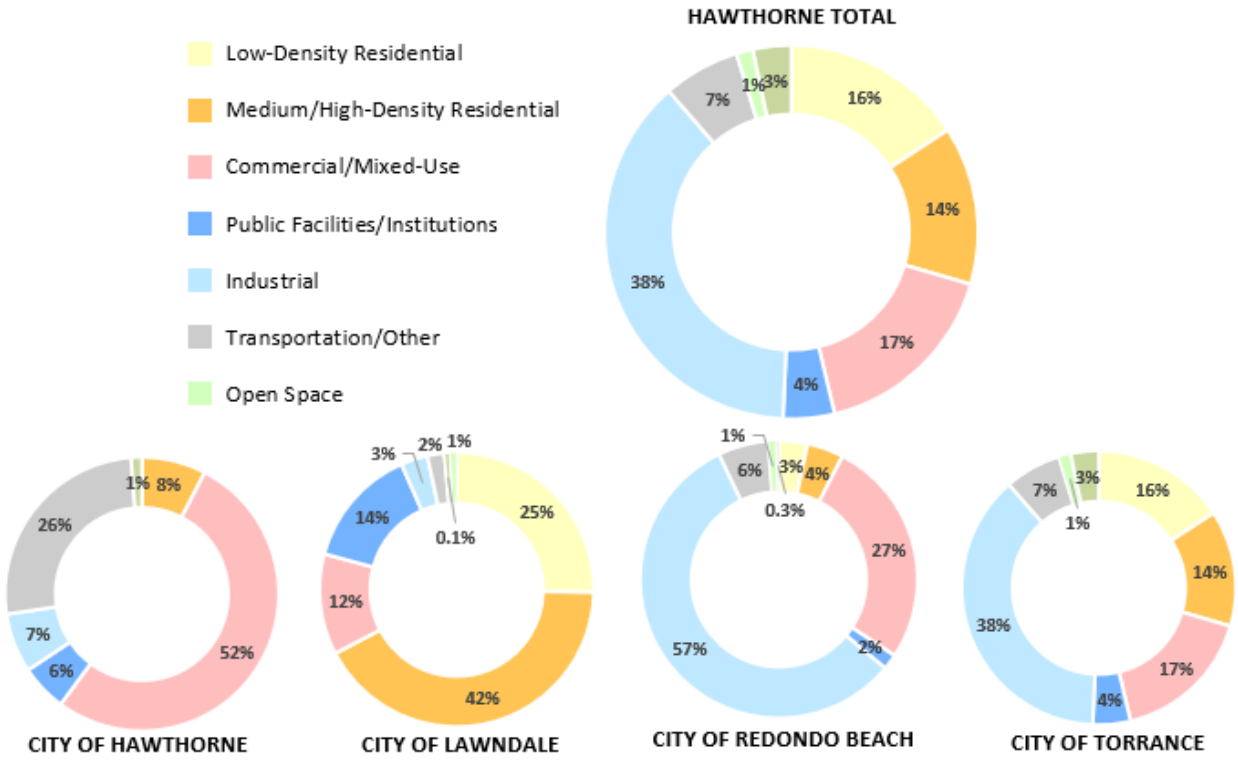
The affected environment and existing conditions for the Trench Option are the same as the Proposed Project.

3.2-3.4.2 Hawthorne Option

Land Use

The land uses within the RSA for Hawthorne Option are shown in Figure 3.2-10. Dominant land uses in the RSA for Hawthorne Option are Industrial (38%), Commercial/Mixed-Use (17%), Low-Density Residential (16%), Medium/High-Density Residential (14%), Transportation (7%) Public Facilities/Institutions (4%), Vacant (3%) and Open Space (1%). Within each jurisdiction, the percent distributions vary, as shown in Figure 3.2-10. Similar to the Proposed Project and Trench Option, the portion of the City of Hawthorne within the RSA consists of only Commercial/Mixed Use, and Transportation land uses. The City of Lawndale has primarily Residential land uses, while the Cities of Redondo Beach and Torrance have primarily Industrial land uses. Overall, the distribution of land use types is similar between Trench Option and Hawthorne Option.

Figure 3.2-10. Hawthorne Option – Percentage of Existing Land Uses in Resource Study Area



Source: Source: SCAG, 2020; STV,2022
Note: Percentages may not add up to 100 due to rounding Redondo Beach (Marine) Station

Redondo Beach (Marine) Station

Land uses within the RSA of the existing Redondo Beach (Marine) Station are discussed in Section 3.2-3.2.

Redondo Beach (Marine) Station to South Bay Galleria Station

Between the Redondo Beach (Marine) Station and the proposed South Bay Galleria Station there is a mix of land uses. The area primarily consists of Residential land uses. There are also Commercial/Mixed Use, Industrial, and Public Facilities/Institutions land uses, and a very small presence of Vacant and Open Space land uses in this area.

South Bay Galleria Station

Land uses within the RSA surrounding the proposed South Bay Galleria Station are predominantly Residential, as well as Commercial/Mixed Use, due to the presence of the South Bay Galleria, and Industrial.

South Bay Galleria Station to Torrance TC Station

The land uses within the RSA between the proposed South Bay Galleria Station and proposed Torrance TC Station are mixed, but the predominant land use type is Industrial. Other present land uses include Residential, Commercial/Mixed, Public Facilities/Institutions, and Vacant and Open Space.

Torrance Transit Center Station

Land uses within the RSA of the proposed Torrance TC Station are discussed in Section 3.2-3.2 under Torrance TC Station**.**

Homeowners Associations

The HOAs within the RSA of the Hawthorne Option are the same as within the RSA of the Proposed and Trench Option, except for the portion of the North Torrance Neighborhood Association that falls within the Hawthorne Option RSA. Between 182nd Street and 190th Street, the North Torrance Neighborhood Association covers the area between the Metro ROW and Hawthorne Boulevard. North 182nd Street, this HOA is bordered by Hawthorne Boulevard to the west, Redondo Beach Boulevard to the north, and RSA boundary to the east and south.

Zoning

The zoning maps for each city are shown in Figure 3.2-6, Figure 3.2-7, Figure 3.2-8, and Figure 3.2-9.

City of Hawthorne

The portion of the City of Hawthorne within the RSA for the Hawthorne Option is the same for the Proposed Project and Trench Option. See Section 3.2-3.2

City of Redondo Beach

The zoning near the existing Redondo Beach (Marine) Station along the Hawthorne Option in the City of Redondo Beach is predominantly Industrial and Industrial-Commercial, with a small amount of land zoned for Parks, Recreation, and Open Space, and Commercial. A small portion of the Hawthorne Option falls within the City of Redondo Beach near the South Bay Galleria Station. This area is zoned primarily as Industrial, Commercial/Mixed-Use, Low-Density Residential, and Medium/High-Density Residential.

City of Lawndale

The zoning classifications along the Hawthorne Option in the City of Lawndale are primarily Two-Family Residential, Limited Multiple Family Residential, and Neighborhood Commercial. The area around Manhattan Beach Boulevard is zoned as Office Commercial. The area of the City of Lawndale near the

proposed South Bay Galleria Station is zoned mostly Limited Multiple Residence (including Limited Multiple Residence Parking), General Commercial, and Neighborhood Commercial.

City of Torrance

Before rejoining the Metro ROW at 190th Street, the Hawthorne Option is surrounded by land zoned Hawthorne Boulevard Specific Plan and Single Family, Two-Family, and Limited Multiple Family Residential. The portion of the RSA surrounding the South Bay Galleria Station that falls within the City of Torrance is almost entirely Residential, with a few parcels zoned Planned Development, Public Use, General Commercial, and Light Agricultural. As with the Proposed Project and Trench Option, the primary zoning classifications along the alignment from 190th Street to the proposed Torrance TC are Heavy Manufacturing and Residential zones, including Single Family, Two-Family, Limited Multiple Family, and some Commercial zones along Hawthorne Boulevard.

3.2-4 Environmental Impacts

3.2-4.1 Would the Proposed Project physically divide an established community?

3.2-4.1.1 Construction Impacts

Less than Significant Impact. The construction of the Proposed Project would require substantial construction activity to build two new light rail tracks and rebuild the existing freight track, including embankment and excavation work, building of retaining walls, bridges, Traction Power Substation (TPSS) sites, light rail stations, multi-use recreational paths, and other required support infrastructure, including soundwalls for mitigation of noise impacts (see Section 3.6, Noise and Vibration). These construction activities would likely cause disruptions in traffic flow, including road closures and potential traffic delays where construction activities would occur. Less substantial roadway construction activities that would occur for the Proposed Project include construction of at-grade crossings, curb ramps, striping, and signage. All construction impacts for the Proposed Project would be temporary, and the duration of activity would be limited.

As construction would be completed in phases, not all of the previously described disruptions would be occurring at the same time, limiting their ability to divide the communities. Additionally, as described in Section 3.1, Transportation, pursuant to PF-T-1, a construction traffic management plan (CTMP) would be prepared and implemented to ensure automobile, walking, bicycling, and other transportation access is maintained throughout the construction limits during all phases of construction. Per Metro standard practice, this CTMP (including street closure information, detour plans, haul routes, and a staging plan) would be prepared and submitted to the Cities of Lawndale, Redondo Beach, and Torrance for review. Therefore, the construction of the Proposed Project would not physically divide an established community and there would be a **less than significant impact**.

TRENCH OPTION

Less than Significant Impact. Construction activities and areas for the Trench Option would be similar to the Proposed Project (utilizing the same equipment in the same area) but would require a greater amount of excavation and a longer duration of activity. The Trench Option would require 1.8 miles of trench and 0.9 miles of aerial structures to be constructed along the corridor, thereby requiring more excavation and hauling of materials to and from the construction site between Manhattan Beach Boulevard and 190th Street than the Proposed Project. The Trench Option would also take longer to construct (approximately two years more than the Proposed Project), so potential impacts would last longer.

Most of the land uses north of 190th, are Residential, with some Commercial/Mixed land use, Industrial, and Public Facilities/Institutional use. For construction areas along the Trench Option corridor, impacts may include disruptions in traffic flow including road closures and potential traffic delays where construction activities would occur. Similar to the Proposed Project, the impacts described would be constructed in a phased manner and a CTMP would be implemented ensuring access during construction as part of PF-T-1. Therefore, the construction of the Trench Option would not physically divide an established community and there would be a **less than significant impact**.

HAWTHORNE OPTION

Less than Significant Impact with Mitigation. Construction activities and areas for the Hawthorne Option would require building elevated tracks and station structures between the existing Redondo Beach (Marine) Station and 190th Street and street level improvements including TPSS sites, as well as restriping roadways and reconstructing the median and sidewalks on Hawthorne Boulevard and its cross

streets in some areas of the alignment. The Hawthorne Option would require 2.9 miles of elevated structures to be constructed parallel to the west side of the I-405 and continuing in the median of Hawthorne Boulevard between Manhattan Beach Boulevard and 190th Street with no at-grade crossings. Most of the land uses along Hawthorne Boulevard are primarily Residential, Commercial/Mixed land use, Industrial, and Public facilities/Institutional use. The Hawthorne Option would require additional parcel acquisitions to construct the elevated guideways and stations when compared to the Trench Option and Proposed Project between the existing Redondo Beach (Marine) Station and 190th Street.

For construction areas along the corridor, impacts may include potential traffic disruptions and delays, as construction necessitates temporary lane and intersection closures. As part of the Hawthorne Option, pursuant to PF-T-1, a CTMP would be implemented to maintain connectivity across and along Hawthorne Boulevard during construction (see Section 3.1, Transportation). Vehicular and pedestrian access across Hawthorne Boulevard would generally be maintained by phasing construction in such a way that does not close multiple parallel roads or sidewalks at the same time. While parallel roads and their intersections are typically close enough that automobiles can easily detour to a parallel road to gain access across Hawthorne Boulevard, in locations where pedestrian crossings are more than 1,000 feet apart, construction of the Hawthorne Option may pose a barrier to pedestrian access across the roadway. This could divide the community for the duration of construction at some locations for several months, resulting in a significant impact during construction with regard to dividing a physically established community. However, with the implementation of Mitigation Measure MM-LU-1, Temporary Crossings (See Section 3.2-5), detours around closures, including temporary crosswalks where closed intersections do not have alternate crossings within 1,000 feet, the Hawthorne Option would have a **less than significant impact with mitigation** during construction.

3.2-4.1.2 Operational Impacts

Less than Significant Impact. The key operational elements of the Proposed Project that could impact the cohesion of an established community are added elevated and at-grade tracks, TPSS sites, fencing, realigned freight tracks, and stations. The majority of east-west streets along the corridor currently dead-end at the existing Metro ROW, thus the addition of a light rail line would not change the overall roadway network and connectivity within the RSA. Currently, the existing freight tracks run through a predominantly residential area in Lawndale, where safety fencing (required where adjacent to freight) is not maintained or has been breached, allowing local residents to cross the Metro ROW outside of the designated crossings and use the freight corridor for recreational activities. With the operation of the light rail line and rebuilding of freight track, local residents would no longer be able to freely cross the Metro ROW in areas where existing fencing is breached as the Proposed Project would include new or repaired security fencing (described in more detail in Chapter 2, Project Description) and other barriers (such as soundwalls proposed as mitigation, described in Section 3.6, Noise and Vibration) adjacent to light rail tracks. These barriers would restrict the current level of unauthorized pedestrian access into the Metro ROW, but they would not physically divide the community because residents would still be able to cross the ROW at the existing crossings (159th, 160th, 161st, 162nd, 170th, and 182nd Streets), which would all be rebuilt with upgraded safety infrastructure. As access across these existing east-west roadways would be maintained, the community would not be physically divided.

Other project elements including stations, TPSS sites, and crossing equipment would not impede access. At approximately 28,000 square feet, TPSS sites would not be of a size or scale to divide a community. The proposed stations would not block any existing roadway or other access paths. The proposed crossings (12 light rail grade-separated and two light rail at-grade) along the Metro ROW would maintain

access across the corridor at all of the locations where crossing is currently permitted. No existing designated pedestrian, cyclist, or automobile crossings would be closed. While freight tracks would be realigned in some areas, their crossing configuration would not be changed in a way that would change access across them.

The two at-grade crossings for the Proposed Project would be at 170th Street and 182nd Street. Both crossings are located in a low-density single-family home neighborhood. Currently, there are safety gates at both intersections for the existing at-grade freight crossings. Under the Proposed Project, a new gate system would be installed at these crossings for enhanced safety and to avoid conflicts between vehicles, pedestrians, and cyclists. During peak periods, light rail trains would operate every five to 10 minutes along the line. When trains cross roadways at-grade, safety gates would be down for a maximum of approximately 90 seconds at a time, if two trains traveling in opposite directions crossed consecutively. With a potential 5-minute headway as the most frequent service pattern, and two light rail trains coming from both directions (north and southbound) consecutively, gates would be down for a maximum of 12 to 18 minutes per hour. As indicated, this scenario would account for the maximum number of light rail trains crossing at the same time every five minutes. However, two trains crossing in both directions consecutively would only occur infrequently, based on headways. Because this scenario is only occasional and at only two crossings, and because there are grade separated rail crossings less than a half-mile away that provide alternate access across the Metro ROW, the addition of light rail tracks and the duration and frequency of gates being down would not physically divide the community. Therefore, the Proposed Project would have a **less than significant impact** related to the division of an established community during operation.

TRENCH OPTION

Less than Significant Impact. The Trench Option would have the same operating patterns as the Proposed Project and would travel along the Metro ROW. Similar to the Proposed Project, the Trench Option would include fencing and proposed soundwalls in some areas within the Metro ROW, but these would not physically divide the community, as access across all existing east-west roadways would be maintained. Under the Trench Option, there would be localized differences in roadway crossing configurations. Because the light rail trains would cross under all roadways that currently cross the Metro ROW, there is not a need for light rail safety gates at the intersections of 170th Street and 182nd Street, however, these intersections would have safety gates for at-grade freight crossings, which exist today. Therefore, the Trench Option would have a **less than significant impact** related to the division of an established community during operation.

HAWTHORNE OPTION

Less than Significant Impact. The Hawthorne Option would be elevated parallel to I-405 and continuing down Hawthorne Boulevard, therefore there would not be conflicts between street and light rail crossings. While there would be changes to the current roadway configuration along Hawthorne Boulevard to support the elevated guideway, this would not impede access to either side of the community.

The main changes to the roadway configuration along Hawthorne Boulevard would involve a reconfiguration of the intersections to relocate the left turn lanes and the reduction of parking within the median due to a conflict with the elevated structure columns. The existing lane configuration would remain as is for both northbound and southbound traffic, but traffic would be shifted a few feet to the east in the approach to the proposed South Bay Galleria Station to provide pedestrian access to the station. There would be new midblock crossings to provide pedestrian access to the proposed South Bay

Galleria Station from the south side of the station in addition to the existing crosswalk at Artesia Boulevard. Additionally, several intersections would be signalized along Hawthorne Boulevard. These changes would not impede access within the community. Therefore, the Hawthorne Option would have a **less than significant impact** related to the division of an established community during operation.

3.2-4.2 Would the Proposed Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

3.2-4.2.1 Construction Impacts

Less than Significant Impact. Table 3.2-5. analyzes the consistency of land use plans, policies, and regulations pertinent to the Proposed Project. These policies are discussed in greater detail in Section 3.2-1, respective to each regional or local regulation subsection. Construction activities would be temporary and, as described in Table 3.2-5., would not directly conflict with applicable regional and local land use plans, policies, and regulations adopted for the purpose of avoiding or mitigating an environmental effect. Further, the Proposed Project would comply with all applicable regulations and local ordinances governing construction activities to the extent feasible. Therefore, construction of the Proposed Project would have a **less than significant impact**.

TRENCH OPTION

Less than Significant Impact. Due to the regional nature of the plans and policies, the consistency analysis presented in Table 3.2-5 for the Proposed Project would be similar for the Trench Option. The primary difference in the construction of the Trench Option is it would involve excavation of 1.8 miles of the Metro ROW and the construction of retaining walls throughout the Metro ROW, which would require a longer construction duration, but this difference does not have a distinction relative to constructing an at-grade light rail line from the standpoint of the plans, policies, and regulations adopted for the purpose of avoiding or mitigating an environmental effect. As with the Proposed Project, construction of the Trench Option would comply with all applicable regulations and local ordinances governing construction activities to the extent feasible. Therefore, construction of the Trench Option would have a **less than significant impact**.

HAWTHORNE OPTION

Less than Significant Impact. The Hawthorne Option would have a similar impact as the Proposed Project as described in Table 3.2-5, as it passes through the same jurisdictions and the same plans and policies apply to the area. As with the Proposed Project, construction of the Hawthorne Option would comply with all applicable regulations and local ordinances governing construction activities to the extent feasible. Therefore, construction of the Hawthorne Option would have a **less than significant impact**.

Table 3.2-5. Consistency Analysis of Land Use Plans, Policies, and Regulations

Policies/Goals	Consistency with the Proposed Project
Regional Regulations	
SCAG 2020-2045 RTP/SCS	
Long-range Strategies for Transportation and Land use	**Consistent.** The Connect SoCal Project List, including the 2019 Federal Transportation Improvements Program (FTIP) as well as strategic projects, identifies funding for the following public transit projects in the RSA: this Project, a city bus transfer station at the Redondo Beach Transit Center (Redondo Beach TC), the Torrance Transit Park and Ride Regional Terminal (Torrance TC), and a transit service connection between Long Beach and the South Bay Transit Galleria. Connect SoCal's "Core Vision" centers on maintaining and better managing the transportation network for moving people and goods, while expanding mobility choices by locating housing, jobs, and transit closer together and increasing investment in transit and complete streets.
South Coast Air Quality Management District Air Quality Management Plan	
Federal and California Clean Air Acts (CCAA)	Discussion of the AQMP, and Project consistency with the AQMP, is addressed in Section 3.4, Air Quality, of this Draft EIR.
Local Regulations	
City of Hawthorne, General Plan	
Circulation Element: Policy 1.16: The City (of Hawthorne) shall review and encourage the use of public transportation through the expansion of local and regional bus systems; encouragement of vanpooling, carpooling, jitneys, and the new light rail transit system; and consideration of staggered work hours for local businesses.	**Consistent.** This policy supports the expansion of light rail and public transportation. In addition to the consistency of this policy, there would be no change to existing land use patterns.
City of Torrance, General Plan	
General Plan Goals: • A balanced transportation system that provides for the safe, convenient, and efficient movement of people and goods throughout the city and region and an infrastructure system that supports the local economy and quality of life in Torrance • Promote and facilitate travel by alternative modes of transportation such as walking, bicycling, and transit; and	**Consistent**. The Project aligns with these General Plan goals, which include a transportation supporting local economy and quality of life, encouraging other modes (transit) of travel, and creating an attractive community with quality public services which may include transit. In addition to the consistency of these policies, there would be no change to existing land use patterns.

Policies/Goals	Consistency with the Proposed Project
• Achieve a high quality of life through a balanced mix of attractive Residential neighborhoods, high-quality public services, and economically viable and attractive Commercial and Industrial areas.	(see previous page)
City of Redondo Beach, General Plan	
Land Use Element: • Goal 1D: Provide for the development of public infrastructure to support existing and future residents, businesses, recreation, and other uses. • Goal 1F: Maintain the fundamental pattern of existing land uses, preserving Residential neighborhoods and Commercial and Industrial districts, while providing opportunities for intensification or reuse of selected sub-areas, which improve the definition of centers of community activity and identity. • Objective 1.8: Commit lands for the continued operation of public infrastructure which supports residents, businesses, and visitors and protects them from environmental hazards. • Policy 1.41.8 Integrate public transit facilities on the [South Bay Galleria] site and ensure that they are accessible by automobile, bicycle, and walking from peripheral Residential neighborhoods. *Circulation Element Goals:* • Reduce Trip Generation • Take Action on Climate Change • Promote Alternative Modes • Plan Regionally • Pursue Transit Priorities.G14 - Increase the provision of bike lockers, bike racks, and lighting for bike facilities; • G16 – Provide reliable, safe fixed-route transit; • P13 – Encourage shared parking between land uses when consistent with industry standards; • P14 – Explore parking maximums around fixed guideway transit investment to maximize transit ridership;	**Consistent.** These policies support the following which all apply to the Project: • Public infrastructure development that protects the public from environmental hazards and contributes to community uses. • Maintaining existing land use and improving centers of community activity. • Integrating public transit facilities. • Providing reliable, safe fixed-route transit • Policy P31 states the extension of the Metro C (Green) Line. The City of Redondo Beach also identifies the South Bay Galleria as a potential site for transit-oriented development due to the anticipated C Line (Green) connection. In addition to the consistency of these policies, there would be no change to existing land use patterns.

Policies/Goals	Consistency with the Proposed Project
• P23 – Focus on [bicycle and pedestrian] access at transit stations, the waterfront, South Bay Galleria, Artesia Boulevard, Riviera Village, Pacific Coast Highway retail zones, and school zones; • P30 – Promote use of alternative transportation for short trips; conduct periodic bicycle and pedestrian counts to assess whether alternative mode use is increasing; • P31 – Extend Metro's C Line (Green); • P32 – Create multi-modal transit hubs; • P33 – Enhance transit wayfinding and signage at transit stops; • P35 – Provide bus turnouts whenever possible so that busses do not interrupt the regular flow of vehicle traffic, particularly on Pacific Coast Highway; and P38 – Investigate expansion of existing bus service.	(see previous page)
City of Lawndale, General Plan	
Land Use Element Policy/Goals: • Goal 1: Preserve and enhance the environment, values, aesthetic character, and image of Lawndale as a vital, attractive, desirable, and safe urban community; • Policy 1a: Maintain the existing Residential development pattern, except in locations along major transportation corridors and public centers where Commercial or higher-density Residential uses are more appropriate; *Circulation Element Policy/Goals:* • Goal 1: Provide an integrated transportation system for the safe and efficient movement of people and goods with minimal disruption to the environment within and through the City; • Goal 2: Consider all modes of transportation; and • Goal 5: Participate in and assist with coordinating regional efforts which integrate the City's transportation system with the regional transportation system.	**Consistent.** These policies support maintaining: • land use patterns except for major transit corridors • a viable and desirable community • integrating public transportation facilities and encouraging all modes of transportation In addition to the consistency of these policies, there would be no change to existing land use patterns.

3.2-4.2.2 Operational Impacts

Less than Significant Impact. Operational impacts are analyzed in Table 3.2-5. Because the Proposed Project's improvements would not change the existing land use setting or conflict with the described plans and policies during operation, the Proposed Project would have a **less than significant impact**. The City of Redondo Beach's General Plan Circulation Element specifically calls for an extension of the Metro C Line as Policy P31.

TRENCH OPTION

Less than Significant Impact. Operational impacts are analyzed in Table 3.2-5. Because the Trench Option would operate in the same location and with the same operating pattern as the Proposed Project, there is no difference in their compatibility with plans and policies during operation. The City of Redondo Beach's General Plan Circulation Element specifically calls for an extension of the Metro C Line as Policy P31. Thus, there would be a **less than significant impact**.

HAWTHORNE OPTION

Less than Significant Impact. Because the Hawthorne Option would operate in the same jurisdictions, completely grade separated, and with the same operating pattern as the Proposed Project, there is little difference in the applicability and their compatibility with plans and policies during operation and the impacts analyzed in Table 3.2-5 are largely the same for the Hawthorne Option. The City of Torrance's Hawthorne Boulevard Corridor Specific Plan acknowledges and supports transit service that enhances mobility in the corridor and serves as a convenient alternative to automobile travel. The City of Lawndale's Hawthorne Boulevard Corridor Specific plan seeks to ensure that the improvement to existing facilities is coordinated with future population and employment growth and provides a balanced mix of transportation. Both of these goals are consistent with light rail transit service. The addition of a station at the South Bay Galleria is consistent with the City of Redondo Beach's General Plan which seeks to integrate public transit facilities on the South Bay Galleria site and ensure that they are accessible by automobile, bicycle, and walking from peripheral residential neighborhoods. Thus, there would be a **less than significant impact**.

3.2-5 Mitigation Measures

Mitigation Measure LU-1 – Temporary Crossings

Where construction requires the closure of crosswalks or other pedestrian roadway crossings and an alternate crossing route does not exist within 1,000 feet of the closed crossing, the contractor shall provide a temporary alternate crossing nearby. These temporary crossings shall be identified in the CTMPs for the Cities of Lawndale, Redondo Beach, and Torrance, described in Project Feature T-1, which would be completed prior to the issuance of a building permit for the Hawthorne Option and the initiation of major roadway work. The plan shall identify the placement of temporary pedestrian crossings to ensure safe pedestrian crossings near all closed roadway crossings where an alternate crossing is not available within 1,000 feet.

3.2-6 Project Impacts Remaining After Mitigation

No mitigations measures are required for the Proposed Project and Trench Option. With the incorporation of Mitigation Measure LU-1 into the Hawthorne Option, there would be no project impacts remaining after mitigation.

3.2-7 Cumulative Impacts

The methodology for cumulative analysis and a description of relevant projects and projections are included in Section 3.0, Introduction. The geographic scope of the cumulative analysis for land use and planning are the RSAs described in Section 3.2-2.1, a quarter-mile from the alignment and a half-mile from stations, falling within urbanized and suburban areas of the Cities of Hawthorne, Lawndale, Redondo Beach, and Torrance.

3.2-7.1 Proposed Project

The related projects identified in Section 3.0, Introduction are subject to land use regulation by the local jurisdictions. Simultaneous construction of related projects and the Proposed Project could occur, potentially resulting in short-term and temporary construction disruptions to the existing built environment and circulation through temporary roadway or sidewalk closures or construction laydown areas. Projects such as the Inglewood Avenue Intersection Improvements and Grant Avenue Signal Improvements are close enough to the Metro ROW to be potentially disruptive if construction occurred concurrently, but given the shorter and more intermittent duration of the nature of these types of roadway improvement projects, overlap of construction periods would be minimal, if at all. Additionally, the Proposed Project roadway closures and laydown areas during construction in conjunction with related projects would not divide existing communities as access within and out of the communities as they would generally be required to be maintained through their respective construction traffic management plans. Therefore, construction of the Proposed Project in combination with past, present, and reasonably probable future projects is not expected to result in a cumulatively significant impact related to the physical division of an established community.

Operation of the Proposed Project would not divide the existing community in conjunction with the related projects as access within and out of the communities would be unchanged or changed very little by these projects. Further, the related projects would be required to be consistent with applicable general plans and zoning codes. Therefore, the Proposed Project, combined with past, present, and reasonably foreseeable projects, would **not result in a cumulatively significant impact to land use and planning during construction or operation.**

3.2-7.2 Trench Option

Because of the similarity to the Proposed Project of construction and operations of the Trench Option's interaction with land use and community connectivity, the Trench Option's potential for cumulative effects would be similar to the Proposed Project. The Trench Option, combined with past, present, and reasonably foreseeable projects, **would not result in a cumulatively significant impact to land use and planning during construction or operation.**

3.2-7.3 Hawthorne Option

Simultaneous construction of some related projects and the Hawthorne could occur, potentially resulting in short-term and temporary construction disruptions to the existing built environment and circulation through temporary roadway or sidewalk closures or construction laydown areas. Projects such as the Hawthorne Boulevard Corridor Improvement and the South Bay Galleria Development projects are close enough to Hawthorne Boulevard to be potentially disruptive if construction occurred concurrently. The South Bay Galleria Development project construction in particular could occur simultaneously with construction of the Hawthorne Option as the duration of construction for this project is likely to be longer than a roadway improvement project. However, with the incorporation of Mitigation Measure LU-1, Temporary Crossings (See Section 3.2-5), the Hawthorne Option would not

physically divide an established community during construction, as alternate crossings to access either side of the community would be provided and its contribution relative to related projects would not be cumulatively considerable.

Operation of the Hawthorne Option would not divide the existing community in conjunction with the related projects as access within and out of the communities would be unchanged or changed very little by these projects. Further, the related projects would be required to be consistent with applicable general plans and zoning codes. Therefore, the Hawthorne Option, combined with past, present, and reasonably foreseeable projects, would not result in a cumulatively significant impact to land use and planning during construction or operation.

3.3 AESTHETICS

This section of the Draft EIR provides an analysis of the potential impacts on aesthetics.

3.3-1 Regulatory Framework

Federal, state, regional, and local regulations concerning aesthetics and visual quality are described in the following section.

3.3-1.1 Federal Regulations

There are no existing federal regulations pertaining to aesthetics and visual resources that are applicable to the Proposed Project.

3.3-1.2 State and Regional Regulations

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" (California Public Resources Code [PRC] Section 21001[b]).

California Department of Transportation Scenic Highway Program

The California Department of Transportation (Caltrans) manages the California Scenic Highway Program, which was created by the State Legislature in 1963. The state laws governing the Scenic Highway Program are included in the Streets and Highways Code, Sections 260 through 263. The purpose of the Scenic Highway Program is to protect and enhance the natural scenic beauty of California highways and adjacent corridors through special conservation treatment. The program includes a system of highways that are either eligible for designation as scenic highways or have been officially designated. The status of a proposed state scenic highway changes from eligible to officially designated when the local governing body applies to Caltrans for scenic highway approval, adopts a Corridor Protection Program, and receives notification that the highway has been officially designated a Scenic Highway (Caltrans, 2022).

Los Angeles County Metropolitan Transportation Authority

Metro Design Standards

Metro adopted design standards that provide a consistent design for all new Metro rail projects. These standards pertain to all facilities that Metro designs, builds, operates, and maintains.

Metro Art Program Policy

Metro adopted a percent for art policy that allocates a minimum of 0.5% of capital project construction costs for public art. The policy is built on three guiding principles: put people first, connect to creative communities throughout Los Angeles County, and champion innovation. The policy recognizes Los Angeles County as one of the world's most important creative capitals and home to a range of talented artists and provides guidelines for percent for art calculation and implementation. Metro adopted an art program which mandates that the inclusion of art in the design of public spaces creates a more inviting environment, enlivens a functional world, and contributes to a positive experience for the system's future riders. This policy consists of guidelines pertaining to community involvement, artist collaboration, and certain components of rail, including station design, trees and other landscaping, signage, street and pedestrian lighting, and public art.

Metro Adjacent Development Review

Published in February 2021, Metro has developed an adjacent development review process which guides developers, utility companies, and other third parties to consult with Metro for development, construction, and maintenance activities occurring within 100 feet from Metro-owned right-of-way (Metro ROW) and other real estate assets. The process ensures safety and aims to avoid conflicts to Metro transit services and operations.

Metro Tree Policy

In October 2022, the Metro Board adopted the Metro Tree Policy, which clarifies and standardizes Metro's practices for protecting the urban canopy throughout its construction program. The Metro Tree Policy recognizes the environmental benefits of trees and outlines Metro's commitment to a consistent and sustainable approach to mitigating the impacts of construction. The key elements of this approach include the following:

> Protecting trees through planning, design and construction, and maintenance.

> Replacing any trees removed (when necessary) at a 2:1 ratio, or at a 4:1 ratio in the case of heritage trees. This replacement ratio is in line with the requirements of other local jurisdictions.

> Adopting species, palette, and planting strategies that maximize opportunities for native species, carbon capture, mitigating urban heat effect, stormwater capture, and use of recycled water for irrigation.

> Committing to a three-year establishment period for the new trees planted and encouraging creative approaches to tree replacement planting within the impacted area, including but not limited to first-last mile pathways, parkway strips, parks, or schools (however, Metro will not support planting trees in parkway locations that have the potential to damage Metro buses or impede their operation).

The Metro Tree Policy also includes several other ways in which Metro will approach issues related to trees, including those that are planted at maintenance and office facilities, and those trees located at or near bus stops and train stations. In addition, the policy includes additional objectives for maintaining or planting trees on Metro properties or in conjunction with Metro funded projects.

3.3-1.3 Local Regulations

The Proposed Project and Options are located within the Cities of Lawndale, Redondo Beach, and Torrance. The resource study areas (RSA) also include areas within the City of Hawthorne, where a portion of the existing Redondo Beach (Marine) Station is located. The local regulations for these four jurisdictions were reviewed for policies and regulations that apply to the Proposed Project.

City of Hawthorne

As described in Table 3.3-1 below, the Land Use Element of the City of Hawthorne General Plan contains the following goals and policies that focus on aesthetic and visual resources.

Table 3.3-1. City of Hawthorne – Relevant Regulations

Code/Goal/Policy	Description
City of Hawthorne General Plan Land Use Element	
Goal 2	Every effort shall be made to ensure that both existing and future development will be and will remain compatible with surrounding desirable uses.
Policy 2.1	The design of future development shall consider the constraints and opportunities that are provided by adjacent existing development.
Policy 2.6	Where it is necessary to construct retaining or noise-attenuating walls along freeway corridors, they should be constructed with natural-appearing materials and generously landscaped with vines, trees and shrubbery.
Goal 3	A sound local economy which attracts investment, increases the tax base, creates employment opportunities for Hawthorne residents and generates public revenues.
Policy 3.2	The design of future developments projects shall consider the economic benefits and detriments that the project will provide.

Source: City of Hawthorne, 1989a amended 2016

City of Lawndale

As described in Table 3.3-2 below, the City of Lawndale General Plan, Municipal Code, and Hawthorne Boulevard Specific Plan contain the following goals and policies that focus on aesthetic and visual resources.

Table 3.3-2. City of Lawndale – Relevant Regulations

Code/Goal/Policy	Description
City of Lawndale General Plan Land Use Element	
Goal 1	Preserve and enhance the environment, values, aesthetic character, and community image of Lawndale as a vital, attractive, desirable, and safe urban community.
Goal 2	The City should promote community character by encouraging compatible land use and design in respect to location, timing, and density.
Policy 2b	In order to minimize conflicts with adjacent land uses, adequate setbacks, buffering, and/or innovative site design shall be required.
Policy 2c	The use of land shall include design features, which create a positive visual impact for the surrounding area.
Goal 5	All proposed land development shall provide quality site design and architectural features as well as demonstrate compliance with General Plan Guidelines and Implementation Ordinances.
Policy 5e	A combination of structural sound attenuation techniques, landscaped setback areas, berms, and decorative sound attenuation walls shall be required where development abuts major transportation corridors.
Policy 5f	New development shall provide coordinated site design whenever possible with existing or proposed adjacent land uses, to provide complimentary site design and unified circulation access.
Policy 5k	Project landscaping should be designed to include drought tolerant, native California plan species and the use of a drip, micro-spray or other low-flow irrigation systems.
Policy 5l	Architectural design shall enhance the neighborhood, community values, and City image.
City of Lawndale General Plan Conservation Element	
Policy 1f	Nonresidential projects shall be encouraged to incorporate decorative hardscape plazas with drought tolerant landscaping into project design.
Goal 4	Promote the preservation and rehabilitation of cultural resources that are significant to the Lawndale community because of their age, architecture, history, or symbolism.

Code/Goal/Policy	Description
Policy 4a	Promote the preservation and/or conservation of historic structures, places, and or architectural features.
City of Lawndale Municipal Code	
Section 12.28	Street Trees. This chapter implements the general plan of the city; protect private property and the public right-of-way from the danger of falling trees and limbs; assure visibility for vehicular traffic; assure the health of existing and proposed trees; assure protection of municipal improvements through the proper selection of trees; facilitate the cleaning of the sidewalks, streets and storm drains; increase property values; enhance the environmental quality of the city; improve general aesthetic values; and select trees of longevity which are suitable to the environment.
Section 17.30	Design Review. This chapter establishes the design review procedure that is enacted to assure that proposed new residential structures meet all aspects of this code, are harmonious with the surrounding area within all R-1, R-2, R-3, and R-4 zones and do not pose a threat to the public health, safety and general welfare of the city and its citizens. In addition, the design review process will assure orderly development while protecting the character of existing neighborhoods and prevent inferior development which would have a deleterious effect on the local and surrounding environments by reason of use, design, appearance or other criteria affecting property value.
Section 17.76	Signs. This chapter is adopted in recognition of the important function of signs and of the need for their regulation under this title. It is the purpose of this chapter to safeguard and enhance property values in residential, commercial and industrial areas; to protect public investment in, and the character and dignity of, public buildings, open spaces and thoroughfares; to provide an environment which will promote the development of business in the city; to encourage sound practices of, and lessen the objectionable effects of, competition in respect to size and placement of signs; to aid in the attraction of visitors and shoppers who are so important to the economy of the city; to reduce hazards to motorists and pedestrians traveling on the public way; to implement the goals and strategies of the general plan; to provide adequate means for persons to express their free speech rights by display of a sign; and thereby to promote the public health, safety and welfare.
Section 17.88	Water-Efficient Landscaping. This chapter establishes that the city council finds and declares that it is in the interest of public health, safety, and welfare to promote water-efficient landscape design, installation, and management while ensuring that the aesthetic, recreational, functional, economic, environmental, and social benefits are achieved. The purpose of the regulations set forth in this chapter is to establish standards for designing, installing, and maintaining water efficient landscapes in new and substantially altered or expanded existing development projects.
Hawthorne Boulevard Specific Plan	
Goal 2b	Provide a high-quality image for Hawthorne Boulevard.
Goal 2e	Protect existing residential neighborhoods from negative impacts.
Chapter III, Section C.1	In most instances, the existing street trees will be removed and replaced with new trees in accordance with the tree species identified for that area. In the few cases where the medians are already planted, the existing trees will remain, and the planters augmented with appropriate shrubs and groundcover.

Source: City of Lawndale 1992a; 1999; 2022

City of Redondo Beach

As described in Table 3.3-3 below, the City of Redondo Beach General Plan and Municipal Code contain the following goals and policies that focus on aesthetic and visual resources.

Table 3.3-3. City of Redondo Beach – Relevant Regulations

Code/Goal/Policy	Description
City of Redondo Beach Land Use Element	
Goal 1N	Ensure a high quality of the City's built environment, architecture, landscape, and public open spaces and sidewalks.
Policy 1.16.4	Establish physical and visual streetscape connections to the South Bay Galleria, which may include consistent street trees, signage, lighting, and other distinctive elements.
Policy 1.46.5	Require, where the City has jurisdiction, that public sites be designed to incorporate landscaped setbacks, walls, and other appropriate elements to mitigate operational and visual impacts on adjacent land uses.
Policy 1.53.9	Limit the use of materials and designs which detract from the community-oriented environment.
Policy 1.55.2	Select landscape and tree species which complement the architectural design of structures and reflect the intended functional, physical, and visual character of the district in which they are located.
City of Redondo Beach Municipal Code	
Section 9-1.16	Fencing of Construction Sites. This section establishes that every holder of a building permit or demolition permit shall completely enclose by fencing the construction site which is the subject of the permit prior to the start of demolition or construction, provided, however, the Chief Building Officer or his or her designee may waive this requirement whenever the terrain, size of the lot, location of neighboring lots, scope of construction or demolition or one or more other factors make it infeasible or unnecessary to completely enclose the construction site by fencing. Any waiver of this provision shall be in writing.
Section 10-2.18	Sign Regulations. This section establishes sign regulations to protect and enhance the City's character and its economic base through the provision of appropriate sign standards and the avoidance of excessive or obtrusive signs on privately owned property.
Section 10-2.19	Landscaping regulations. This section establishes standards for installation of landscaping in order to enhance the aesthetic appearance of properties within the City, ensure the quality, quantity, and appropriateness of landscape materials, effect a functional and attractive design, improve compatibility between land uses, conserve water, control soil erosion, and preserve the character of existing neighborhoods.

Source: City of Redondo Beach, 2008; 2022

City of Torrance

As described in Table 3.3-4 below, the City of Torrance General Plan, Municipal Code, and Hawthorne Boulevard Corridor Specific Plan contain the following goals and policies that focus on aesthetic and visual resources.

Table 3.3-4. City of Torrance Beach – Relevant Regulations

Code/Goal/Policy	Description
City of Torrance General Plan Land Use Element	
Policy LU.2.1	Require that new development be visually and functionally compatible with existing residential neighborhoods and industrial and commercial areas.
Policy LU.3.1	Require new development to be consistent in scale, mass and character with structures in the surrounding area. For distinct neighborhoods and districts, consider developing design guidelines that suit their unique characteristics. Create guidelines that offer a wide spectrum of choices and that respect the right to develop within the context of existing regulations.
Policy LU.5.1	Require that new residential development be visually and functionally consistent in scale, mass, and character with structures in the surrounding neighborhood. Encourage residential development that enhances the visual character, quality, and uniqueness of the City's neighborhoods and districts.
City of Torrance General Plan Community Resource Element	
Policy CR.19.1	Make the preservation of scenic vistas an integral factor in land development decisions.
Policy CR.20.2	Require that nonresidential uses adjacent or near residential neighborhoods provide shielding or other protections from outdoor lighting and lighted signage.
City of Torrance Municipal Code	
Section 92.30.5	Lighting. All lighting on the subject property shall be constructed in such a manner that glare shall be directed away from all surrounding residential land uses.
Section 92.30.6	Landscaping. A landscape plan for the subject property shall be approved by the City and said landscape plan shall comply with Article 6, Chapter 3, Division 9 of the Torrance Municipal Code.
Section 75.1.11	Protection During Erection, Repair, Etc. of Buildings. During the erection, repair, alteration or removal of any building, house or structure in the City, no person in charge of such work shall leave any tree, shrub or plant in any street, park, boulevard, alley or public place of the City in the vicinity of such building or structure without good and sufficient guards or protectors as shall prevent injury to such tree, shrub or plant arising out of or by reason of the erection, repair, alteration or removal.
Hawthorne Boulevard Corridor Specific Plan	
Goal 1C	Define and provide for an integrated and high-quality urban image of the Corridor as a whole, consistent with its functional role.
Goal 1I	Facilitate public and private participation to achieve a high quality aesthetic, functional, and economically viable corridor.

Source: City of Torrance, 1996; 2010c; 2010d; 2022a

3.3-2 Methodology

The methodology approach presented herein draws upon the guidance outlined in the Guidelines for the Visual Impact Assessment of Highway Projects (2015) published by the Federal Highway Administration (FHWA), a guidance document commonly used by transportation agencies to assess potential visual impacts of public transit projects. The impacts section addresses the impacts of the Proposed Project and Options based on an analysis of visual quality and aesthetics within the RSAs.

The following steps have been used to determine the impacts of the Proposed Project and Options:

- The visual environment and existing landscape characteristics within the RSA are defined and documented. The visual environment is evaluated for both the existing condition and for the future planned condition.
- Applicable planning documents (e.g., general plans, planning, and zoning codes, etc.) are reviewed for pertinent policy and guidance information.
- Major viewer groups are identified, and anticipated viewer responses are documented.
- Typical views and key observation points (KOP) for the visual assessment are identified, based on the responses of representative viewers.
- After review of the project description, engineering plans and renderings, the type and degree of visual changes expected to result in the RSA are documented.
- Appropriate mitigation measures are identified if a significant impact is identified.

Several variables affect the degree of visibility, visual contrast, and ultimately, the project impacts, including the scale and size of facilities, distance and viewing angle, color, and texture, and influences of adjacent scenery or land uses. Even where visible, viewer response and sensitivity vary depending on viewer attitudes and expectations. Viewer sensitivity is distinguished among project viewers in recreation, residential, commercial, and office/industrial areas, with the first considered to have relatively high sensitivity, the second to have moderate sensitivity, and the latter two to have low sensitivity. Activities can either encourage a viewer to observe the surrounding area more closely (scenic driving) or discourage close observation (commuting in heavy traffic). All viewer elements are considered when evaluating expected viewer response.

Field surveys were performed of the RSAs on May 12, 2020 and November 25, 2020 to identify the visual environment and to describe associated landforms, visual resources, vegetation patterns, and manmade development. Views from representative viewpoints were digitally photographed to depict the RSAs.

To assess the physical changes of the Proposed Project and Options on the visual environment, typical views, or KOPs, were established in locations where the visual character is representative of the Project Area and experienced by viewer groups in the RSAs. These KOPs represent views that would be seen by the range of potentially sensitive viewer groups that may be affected by the Proposed Project. These locations were selected to represent either (1) “typical” views from common types of viewing areas from which a project could be seen, such as a highway or residential area, or (2) specific areas such as parks, viewpoints, and sensitive areas that may be affected by the Proposed Project. KOPs are useful for depicting the range of visual character and visual quality found within an RSA. The KOPs selected for analysis ultimately serve as site-specific examples of existing visual conditions so analysts can simulate the view with the Proposed Project in place to assess impacts. In total, 23 KOPs were evaluated.

3.3-2.1 Resource Study Area

The RSAs for aesthetics extend a quarter-mile around from the alignments of the Proposed Project, Trench Option, and Hawthorne Option, as depicted in Figure 3.3-1. The RSAs include varying landforms (topography), land cover (vegetation and structures), and atmospheric conditions (dust, fog, and precipitation), which can all limit human sight. Considering the anticipated scale of the Proposed Project and Options, and the urban environment of the RSAs, the zone of highest visual concern generally is not expected to extend beyond a foreground distance of a quarter-mile from the alignment. Beyond foreground viewing distances of a quarter-mile, the Proposed Project and Options would have limited visual presence. Although there are instances in which visual changes may be experienced beyond the

RSAs, this distance was not selected for the extent of the RSAs because views would generally be blocked by tall vegetation, buildings, and other intervening development. In addition, views of the alignments from specific view corridors along major arterials, freeways, railways, or other transportation corridors were also addressed as appropriate throughout the analysis and were considered in the selection of representative KOPs along the proposed alignments.

3.3-2.2 Visual Resources

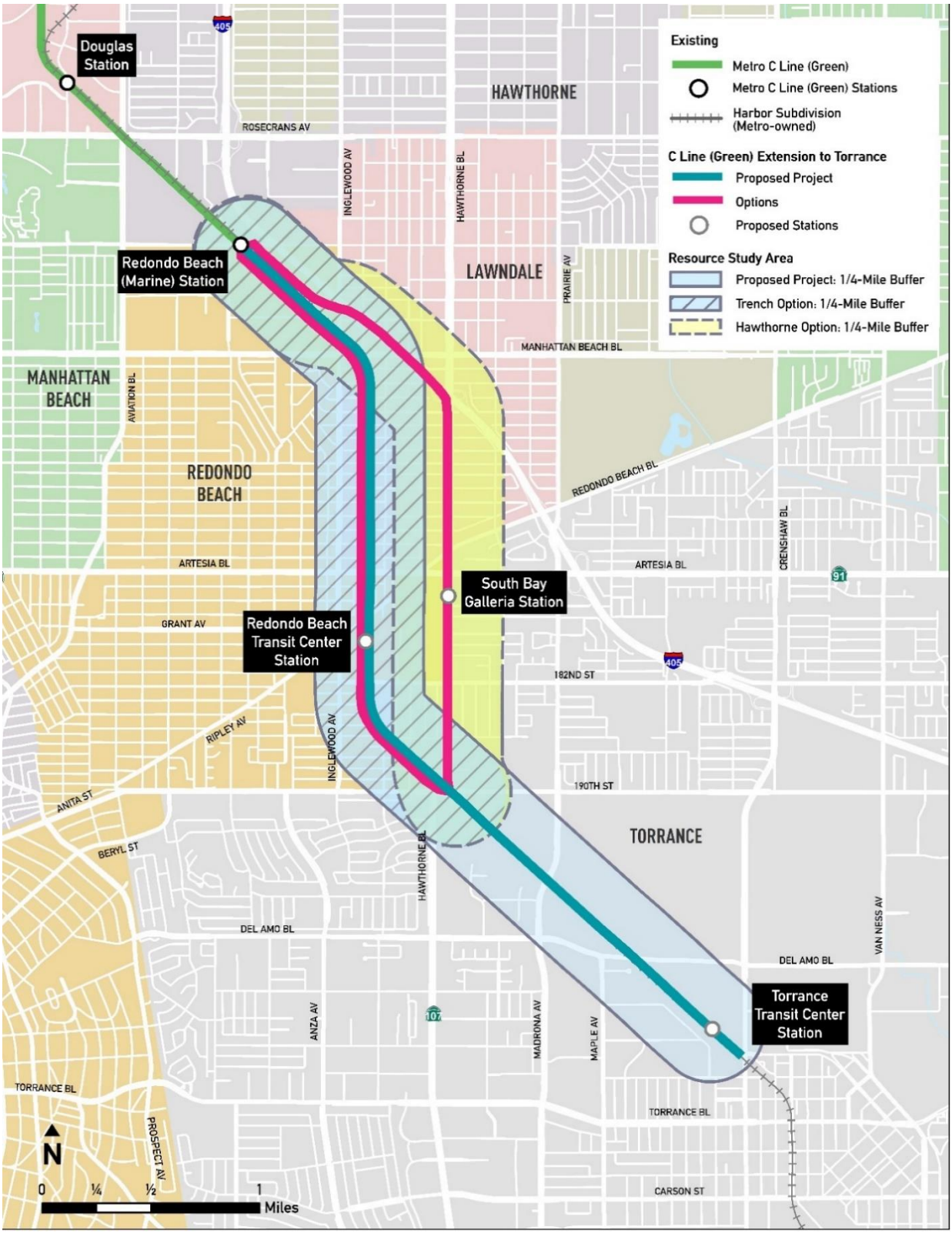
Visual or aesthetic resources are defined and identified by assessing visual character and visual quality. As described below, the assessment of visual resources was made based on the cohesion or variation in form, the level of up-keep or deterioration of the built environment and the level of landscaping and visual attractiveness along the proposed alignments of the Proposed Project and Options.

3.3-2.2.1 Visual Character

Visual character may include the following defined attributes, and is used to describe, not evaluate.

- Form: visual mass and shape
- Line: edges or linear definition
- Color: reflective brightness (i.e., light, and dark) and hue (i.e., red, green)
- Texture: surface coarseness
- Dominance: position, size, or contrast
- Scale: apparent size as it relates to the surroundings
- Diversity: a variety of visual patterns
- Continuity: uninterrupted flow of form, line, color, or textural pattern

Figure 3.3-1. Visual Quality and Aesthetics Resource Study Area



Source: STV, 2022

3.3-2.2.2 Visual Quality

Visual quality refers to the aesthetics of the landscape, which is based in part on the viewer's values and notions about what constitutes a quality setting. To establish an objective framework, the FHWA concludes that vividness, intactness, and unity are valid and reliable criteria for evaluative appraisals of visual quality. Each criterion was assigned a qualitative ranking (low, moderate, and high) for each the areas along the proposed alignments. The combined result of all three criteria indicates the degree of visual quality.

- Vividness is the extent to which the landscape is memorable and is associated with distinctive, contrasting, and diverse visual elements. For example, high vividness would be represented by dramatic background views towards a mountain range.
- Intactness is the integrity of visual features in the landscape, and the extent to which the landscape is free from non-typical visual intrusions. For example, high intactness embodies a consistent image of well-maintained homes or multi-family structures and street edge treatment.
- Unity is the extent to which visual elements combine to form a coherent, harmonious visual pattern. For example, high unity attests to the careful design and organization of buildings, structures, railroads, and streets.

3.3-2.3 Significance Thresholds

The Project and Options may have a significant effect on visual and aesthetics resources if they would:

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. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality;

d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area, or create new shade or shadows that would substantially affect outdoor recreation facilities or other public areas.

3.3-2.4 Project Features

As described in Chapter 2, Project Description, a number of features have been incorporated into the project in order to ensure compliance with the laws, guidelines, and best practices of regulatory agencies. The following project features would be implemented for aesthetics.

PF-AES-1. Local Zoning Ordinances

All project components located on properties outside of existing Metro ROW and public ROW would adhere to local zoning ordinances.

PF-AES-2. Metro Design Standards

All project components, including, but not limited to track guideway, auxiliary facilities, station (public and ancillary) facilities, and the parking facility, will be designed per Metro's Metro Rail Design Criteria (MRDC) and consistent with the objectives of the Metro Art Program Policy, Metro's Transit Service

Policies & Standards, Systemwide Station Design Standards Policy, and Standard/Directive Drawings, or equivalent. Landscaping and operational lighting will also be installed consistent with these design standards.

3.3-3 Affected Environment/ Existing Conditions

This section describes the existing conditions related to aesthetics and visual quality within the RSAs.

3.3-3.1 Scenic Vistas

Scenic vistas are visually interesting public views of focal points (e.g., notable objects, buildings, or settings) or panoramas that extend into the distance. The RSAs are within a topographically flat area on the southern edge of the Los Angeles Basin within the Cities of Hawthorne, Redondo Beach, Lawndale, and Torrance. There are several topographic features within the area, including the Pacific Ocean to the west and the Palos Verdes Hills to the south. The Proposed Project and Options traverse an urbanized area where the dominant visual features include existing large-scale industrial facilities, smaller commercial and residential structures, overhead power lines freight tracks, mature trees, and landscaping. Views of the RSAs are thus limited to those from adjacent buildings. There are no scenic vistas or other public vistas within the RSAs.

3.3-3.2 Scenic Resources within State Scenic Highway Corridors

Scenic resources refer to natural or manmade features of high aesthetic quality. Such features can include landscaping, heritage trees, or natural trees and landforms, as well as buildings and other structures with aesthetic value. Pursuant to CEQA Guidelines Appendix G, this area of consideration includes specific mention of such natural or manmade features when they are located within the view field of a state scenic highway.

There are no designated state scenic highways within the RSAs. The nearest state-designated scenic highway is the Pacific Coast Highway, which is located approximately 10 miles southeast of the Proposed Project (Caltrans, 2022). The Proposed Project and Options are not within the viewshed of this scenic highway.

3.3-3.3 Visual Character

Overview of Visual Character and Land Uses

Within the RSAs for the Proposed Project and Trench Option, the existing Metro ROW travels through or borders several jurisdictions, including Hawthorne, Redondo Beach, Lawndale, and Torrance. Certain segments of the existing Metro ROW are generally located at the boundary between several of these jurisdictions. In addition to jurisdictional separation, the existing Metro ROW also functions as a visual edge between various types of land uses. This is particularly noticeable at locations where the existing Metro ROW is located above grade on an elevated structure, such as at locations where the existing freight tracks are located on a bridge above an intersection.

A large portion of the existing Metro ROW is bordered by industrial, office and retail/commercial land uses, with some adjacent residential land uses in several areas, primarily in the northern portion of the RSA. The area between the Metro ROW and the I-405 freeway consists mainly of commercial and light industrial land uses, such as logistics, aerospace, and trucking services. In addition, there are several retail/commercial uses adjacent to Inglewood Avenue, including restaurants, auto repair, and home supplies.

One adjacent residential area lies on both sides of the Metro ROW between Manhattan Beach and Artesia Boulevards within the Cities of Redondo Beach and Lawndale. These residences were constructed between the 1930s and the 1970s. South of Artesia Boulevard, residential land uses include residences built in the 1950s and 1960s, as well as condominium developments (Los Angeles County Assessor's Office 2020). In addition, the Pacific Crest Cemetery (which includes numerous tall palm trees) and El Nido Park are located adjacent to the Metro ROW near 182nd Street at the Redondo Beach/Torrance border. South of 190th Street, there are no residential land uses within the RSA. This southern segment of the RSA includes heavy industrial land uses, such as the Torrance Refining Company facilities, which have visually-dominant industrial features.

The RSA for the Hawthorne Option overlaps substantially with the RSAs for Proposed Project and Trench Option. In the northern segment of the RSA, the Hawthorne Option alignment would be located adjacent to I-405 and be adjacent to commercial/industrial and residential uses. Along Hawthorne Boulevard traveling southward, the RSA includes a small scale-commercial frontage on both sides, with single- and multi-family residences located beyond the frontage both east and west of Hawthorne Boulevard. Hawthorne Boulevard is a wide thoroughfare with a landscaped median that also incorporates parking spaces and traffic circulation left-turn lanes. The scale of commercial development along Hawthorne Boulevard increases from approximately Redondo Beach Boulevard southward. The South Bay Galleria regional shopping mall is present with expansive surface parking areas on the west side of Hawthorne Boulevard, while single-family residences are located on the east side of the wide street. At 182nd Street and southward, the RSA includes a commercial frontage with residential beyond to the east and west until 186th Street. These residential areas consist mainly of one to two-story single-family residences. Some two-family and multi-family residences are also present directly behind the commercial uses along Hawthorne Boulevard. South of 186th Street to 190th Street, the RSA is comprised of multi-family residential homes, mobile homes, car dealerships, and open space areas.

South of 190th Street, there is only one alignment for the Proposed Project; as noted, this southern segment of the RSA includes visually dominant industrial features and does not include residential land uses.

Representative Views

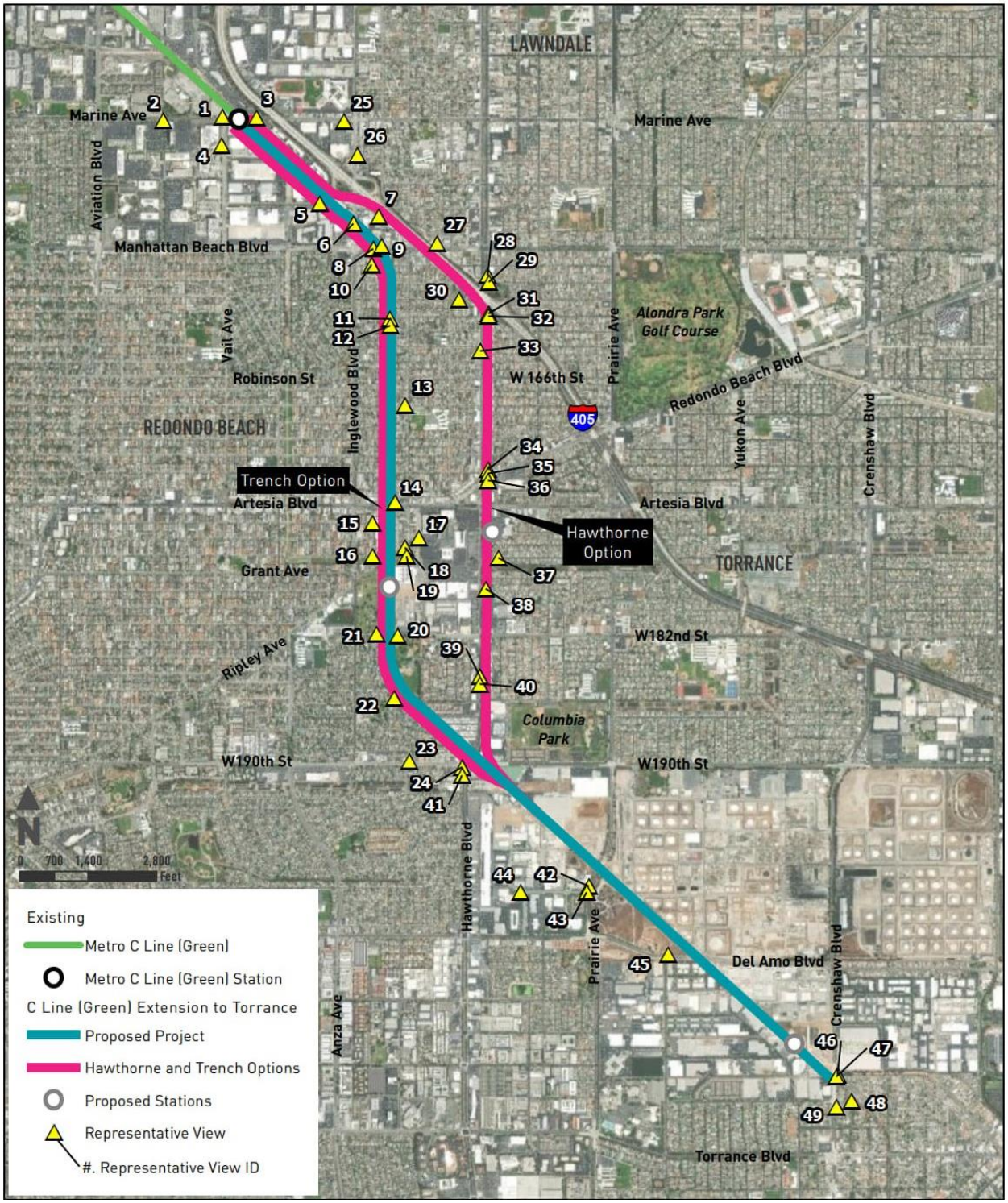
The visual character of the alignments for the Proposed Project, Trench Option, and Hawthorne Option, adjacent land uses, and potential visual resources are described in detail in the following sections from north to south. Visual resources within a visual setting or view may include unique views, views identified as being important in local plans or codes (i.e., protected views), views from designated scenic highways, or cultural modifications. Cultural modifications may include designated historic buildings or structures, or locally and architecturally significant buildings or structures. The RSAs are within a developed urban area. As such, scenic views in such urban areas would be primarily of scenic resources, such as unique buildings or architectural features, long scenic vistas, and unique landscaping. Specifically, a portion of the Hawthorne Option contains three historic buildings, which are located on Hawthorne Boulevard. These historic buildings would represent scenic resources within the RSA. However, there are no eligible or officially designated state scenic highways within the RSAs. Overlapping alignment segments between the Proposed Project, Trench Option, and Hawthorne Option are identified, as are segments that exclusively represent only Proposed Project, Trench Option, or the Hawthorne Option, respectively. Each figure below depicts the visual character of the existing alignments and the adjacent area. The figures show views from the alignments toward the adjacent areas, as well as from the adjacent areas toward the alignments. The figures are intended to represent the overall visual character of the RSAs as viewed by local residents, transit riders, employees and

patrons, pedestrians, and passing motorists. In addition, the figures also show north-facing views toward the local mountain ranges. Figure 3.3-2 shows an overview of the locations of the existing representative views.

The character of the existing visual environment was documented through field reconnaissance, photographic records, and aerial photograph interpretation. The description of the existing visual environment of the RSAs provides a baseline against which the impacts of the Proposed Project and Options on visual character, visual resources, scenic views, and light/glare effects are assessed. Descriptors used to assess the visual environment include visual character, visual quality, visual resources, viewer groups and their sensitivity, and view duration, as described below.

- The *visual character* of the visual setting is described by features such as topography, general land use patterns, scale, form, and the presence of natural areas.
- *Visual quality* refers to the aesthetics of a view. Determining the quality of a view is based in part on the viewer's values and notions about what constitutes a quality setting. Existing visual quality is compared to the expected appearance of the site in order to determine whether the visual character of the area would be degraded. Factors such as changes in the appearance of the project site, structure height and massing, setbacks, landscape buffers, and other features are taken into account.
- *Visual resources* are defined and identified by assessing visual character and visual quality. Significant visual resources within a visual setting or view may include unique public views (e.g., scenic vista or views of the horizon or iconic structure), views identified as being important in local plans or codes (i.e., protected views), views from designated scenic highways, or cultural modifications.
- *Viewer groups and their sensitivity* relate to those who see the view and the associated sensitivity of each viewer group. General viewer groups for the Proposed Project and Options include local residents, transit-riders, area employees and patrons, pedestrians, and passing motorists.
- *View duration* refers to the amount of time the view is seen by a particular viewer group. Fleeting or intermittent views include those experienced by motorists over a short distance and are generally rated as low (indistinctive) to medium (common). Conversely, long-term views, which include views from residences, are generally rated as medium to high (distinctive).

Figure 3.3-2. Location of Representative Views Near the Project



Source: AECOM, 2022

Redondo Beach (Marine) Station Area (Proposed Project, Trench Option, and Hawthorne Option)

An overview of the existing Redondo Beach (Marine) Station area, including the Proposed Project, Trench Option, and Hawthorne Option, is included on Figure 3.3-3. The existing Redondo Beach (Marine) Station is elevated above Marine Avenue, as shown in Figure 3.3-4 (View 1). The station is located just south of an electrical power transformer yard, which is visible from the station and station parking lot. Figure 3.3-5 (View 2) shows a pedestrian and motorist's view of an existing residential townhome complex located approximately a quarter-mile west of the Redondo Beach (Marine) Station.

Several multi-story industrial and office buildings dedicated to aerospace and automobile industries are located west and southwest of the station along both sides of Redondo Beach Avenue and south of Marine Avenue. Also, due to the presence of the electrical power transformer yard located north of the Redondo Beach (Marine) Station, as well as the major overhead power transmission corridor which parallels the existing Metro ROW and I-405 in this area, overhead power lines and towers dominate the existing visual environment in this area.

Figure 3.3-6 (View 3) shows a pedestrian and motorist's view looking south from Marine Avenue toward a complex of hotels that were constructed in 2013 (Los Angeles County Assessor's Office 2020). The hotel grounds are landscaped with medium-sized palm trees. These hotels are located on the south side of Marine Avenue, in between the locations of the Redondo Beach (Marine) Station to the west and the I-405 overpass to the east. Figure 3.3-7 (View 4) shows a pedestrian and motorist's view looking north toward the existing station along Redondo Beach Avenue to the south. The station stands out visually due to its electric blue canopy structure.

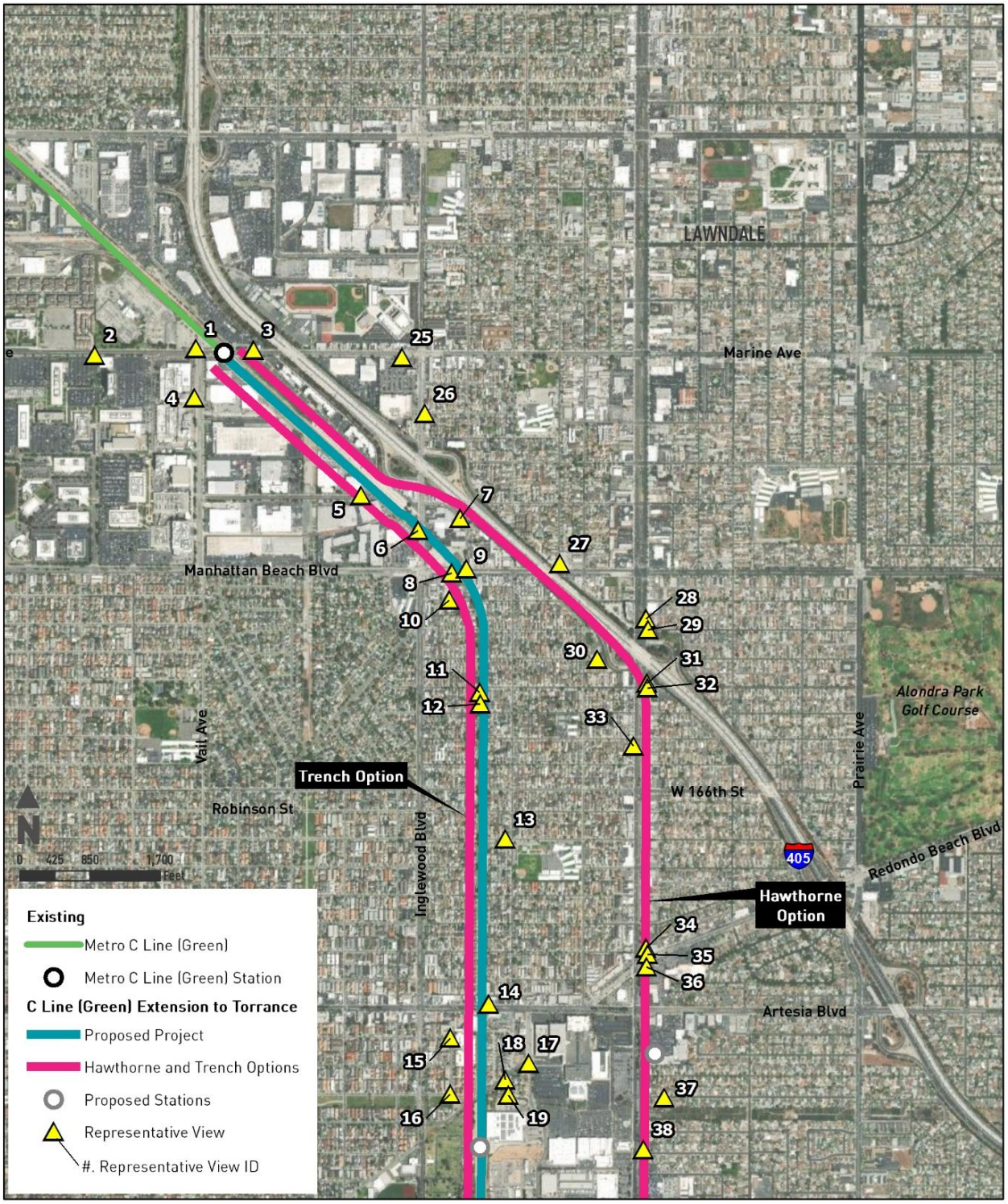
The elevated Redondo Beach (Marine) Station and elevated I-405 overpass are separated by a distance of approximately 630 feet in this area. In addition to the hotels, car dealerships, other commercial uses, and the major power transmission corridor are visible. As previously mentioned, power lines dominate many of the views in this portion of the RSA in Redondo Beach.

Along Marine Avenue, east of the I-405 overpass, the RSA includes a high school campus and one to two story multi-family residential buildings. However, primarily older automotive repair-related buildings are dominant. Overhead power lines and towers dominate the south side of Marine Avenue in this area.

There are no visual resources within this section. In addition, there are no unique views of the local mountains or coastline and no protected views.

Redondo Beach (Marine) Station Area	Vividness	Intactness	Unity	Visual Quality
	Moderate	Low	Low	Moderately Low

Figure 3.3-3. Detailed Location of Representative Views: Marine Avenue to Artesia Boulevard



Source: AECOM, 2022

Figure 3.3-4. View 1: Looking East Along Marine Avenue at Redondo Beach Avenue Towards Existing Redondo Beach (Marine) Station

Figure 3.3-5. View 2: Looking Northwest from Marine Avenue Towards Existing Residential Complex, West of Existing Redondo Beach (Marine) Station

Figure 3.3-6. View 3: Looking South from Marine Avenue Towards Existing Hotel Complex, East of Existing Redondo Beach (Marine) Station

Figure 3.3-7. View 4: Looking North Along Redondo Beach Avenue Towards Existing Redondo Beach (Marine) Station

Marine Avenue to Inglewood Avenue (Proposed Project, Trench Option, and Hawthorne Option)

An overview of the segment from Marine Avenue to Inglewood Avenue, including the Proposed Project, Trench Option, and Hawthorne Option, is included on Figure 3.3-3 above. South of Marine Avenue and the existing Redondo Beach (Marine) Station area, the existing Metro ROW carries only freight trains, as the Metro C Line (Green) currently terminates at the Redondo Beach (Marine) Station. The existing Metro ROW is located adjacent to large-scale industrial, manufacturing, and storage buildings. Figure 3.3-8 (View 5) shows a pedestrian and motorist's view looking east from the Santa Fe Avenue cul-de-sac towards the Metro ROW, adjacent storage uses, and the City of Lawndale tall video sign. The tops of mature trees are visible in the background.

An older commercial shopping center and gas stations are located along Inglewood Avenue and south of the elevated I-405. Figure 3.3-9 (View 6) shows a pedestrian and motorist's view looking north towards the Metro ROW commercial uses, and the elevated I-405. The existing overhead power transmission lines and poles increase the visual clutter in the view. Visual clutter can be caused by structures such as traffic signals, overhead power transmission lines, and poles, which detract from certain views.

Near the intersection of Marine Avenue and Inglewood Avenue, small commercial and automotive repair uses dominate the visual environment. Figure 3.3-10 (View 25) shows a pedestrian and motorist's view looking west/northwest towards the small commercial and automotive repair uses located along Marine Avenue, just west of Inglewood Avenue.

North of I-405, a commercial shopping center with a large surface parking area is visible on the west side of Inglewood Avenue. Commercial and residential buildings are located on the east side of Inglewood Avenue. Figure 3.3-11 (View 26) shows a residential, pedestrian and motorist's view looking south along Inglewood Avenue from 153rd Street towards the elevated existing I-405, a fast-food restaurant, as well as existing mature trees and landscaping.

There are no visual resources within this segment, and no public access to the Metro ROW. In addition, there are no unique views of the local mountains or coastline and no protected views.

Marine Avenue to Inglewood Avenue	Vividness	Intactness	Unity	Visual Quality
	Low	Low	Low	Low

Figure 3.3-8. View 5: Looking East Towards Metro ROW from Santa Fe Avenue Cul-De-Sac

Figure 3.3-9. View 6: Looking North on Inglewood Avenue towards Metro ROW and I-405

Figure 3.3-10. View 25: Marine Ave Looking West/Northwest from West of Inglewood Avenue

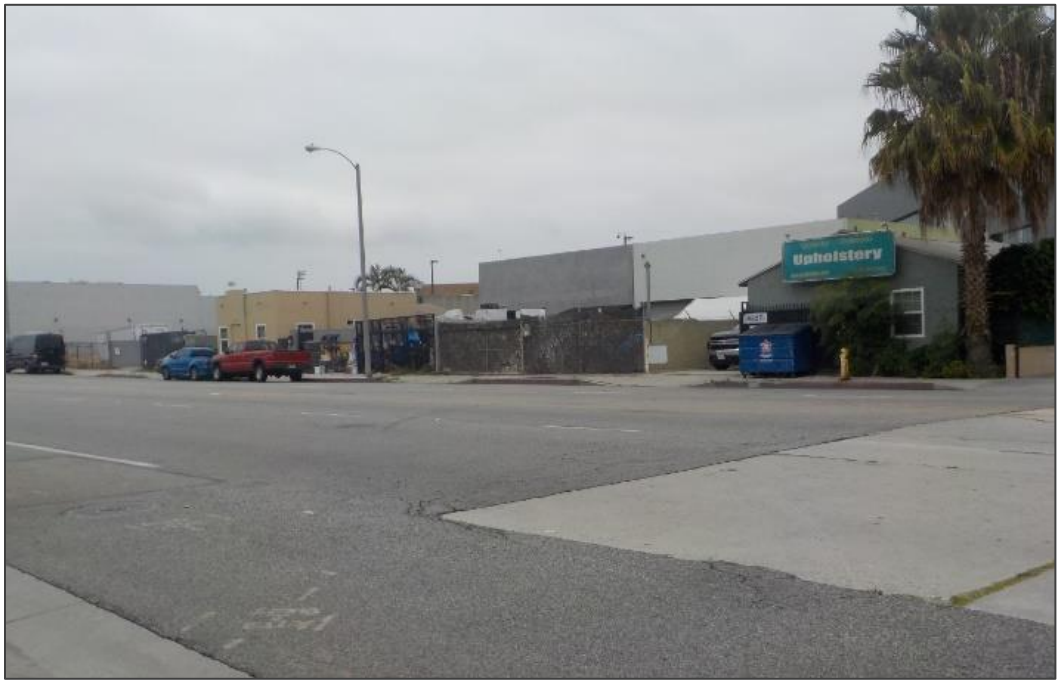


Figure 3.3-11. View 26: Looking South Towards I-405 on Inglewood Avenue at 153rd Street

Inglewood Avenue to Artesia Boulevard (Proposed Project and Trench Option)

An overview of the segment from Inglewood Avenue to Artesia Boulevard for the Proposed Project and Trench Option is included on Figure 3.3-3 above. East of Inglewood Avenue, the existing Metro ROW travels in a diagonal southeast/northwest orientation, which parallels the I-405, and adjacent small-scale industrial, commercial, and automotive repair buildings are visible. At Manhattan Beach Boulevard, the existing Metro ROW curves southward, paralleling Inglewood Avenue to the west. The primary uses south of Manhattan Beach Boulevard are small-scale single- and multi-family residential buildings within the City of Lawndale.

Figure 3.3-12 (View 7) shows a pedestrian and motorist's view of the City of Lawndale video sign and overhead power transmission lines and poles from Condon Avenue looking to the northwest. The I-405 is located to the east or on the right side of the view. This view is from east of the existing Metro ROW and east of Inglewood Avenue. The video sign is visible from many vantage points within the RSA and is directly visible from the elevated I-405.

Figure 3.3-13 (View 8) and Figure 3.3-14 (View 9) show a pedestrian and motorist's view of Manhattan Beach Boulevard looking towards the Metro ROW. Street medians, street trees, crossing gates, and commercial and industrial uses are also visible.

Figure 3.3-15 (View 10) shows a pedestrian and motorist's view of the one- to two-story single- and multi-family residential uses located along 159th Street looking to the west, south of Manhattan Beach Boulevard. The residential uses were constructed primarily in the 1940s and 1950s, with some newer structures built in the 1990s, and represent a mix of architectural styles. The residential architecture does not appear to possess any unique visual features. The view includes several mature street trees. The existing overhead power transmission lines and towers on both sides of the street increase the visual clutter in the view. Figure 3.3-16 (View 11) shows a north-facing residential and pedestrian view of the Metro ROW from just south of 162nd Street. As shown, single- and multi-family residences are located directly adjacent to the existing freight track within the Metro ROW, and this segment includes a green space within Metro ROW that is used by the community recreationally. However, because the greenway is not specifically protected by any applicable local general plans, planning and zoning codes, or other regulations, this greenway is not considered to be a visual resource. Figure 3.3-17 (View 12) shows south-facing residential and pedestrian view of mature trees and shrubs along the Metro ROW from between 162nd Street and 163rd Street. Southward along the Metro ROW, there are additional mature trees and shrubs trees, and the existing freight track becomes slightly elevated on an earthen berm. As shown on Figure 3.3-18 (View 13), a pedestrian and residential view is visible looking to the west along 168th Street. The visible single- and multi-family residential uses on this portion of 168th Street were primarily built in the 1950s and represent a mix of architectural styles. The residential architecture does not appear to possess any unique visual features.

Figure 3.3-19 (View 14) shows a pedestrian and motorist's view looking west along Artesia Boulevard towards the existing freight overpass bridge. Mature trees and other landscaping are visible within the street median of Artesia Boulevard. Commercial, automotive repair, and hotel uses are located along this portion of Artesia Boulevard.

There are no visual resources in this area. In addition, there are no unique views of the local mountains or coastline, and no protected views.

Inglewood Avenue to Artesia Boulevard	Vividness	Intactness	Unity	Visual Quality
	Low	Low	Low	Low

Figure 3.3-12. View 7: Looking Northwest Along Condon Avenue Adjacent to I-405

Figure 3.3-13. View 8: Manhattan Beach Boulevard Looking East towards Metro ROW

Figure 3.3-14. View 9: Manhattan Beach Boulevard Looking West towards Metro ROW

Figure 3.3-15. View 10: Looking West on 159th Street, West of Metro ROW

Figure 3.3-16. View 11: Looking North From 162nd Street Towards Metro ROW

Figure 3.3-17. View 12: Looking South from Between 162nd and 163rd Streets Metro ROW

Figure 3.3-18. View 13: Looking West Along 168th Street Towards Metro ROW, West of Firmona Avenue

Figure 3.3-19. View 14: Looking West Along Artesia Boulevard Towards Existing Overpass Bridge

Redondo Beach TC Station Area (Proposed Project and Trench Option)

An overview of the area including and surrounding the proposed Redondo Beach TC Station under the Proposed Project and Trench Option is included on Figure 3.3-20. South of Artesia Boulevard, the existing Metro ROW re-enters the City of Redondo Beach and the existing freight track is located adjacent to single-family residences on the east and condominium developments on the west.

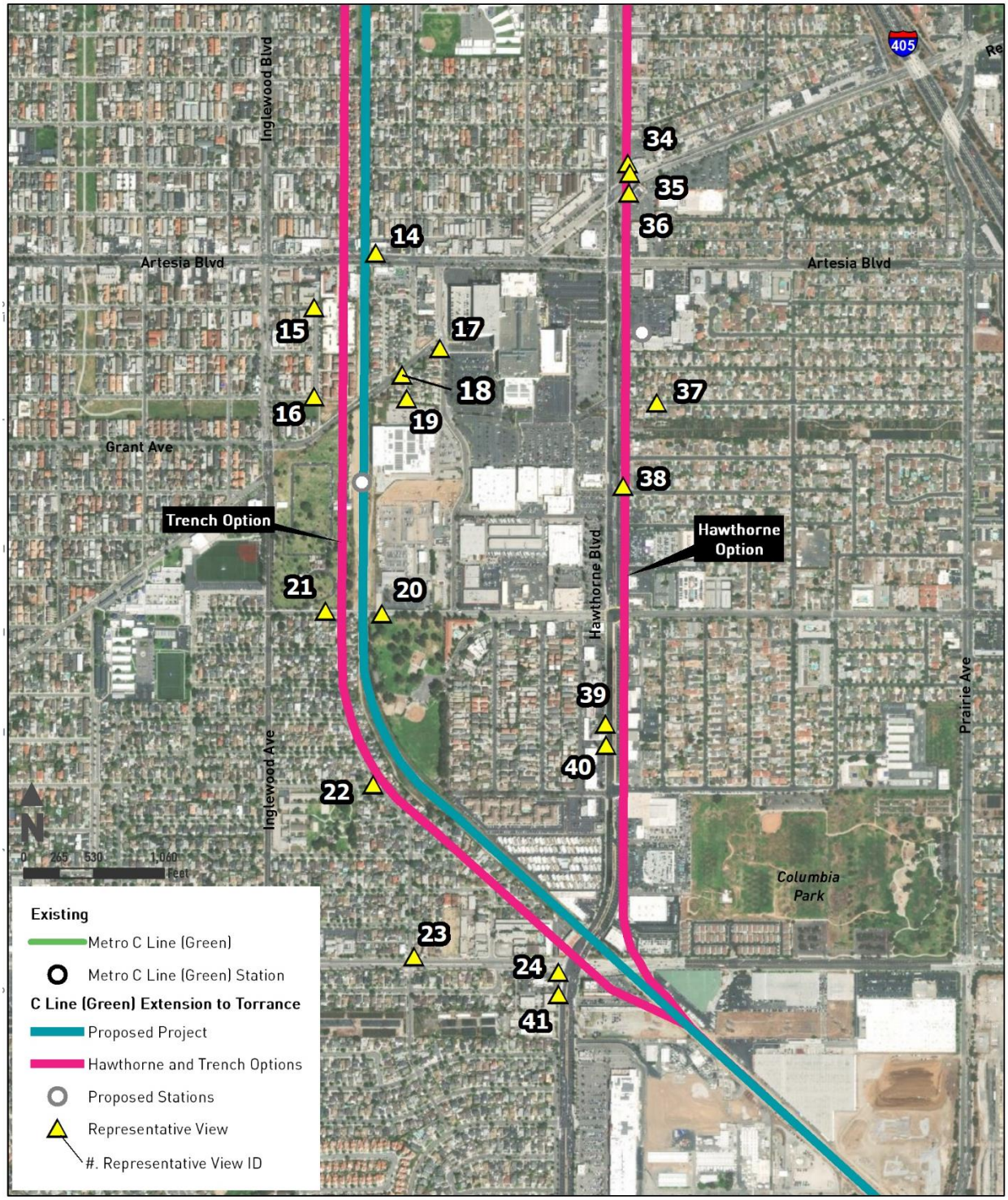
Figure 3.3-21 (View 15) shows a pedestrian, residential, and motorist's view looking south along Ruxton Lane from Vanderbilt Lane. Figure 3.3-22 (View 16) shows a similar view looking north along Ruxton Lane from Rockefeller Lane. Visible in both views are one- to two-story multi-family residential buildings with some landscaping adjacent to the sidewalk on the east side of Ruxton Lane. Figure 3.3-23 (View 17) shows a pedestrian, residential, and motorist's view looking northeast from Grant Avenue at the western side of the South Bay Galleria shopping complex along Kingsdale Avenue. A single-family residential neighborhood is located behind the view (not shown) to the south/southwest. The South Bay Galleria includes the tallest and largest-scale structures in the RSA, with buildings standing at four to five stories in height. Figure 3.3-24 (View 18) shows a pedestrian, residential, and motorist's view looking west along Grant Avenue towards the existing freight bridge. The Metro ROW is located directly adjacent to multi-family residential buildings on the west and older single-family residences to the east. Mature street trees and other landscaping is visible. In addition, existing overhead power transmission lines, poles, and towers increase visual clutter in the view. Figure 3.3-25 (View 19) shows a pedestrian, residential, and motorist's view looking north along Firmona Avenue, just south of Grant Avenue. Visible are small-scale single-family residential uses, small street trees, and landscaping located east of the existing Metro ROW. Overhead power transmission lines and poles are visible in the background. In addition, a major overhead power transmission corridor including wide towers is located directly south of this residential neighborhood, which travels in an east-west orientation.

Traveling southward of Grant Avenue, the Metro ROW continues in the City of Redondo Beach and is located adjacent to the existing Pacific Crest Cemetery and a Target store with an associated surface parking area. The Redondo Beach General Plan states that the City's properties, structures, and public open spaces should be designed to provide a high-quality image and character for the City. The Redondo Beach General Plan does not designate cemeteries as a significant visual resource; however, cemeteries are designated as Open Space. The cemetery includes numerous tall palm trees, which are of visual interest in this area. However, the palm trees are not protected by any local general plans, planning and zoning codes, or other regulations.

There are no visual resources in the area of the proposed Redondo Beach TC. In addition, there are no unique views of the local mountains or coastline, and no protected views exist within this area.

Redondo Beach TC Station Area	Vividness	Intactness	Unity	Visual Quality
	Low	Moderate	Low	Moderately Low

Figure 3.3-20. Detailed Location of Representative Views: Artesia Boulevard to 190th Street



Source: AECOM, 2022

Figure 3.3-21. View 15: Ruxton Lane Facing South

Figure 3.3-22. View 16: Ruxton Lane Facing North

Figure 3.3-23. View 17: Looking Northeast at South Bay Galleria Complex Along Kingsdale Avenue at Grant Avenue

Figure 3.3-24. View 18: Looking West Along Grant Avenue Towards Existing Railroad Bridge

Figure 3.3-25. View 19: Looking North at Residential Uses Along Firmona Avenue, just South of Grant Avenue

182nd Street to Intersection of Hawthorne Boulevard and 190th Street (Proposed Project and Trench Option)

An overview of the segment from 182nd Street to the intersection of Hawthorne Boulevard and 190th Street for the Proposed Project and Trench Option is included on Figure 3.3-20 above. Traveling southward from 182nd Street, the existing Metro ROW is located adjacent to an area of small-scale single-family residences on the west and El Nido Park on the east. Figure 3.3-26 (View 20) shows a motorist's view looking south from 182nd Street towards the numerous mature trees and grassy open space of El Nido Park. In this area, and as shown in the background of the view, the existing freight tracks run on top of a large earthen berm. El Nido Park is of visual interest due to open green space, mature trees, and other landscaping. However, the park is not identified as a protected visual resource by local general plans, planning and zoning codes, or other regulations.

Further to the south is a mobile home park, single-family and multi-family residences, and commercial shopping centers located adjacent to the existing Metro ROW. Figure 3.3-27 (View 21) shows a motorist's and pedestrian view looking south/southwest towards single-family residential uses along 182nd Street, just west of the Metro ROW. Figure 3.3-28 (View 22) shows a pedestrian, residential, and motorist's view looking north along Firmona Avenue at Ralston Lane, approximately 145 feet west of the existing Metro ROW. In the view, small-scale single-family residences with landscaping, as well as public street trees are visible. The back yards of these residences directly abut the existing Metro ROW to the east. The residential uses were constructed primarily in the 1950s and represent a mix of architectural styles. The residential architecture does not appear to possess any unique visual features.

Figure 3.3-29 (View 23) shows a pedestrian, residential, and motorist's view looking east along 190th Street from Firmona Avenue towards the existing freight bridge over 190th Street. The bridge is located approximately a quarter-mile to the east. The backyard walls and private backyard trees of single-family residences are visible on both sides of the street along with public street trees. Overhead power transmission lines and poles are also located on both sides of the street, which increases visual clutter. An additional overhead power corridor is also visible just south of 190th Street. Figure 3.3-30 (View 24) also shows a view looking east towards the existing freight bridge over 190th Street, at the intersection

with Hawthorne Boulevard. This view is from the perspective of pedestrians and motorists. Hawthorne Boulevard is a major commercial thoroughfare in the RSA and includes one- to two-story commercial buildings. Mature trees, palm trees, and other landscaping is visible adjacent to the commercial uses. A billboard and numerous overhead power transmission lines and poles dominate the view, which also presents visual clutter.

El Nido Park is the only location of visual interest in this segment. There are no unique views of the local mountains or coastline, and no protected views exist within this segment.

182nd Street to Intersection of Hawthorne Boulevard and 190th Street	Vividness	Intactness	Unity	Visual Quality
	Low	Moderate	Low	Moderately Low

Figure 3.3-26. View 20: Looking South from 182nd Street Towards El Nido Park, Adjacent and East of Metro ROW

Figure 3.3-27. View 21: 182nd Looking South/Southwest Toward Residential West of Metro ROW

Figure 3.3-28. View 22: Looking North Along Firmona Avenue at Intersection with Ralston Lane

Figure 3.3-29. View 23: Looking East Along 190th Street from Firmona Avenue, towards the Existing Railroad Bridge Over 190th Street

Figure 3.3-30. View 24: Looking East Along 190th Street at Intersection with Hawthorne Boulevard towards Existing Bridge Over 190th Street

Metro ROW between 190th Street to Crenshaw Boulevard (Proposed Project)

An overview of the segment Proposed Project alignment from 190th Street to Crenshaw Boulevard is included on Figure 3.3-31. South of 190th Street, the \Metro ROW enters the City of Torrance and travels through an industrial freight corridor,. Running in a southeastern direction, the Metro ROW is located adjacent to large-scale industrial buildings, industrial yards, offices, and a hotel. Figure 3.3-32 (View 42) shows a pedestrian and motorist's view looking east from Prairie Avenue towards the Metro ROW and the Torrance Refining Company's large oil drum structures located directly east of the Metro ROW. Undeveloped and vegetated land is visible, along with the landscaped median of Prairie Avenue. Figure 3.3-33 (View 43) shows a pedestrian and motorist's view looking south along Prairie Avenue towards Del Amo Boulevard, at Challenger Street. The view is approximately 495 feet southwest of the Metro ROW. A landscaped median and street trees dominate the view. However, undeveloped land and a portion of a hotel are visible on the left and right sides of the view, respectively. Figure 3.3-34 (View 44) shows a pedestrian and motorist's view looking east towards Challenger Avenue from Marine Street, west of Prairie Avenue. The view includes office buildings, landscaping, and mature trees.

Figure 3.3-35 (View 45) shows a pedestrian and motorist's view looking northeast towards the Metro ROW from the north side of Del Amo Boulevard at Maple Avenue. Undeveloped and vegetated land dominates the foreground of the view. A cargo freight train is visible within the Metro ROW, with the various large oil drums and other structures associated with the Torrance Refining Company visible in the background directly northeast of the Metro ROW.

There are no visual resources within this section. In addition, there are no unique views of the local mountains or coastline and no protected views.

Hawthorne Boulevard to Del Amo Boulevard	Vividness	Intactness	Unity	Visual Quality
	Low	Low	Low	Low

Figure 3.3-31. Detailed Location of Representative Views: 190th Street to Crenshaw Boulevard

Source: AECOM, 2022

Figure 3.3-32. View 42: Looking East from Prairie Avenue towards the Existing Metro ROW and Torrance Refining Company Structures

Figure 3.3-33. View 43: Looking South Along Prairie Avenue at Challenger Street, towards Del Amo Boulevard

Figure 3.3-34. View 44: Looking East towards Challenger Street from Mariner Avenue, just West of Prairie Avenue

Figure 3.3-35. View 45: Looking Northeast towards Metro ROW from North Side of Del Amo Boulevard, at Maple Avenue

Torrance TC Station Area (Proposed Project)

An overview of the existing area within and surrounding the proposed location of the terminus Torrance TC Station is included on Figure 3.3-31 above.

Figure 3.3-36 (View 46) shows a pedestrian, residential, and motorist's view looking west from the east side of Crenshaw Boulevard at Dominguez Street towards the slightly elevated existing Metro ROW located on the west side of Crenshaw Boulevard. Dominguez Street includes single-family residences. The view includes several small palm trees, a vacant parcel, a billboard, and overhead power transmission lines and poles. Industrial buildings are visible in the background.

Similarly, Figure 3.3-37 (View 47) shows a pedestrian, residential, and motorist's view looking southwest from Crenshaw Boulevard at Dominguez Street towards the existing freight bridge over Crenshaw Boulevard. The view includes small shrubs, a vacant parcel, a billboard, and overhead power transmission lines and poles.

Directly east of Crenshaw Boulevard is a large area of single-family residences within the City of Torrance. Figure 3.3-38 (View 48) shows a pedestrian, residential, and motorist's view looking south along Maricopa Street at Beech Avenue, just south of the Metro ROW. The view includes numerous mature trees and well maintained one- to two-story single-family residences built in the 1930s through the 1950s, which include a mix of architectural types. Most of the residences have large setbacks from the street and public sidewalks. However, the residential architecture does not appear to possess any unique visual features.

Figure 3.3-39 (View 49) shows a pedestrian, residential, and motorist's view looking north, from just south of Maricopa Street, towards the existing freight bridge over Crenshaw Boulevard. The view includes a dilapidated roadway, curb, and sidewalk, as well as mature trees, a commercial building, and overhead power transmission lines and poles.

There are no visual resources in the area of the proposed Torrance TC Station. In addition, there are no unique views of the local mountains or coastline, and no protected views exist within this area.

Torrance TC Station Area	Vividness	Intactness	Unity	Visual Quality
	Low	Moderately	Low	Moderately Low

Figure 3.3-36. View 46: Looking West towards Metro ROW from East Side of Crenshaw Boulevard at Dominguez Street

Figure 3.3-37. View 47: Looking Southwest towards Metro ROW from East Side of Crenshaw Boulevard at Dominguez Street

Figure 3.3-38. View 48: Looking South Along Maricopa Street at Beech Avenue towards Residential Uses, South of Metro ROW

Figure 3.3-39. View 49: Looking North along Crenshaw Boulevard just South of Maricopa Street towards the Existing Freight Bridge within Metro ROW Bridge

Inglewood Avenue to Hawthorne Boulevard/I-405 Bridge Intersection (Hawthorne Option)

The Hawthorne Option alignment would be located in the same corridor as the Proposed Project just north/northwest of Inglewood Avenue. Refer to discussions above related to Marine Avenue to Inglewood Avenue.

An overview of the segment from Inglewood Avenue to the Hawthorne Boulevard/I-405 bridge intersection for the Hawthorne Option is included on Figure 3.3-3 above. Existing uses south/southeast of Inglewood Avenue include commercial uses, automotive repair businesses, and three to four single-family residential buildings on the southwest side of I-405, and a large area or small-scale single-family residences with some commercial uses on the northeast side of I-405.

Figure 3.3-40 (View 27) shows a pedestrian and motorist's view looking north along Mansel Avenue from Manhattan Beach Boulevard, just northeast of I-405. The view includes a commercial business, palm trees, as well as single-family residential buildings and overhead power lines in the background. Similarly, a large area of small-scale single-family residences is located south of Manhattan Beach Boulevard, directly adjacent and southwest of I-405, southeast to Hawthorne Boulevard. A smaller number of multi-family residential buildings are also located in this area.

Hawthorne Boulevard is a major north-south oriented thoroughfare in the RSA and includes four lanes of travel in each direction, as well as a wide landscaped median. In some areas, the median also incorporated parking spaces and left-turn pockets. Figure 3.3-41 (View 28) shows a pedestrian, residential, and motorist's view looking north along Hawthorne Boulevard from 160th Street. The view includes numerous mature palm trees within the landscaped median and a multi-story office building on the west side of Hawthorne Boulevard. Similarly, Figure 3.3-42 (View 29) shows a pedestrian, residential, and motorist's view looking south along Hawthorne Boulevard from 160th Street towards the I-405 bridge. Commercial businesses front onto this portion of Hawthorne Boulevard and single- and multi-family residential buildings are located east of the commercial frontage. The view includes a landscaped median with mature trees, and additional mature trees visible in the background. Figure 3.3-43 (View 30) shows a pedestrian and motorist's view looking northeast from the 161st Street cul-de-sac towards the I-405 ROW, just east of Grevillea Avenue. The view is dominated by overhead power transmission lines and a pole, as well as the I-405 embankment undeveloped ROW and freeway soundwall. Portions of mature trees are visible in the background.

There are no visual resources within this segment. In addition, there are no unique views of the local mountains or coastline and no protected views.

Inglewood Avenue to Hawthorne Boulevard/I-405 Bridge Intersection	Vividness	Intactness	Unity	Visual Quality
	Low	Low	Moderate	Moderately Low

Figure 3.3-40. View 27: Looking North Along Mansel Avenue from Manhattan Beach Boulevard

Figure 3.3-41. View 28: Looking North on Hawthorne Boulevard from 160th Street, just North of I-405 Bridge

Figure 3.3-42. View 29: Looking South on Hawthorne Boulevard from 160th Street towards I-405 Bridge

Figure 3.3-43. View 30: Looking Northeast on 161st Street Cul-De-Sac towards I-405 from just East Grevillea Avenue

I-405 Bridge to Redondo Beach Boulevard (Hawthorne Option)

An overview of the segment from the I-405 bridge to Redondo Beach Boulevard for the Hawthorne Option is included on Figure 3.3-3 above. Traveling southward from the I-405 bridge in the City of Lawndale, Hawthorne Boulevard includes a wide thoroughfare with a landscaped median which integrated parking spaces and left-turn pockets. One- to two-story older commercial, automotive-related, and fast-food establishments dominate this segment. Residential buildings are located beyond the commercial frontages on the east and west sides of the street, respectively.

Figure 3.3-44 (View 31) shows a pedestrian and motorist's view looking north along the east side of Hawthorne Boulevard, from 162nd Street, towards the I-405 bridge. The view includes a landscaped median with mature palm trees, other vegetation and trees within the freeway ROW embankment, and views of additional trees in the north side of the freeway. Figure 3.3-45 (View 32) shows a pedestrian and motorist's view looking south along the east side of Hawthorne Boulevard, from 162nd Street. The view includes a landscaped median with mature trees, street trees, and one- to two-story older commercial buildings. Figure 3.3-46 (View 33) shows a pedestrian and motorist's view looking south along the west side of Hawthorne Boulevard, from 164th Street. Numerous street trees dominate the view. In addition, commercial businesses and various types of signage are also visible, along with decorative pedestrian light poles. Similarly, Figure 3.3-47 (View 34) shows a pedestrian and motorist's view looking north along the east side of Hawthorne Boulevard, from just north of Redondo Beach Boulevard. The landscaped median with mature palm trees, other street trees, the commercial frontage, and a decorative pedestrian light pole are visible. However, there are no unique views of the local mountains or coastline and no protected views.

This segment contains three historic buildings, as discussed in Section 3.13, Cultural Resources. As discussed above, these historic buildings would represent scenic resources within the RSA for the Hawthorne Option.

There are no visual resources within this segment. In addition, there are no unique views of the local mountains or coastline and no protected views.

I-405 Bridge to Redondo Beach Boulevard	Vividness	Intactness	Unity	Visual Quality
	Low	Moderate	Low	Moderately Low

Figure 3.3-44. View 31: Looking North Along Hawthorne Boulevard from 162nd Street towards I-405 Bridge

Figure 3.3-45. View 32: Looking South Along Hawthorne Boulevard from 162nd Street, just South Of I-405 Bridge

Figure 3.3-46. View 33: Looking South Along Hawthorne Boulevard from 164th Street

Figure 3.3-47. View 34: Looking North Along Hawthorne Boulevard from just North of Redondo Beach Boulevard

South Bay Galleria Station Area (Hawthorne Option)

An overview of the existing area within and surrounding the proposed location of the South Bay Galleria Station for the Hawthorne Option is included on Figure 3.3-20 above. The proposed elevated South Bay Galleria Station would be located in the median of Hawthorne Boulevard approximately halfway between Artesia Boulevard and 177th Street, featuring with an elevated center platform. This station would be located in Redondo Beach, along the border with Torrance.

Hawthorne Boulevard in this area includes commercial shopping centers and malls with large surface parking areas. Single- and multi-family residential buildings are located beyond the commercial frontages on both sides (east and west). Figure 3.3-48 (View 35) shows a pedestrian and motorist's view looking south along the east side of Hawthorne Boulevard, from just north of Redondo Beach Boulevard. The landscaped median with mature trees, other landscaping, and commercial buildings. In addition, this view illustrates the existing visual clutter. This type of view is common traveling south on Hawthorne Boulevard.

Figure 3.3-49 (View 36) shows a pedestrian and motorist's view from Artesia Boulevard looking west at Hawthorne Boulevard. South of Artesia Boulevard, the landscaped median continues within the center of Hawthorne Boulevard. Large shopping centers, including the South Bay Galleria, with large areas of surface parking are visible. The South Bay Galleria is a regional shopping mall at the southwest corner of Hawthorne Boulevard and Artesia Boulevard.

On the east side of Hawthorne Boulevard starting at 176th Street and southward, a large area of single-family residences is visible. Figure 3.3-50 (View 37) shows a pedestrian, residential, and motorist's view looking west along 177th Street towards Hawthorne Boulevard and the South Bay Galleria. Well maintained one- to two-story single-family residential buildings, grassy front yard areas, street trees, private property landscaping are visible in the foreground, with mature trees in the middle-ground. Dominating the background of the view are tall overhead power transmission lines, typical tall towers, and other wide tower structures within the power transmission corridor that travels in an east-west orientation through the South Bay Galleria property and south of residences in this view. Figure 3.3-51 (View 38) shows a pedestrian, residential, and motorist's view looking north along Hawthorne Boulevard towards the South Bay Galleria, from 179th Street. The view includes the continued landscaped median, a wide landscaped parkway, commercial buildings as part of the South Bay Galleria complex, and other distant mature trees and palm trees. In addition, overhead power transmission lines are visible extending across Hawthorne Boulevard.

There are no visual resources within this segment. In addition, there are no unique views of the local mountains or coastline and no protected views.

South Bay Galleria Station Area	Vividness	Intactness	Unity	Visual Quality
	Low	Low	Moderately	Moderately Low

Figure 3.3-48. View 35: Looking south along Hawthorne Boulevard towards Redondo Beach Boulevard Intersection

Figure 3.3-49. View 36: Artesia Boulevard Looking West at Hawthorne Boulevard

Figure 3.3-50. View 37: Looking west along 177th Street towards Hawthorne Boulevard and South Bay Galleria

Figure 3.3-51. View 38: Looking north along Hawthorne Boulevard towards the South Bay Galleria, from 179th Street

182nd Street to Intersection of Hawthorne Boulevard and 190th Street (Hawthorne Option)

An overview of the segment from 182nd Street to the intersection of Hawthorne Boulevard and 190th Street for the Hawthorne Option is included on Figure 3.3-20 above. South of 182nd Street, small- to medium-scale commercial buildings, as well as automotive-related uses, with surface parking areas dominate the frontage on both sides of Hawthorne Boulevard. The landscaped median continues on this segment of Hawthorne Boulevard. Traveling southward from 182nd are large blocks of commercial uses, and the next intersection to the south is 186th Street. Single-and multi-family residential buildings are located beyond the commercial frontage on the east and west sides of the street, respectively. Figure 3.3-52 (View 39) shows a pedestrian and motorist's view looking north along Hawthorne Boulevard towards 182nd Street, from approximately 870 feet south of 182nd Street. The view includes a wide street landscaped median, small street trees, and older small-scale commercial buildings. Overhead power transmission lines and poles are visible on the west side of the street, as well as in the background of the view. Figure 3.3-53 (View 40) shows a pedestrian and motorist's view looking south along Hawthorne Boulevard towards 186th Street, from approximately 390 feet north of 186th Street. The view includes a wide street, landscaped median, street trees, and older small-scale commercial buildings. Overhead power transmission lines and poles are visible in the background.

South of 186th Street, visible uses on Hawthorne Boulevard include a restaurant, commercial buildings, car dealerships, and a mobile home park. The existing freight bridge over Hawthorne Boulevard is located less than a quarter-mile south of 186th Street. South of the freight bridge, similar commercial uses are prevalent. Figure 3.3-54 (View 41) shows a pedestrian and motorist's view looking north along Hawthorne Boulevard toward the existing freight bridge and 190th Street. The view includes commercial uses, landscaping and trees, and billboards. Overhead power transmission lines and poles are visible on both sides of the street, as well as in the background of the view. The view exhibits visual clutter.

There are no visual resources within this segment. In addition, there are no unique views of the local mountains or coastline and no protected views.

182nd Street to Intersection of Hawthorne Boulevard and 190th Street	Vividness	Intactness	Unity	Visual Quality
	Low	Low	Low	Low

Figure 3.3-52. View 39: Looking North Along Hawthorne Boulevard towards 182nd Street

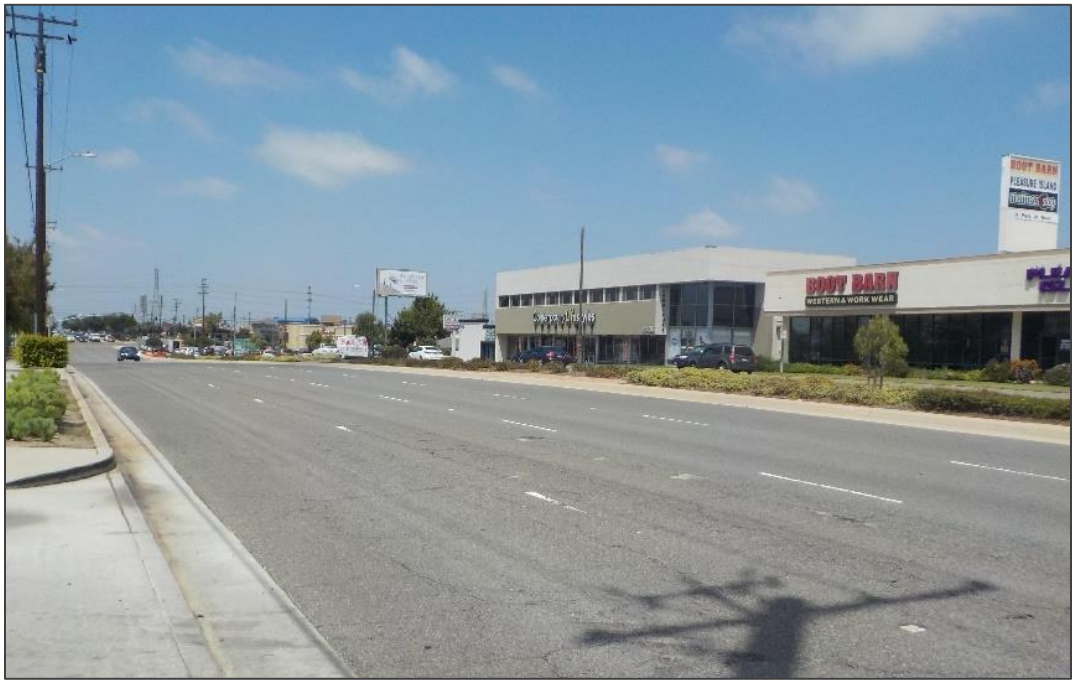
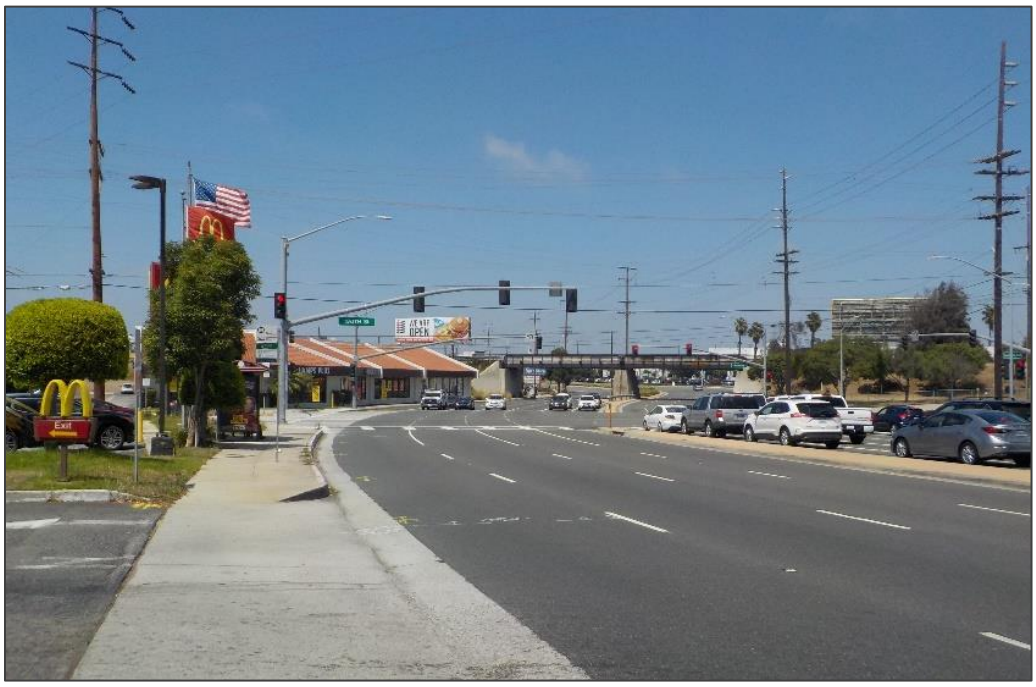


Figure 3.3-53. View 40: Looking South Along Hawthorne Boulevard towards 186th Street

Figure 3.3-54. View 41: Looking North Along Hawthorne Boulevard towards 190th Street and Existing Railroad Bridge Over Hawthorne Boulevard



Light, Glare, and Shadows

The RSAs for the Proposed Project, Trench Option and Hawthorne Option are largely built-out and are regularly exposed to high levels of existing light and glare during the daytime and light during evening hours. The commercial areas within the RSAs have a higher concentration of artificial light and reflective surfaces that produce glare than outlying residential areas due to the amount of artificial light associated with exterior building lights, lighted signs, streetlights, roadways, signal lights, and parking area lights. Aside from streetlights, some of the most notable sources of nighttime light in the RSAs are from office buildings and adjacent commercial, residential, and roadway uses, as well as safety lighting that exists along the Metro ROW and the existing elevated Redondo Beach (Marine) Station. In addition, major freeway lighting is located on the elevated I-405.

Glare may be a daytime occurrence caused by the reflection of sunlight or artificial light from highly polished surfaces, such as window glass and reflective cladding materials, and may interfere with the safe operation of a motor vehicle on adjacent streets. Daytime glare generation is common in urbanized areas and is typically associated with mid- to high-rise buildings with exterior façades largely or entirely comprising highly reflective glass or mirror-like materials. Nighttime glare is primarily associated with bright point source lighting that contrasts with existing low ambient light conditions.

Shadows are cast in a clockwise direction from west/northwest to east/northeast, from the morning to afternoon hours, during the Spring, Summer, Autumn, and Winter seasons of the year. Generally, the shortest shadows are cast during the Summer and grow increasingly longer until the Winter. During the Winter, the sun is lower in the sky and shadows are at their maximum coverage lengths. Shadow-sensitive uses generally include routinely useable outdoor spaces associated with residential, recreational, or institutional land uses; commercial uses, such as pedestrian-oriented outdoor spaces or restaurants with outdoor eating areas; plant nurseries; and existing solar collectors/panels.

In terms of existing shading, extremely narrow shadows are cast by the power transmission poles and towers, street trees, oil refinery drums, and low-rise buildings within the RSAs. Existing shadows are also cast by the elevated segments of the I-405 and freight bridges, tall and mature trees, as well as the existing elevated Redondo Beach (Marine) Station. Existing shading does not substantially cover surrounding uses. Therefore, the RSAs experiences a low to medium amount of shade during the day as the sun moves from east to west.

3.3-4 Environmental Impacts

3.3-4.1 Would the Proposed Project have a substantial adverse effect on a scenic vista?

3.3-4.1.1 Construction Impacts

No Impact. As discussed in Section 3.3-3.1, scenic vistas are unique public views of focal points or panoramic views of broader geographic areas that have visual interest. There are no scenic vistas within the RSA. Existing urban development, including commercial and residential areas, and a major power transmission corridor dominate many of the views in the RSA.

As discussed above, there are no designated scenic vistas located in the RSA. As such, construction activities would not result in a substantial adverse effect on a scenic vista. Therefore, construction of the Proposed Project would not have a substantial adverse effect on a scenic vista, and **no impact** would occur.

TRENCH OPTION

No Impact. The Trench Option is located in the same corridor as the Proposed Project. As discussed above, there are no scenic vistas within the RSA. Therefore, construction of the Trench Option would not have a substantial adverse effect on a scenic vista, and **no impact** would occur.

HAWTHORNE OPTION

No Impact. Similar to the Proposed Project, the Hawthorne Option RSA does not have any scenic vistas. Therefore, construction of the Hawthorne Option would not have a substantial adverse effect on a scenic vista or a prominent view of the urban setting, and there would be **no impact**.

3.3-4.1.2 Operational Impacts

No Impact. As discussed previously, there are no scenic vistas in the RSA. As such, the Proposed Project would not block any designated scenic vistas. Therefore, operation of the Proposed Project would not have a substantial adverse effect on a scenic vista, and **no impact** would occur.

TRENCH OPTION

No Impact. As discussed previously, there are no scenic vistas in the RSA. As such, the Trench Option would not block any designated scenic vistas. Therefore, operation of the Trench Option would not have a substantial adverse effect on a scenic vista, and **no impact** would occur.

HAWTHORNE OPTION

No Impact. As discussed previously, there are no scenic vistas in the RSA. As such, the Hawthorne Option would not block views of the urban setting or scenic vistas. Therefore, operation of the Hawthorne Option would not have a substantial adverse effect on a scenic vista, and **no impact** would occur.

3.3-4.2 Would the Proposed Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

3.3-4.2.1 Construction Impacts

No Impact. There are no designated state scenic highways within the RSA. As noted in Section 3.3-3.2, the nearest State-designated scenic highway is the Pacific Coast Highway, which is located approximately 10 miles southeast of the Proposed Project footprint (Caltrans, 2022). The RSA is not within the viewshed of this scenic highway. Due to the Proposed Project's distance from a state scenic highway, the Proposed Project would not damage scenic resources, such as trees, rock outcroppings, or historic buildings within a state scenic highway, and there would be **no impact**.

TRENCH OPTION

No Impact. The Trench Option would be located in the same corridor as the Proposed Project. There are no designated state scenic highways within the RSA. Therefore, the Trench Option would not damage a scenic resource (i.e., trees, rock outcroppings, or historic buildings) during construction within the viewshed of a state scenic highway, and **no impact** would occur.

HAWTHORNE OPTION

No Impact. There are no designated state scenic highways within the Hawthorne Option RSA. Therefore, the Hawthorne Option would not damage a scenic resource (i.e., trees, rock outcroppings, or historic buildings) during construction within the viewshed of a state scenic highway, and **no impact** would occur.

3.3-4.2.2 Operational Impacts

No Impact. As discussed previously, there are no designated state scenic highways within the RSA. Therefore, the Proposed Project would not damage a scenic resource (i.e., trees, rock outcroppings, or historic buildings) during operation within the viewshed of a state scenic highway, and **no impact** would occur.

TRENCH OPTION

No Impact. The Trench Option would be located in the same corridor as the Proposed Project. There are no designated state scenic highways within the Trench Option RSA. The Trench Option would not damage a scenic resource (i.e., trees, rock outcroppings, or historic buildings) during operation within the viewshed of a state scenic highway, and **no impact** would occur.

HAWTHORNE OPTION

No Impact. There are no designated state scenic highways within the Hawthorne Option RSA. The Hawthorne Option would not damage a scenic resource (i.e., trees, rock outcroppings, or historic buildings) during operation within the viewshed of a state scenic highway, and **no impact** would occur.

3.3-4.3 In non-urbanized areas, would the Proposed Project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

As defined by CEQA Guidelines Section 15387, the Proposed Project, Trench Option, and Hawthorne Options RSAs are located in an urbanized area within the Cities of Hawthorne, Lawndale, Redondo

Beach, and Torrance. Thus, a significant impact under CEQA could occur if the project conflicts with applicable zoning and other regulations governing scenic quality during construction or operation.

3.3-4.3.1 Construction Impacts

Less than Significant Impact. As discussed in Chapter 2, Project Description, construction activities for the Proposed Project would include the addition of construction equipment, vehicles, signs, staging, and personnel within the RSA. Construction activities would result in site disturbances, partial or full demolition of existing structures, use and movement of heavy construction equipment, import and export of materials, and removal of vegetation, use of erosion devises, and installation of piles, columns and piers. Construction would also require the temporary use of staging and laydown areas to stockpile and prepare materials and store and maintain equipment and vehicles. During the construction phase, temporary lighting would be installed, and the RSA would be fenced off with a chain-linked fence and construction noise barriers, resulting in a visual change from existing conditions. Fencing around construction staging areas may incorporate artwork, Metro-branded design treatments, and/or community relevant messaging. This would help to minimize the visual nuisance and ensure that the visual character and quality of the immediate area is not substantially degraded during construction.

Some residents may have private views of the construction of the Proposed Project from their windows. Some residents would be highly sensitive to visual changes and would have a higher degree of personal investment in the Proposed Project. In addition, pedestrians would primarily experience views of construction activities while walking along public sidewalks, within transit stations, and near businesses adjacent to the Proposed Project, and would have prolonged views while walking or standing near the Proposed Project. The change in the visual character of the alignment during the construction phase would be noticeable by these viewers. In addition, pedestrians are considered to have a moderate sensitivity to visual changes as they may be engaged in observing their surroundings.

Motorists would primarily experience views of construction activities while driving along the roadways along and adjacent to the Proposed Project. In addition, drivers would have prolonged views while idling at the various traffic signals surrounding the alignment. The change in the visual character of the alignment during the construction phase would be noticeable by-passing drivers. However, drivers are considered to have a low sensitivity to any visual changes as they are likely passing through the RSA to reach their destinations and do not necessarily have a personal investment in the visual character or quality of the RSA.

Overall, construction would represent a temporary change in the visual quality and character of the RSA, similar to other construction projects in the city. However, the existing visual quality is low to moderately low throughout the entire RSA, as discussed in Section 3.3-3.3, and construction activities would not substantially degrade the visual quality of the immediate area. Visual changes from construction activities would be temporary and post-construction views of Proposed Project-related construction activities, equipment, stockpiles, and fencing would be removed once construction is completed.

In addition, through implementation of PF-AES-1, Local Zoning Ordinances (as discussed in Section 3.3-2.4 above), Metro would verify that construction activities comply with applicable zoning regulations within the Cities of Hawthorne, Lawndale, Redondo Beach, and Torrance throughout the duration of construction. The Proposed Project would not conflict with the applicable policies within the City of Hawthorne General Plan Open Space and Recreation Element and Hawthorne Municipal Code; City of Lawndale General Plan Conservation and Land Use Elements and Lawndale Municipal Code; the City of Redondo Beach Land Use Element and Redondo Beach Municipal Code; or the City of Torrance Land Use

and Community Resource Elements and Torrance Municipal Code, as the Project would not substantially change the primarily urban views in the RSA. Therefore, the Proposed Project would not conflict with applicable zoning and other regulations governing scenic quality, and impacts during construction would be **less than significant**.

TRENCH OPTION

Less than Significant Impact. The Trench Option would involve construction activities that result in similar visual changes as the Proposed Project, though for longer durations. In addition, the Trench Option would also implement PF-AES-1, which would ensure that construction activities comply with applicable zoning regulations within the cities of Hawthorne, Lawndale, Redondo Beach, and Torrance throughout the duration of construction. Therefore, the Trench Option would not conflict with applicable zoning and other regulations governing scenic quality, and impacts during construction would be **less than significant**.

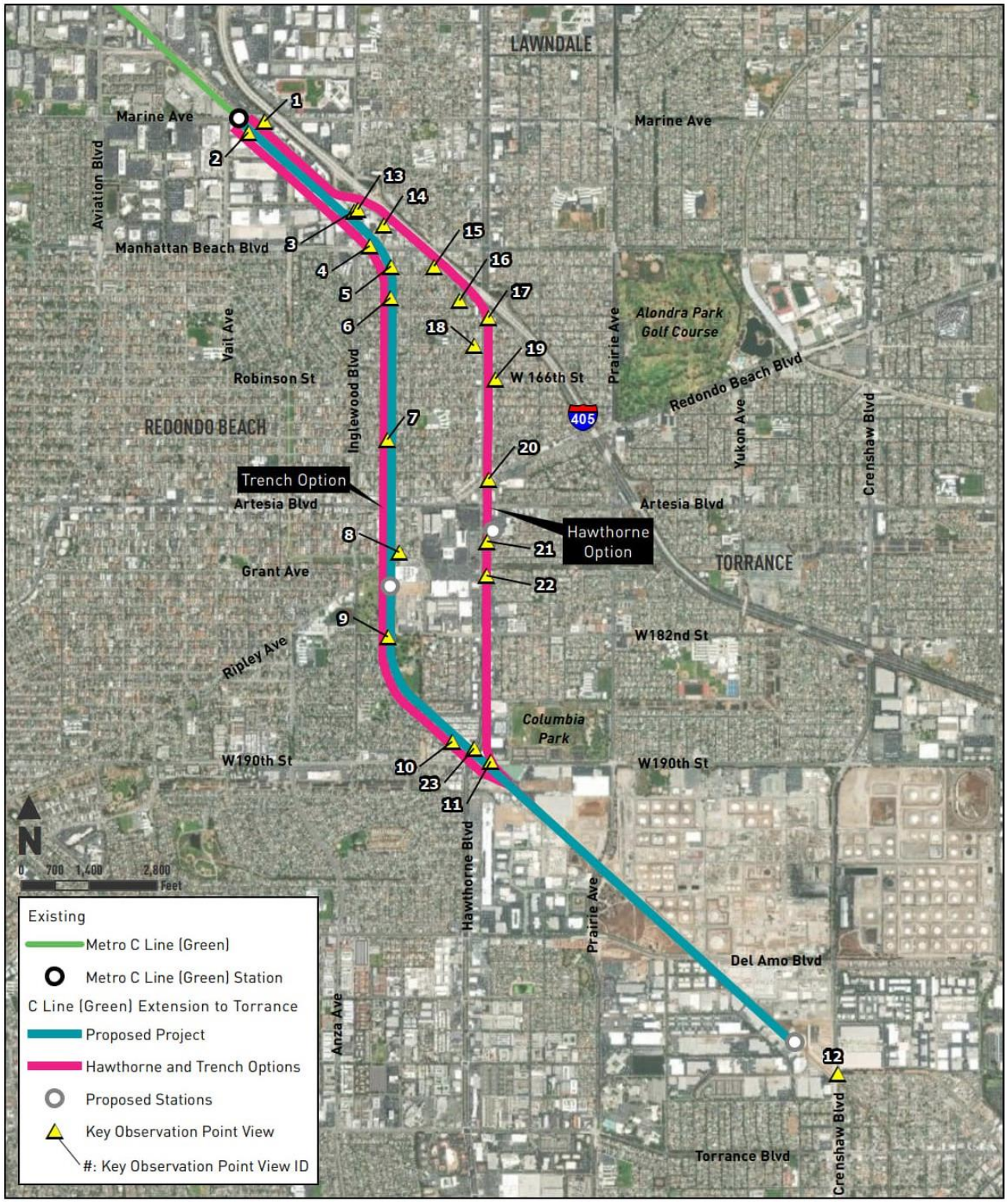
HAWTHORNE OPTION

Less than Significant Impact. The Hawthorne Option would involve construction activities that result in similar changes in the visual character as the Proposed Project. However, the changes would be temporary and would not substantially degrade the visual quality within the RSA. In addition, the Hawthorne Option would also implement PF-AES-1, which would ensure that construction activities comply with applicable zoning regulations within the cities of Hawthorne, Lawndale, Redondo Beach, and Torrance throughout the duration of construction. Therefore, the Hawthorne Option would not conflict with applicable zoning and other regulations governing scenic quality, and impacts during construction would be **less than significant**.

3.3-4.3.2 Operational Impacts

To assess the potential visual changes that would result from the operation of the Project, 23 KOPs were specifically selected to depict the Proposed Project's visual changes. Visual simulations from these KOPs were prepared to provide a before and after comparison of the visual effects that would result from the Proposed Project, Trench Option, and Hawthorne Option. The KOPs are representative of direct views within the RSA; simulations from the same locations show how these views would change as a result of the implementation of the Proposed Project. The simulated views represent conceptual design and are not intended to represent the final Project design. The simulations are included to conceptually illustrate the general visual changes that would be expected to occur. Details concerning the landscaping and soundwalls for the Proposed Project and Options are provided, as relevant, in the text corresponding with the visual simulations. The locations of the KOPs are shown on Figure 3.3-55.

Figure 3.3-55. KOP Locations



Source: AECOM, 2022

Less than Significant Impact. Per the CEQA Guidelines, visual impacts in urbanized areas are assessed based on the potential of a project to conflict with applicable zoning and other regulations governing scenic quality. The zoning ordinances that regulate scenic quality in each jurisdiction do not directly regulate the design of transportation infrastructure elements, such as Metro tracks and stations. However, the Cities' planning documents described in Section 3.3-1.3 contain goals and policies aimed at protecting visual character and quality. An analysis of the potential of the Proposed Project to affect visual character and quality is therefore presented below in KOPs 1 to 12.

Overall, the operation of the Proposed Project would represent a visual change as compared to existing conditions. However, the Proposed Project is located in a primarily urbanized area that provides a mix of architectural styles, as well as a mix of land uses. As discussed throughout the KOP analysis below, viewers in the RSA, such as pedestrians, residents, commuters, and patrons and employees of commercial businesses, would have a low to moderate sensitivity to this visual change.

In addition, the Proposed Project would be consistent with the local policies regarding visual character and scenic quality, such as applicable policies for the cities of Hawthorne, Lawndale, Redondo Beach, and Torrance listed in Table 3.3-1, Table 3.3-2, Table 3.3-3, and Table 3.3-4, respectively. For example, the Proposed Project would be consistent with Goal 2 of the Hawthorne General Plan Land Use Element through implementation of PF-AES-2, Metro Design Standards, which would ensure that both existing and future development will be and will remain compatible with surrounding desirable uses.

The Proposed Project would also be consistent with Goal C of the Hawthorne Boulevard Specific Plan within the City of Lawndale, which is to provide a high-quality image for Hawthorne Boulevard. This would also be achieved through the implementation of Metro design policies to ensure a high level of quality in design. Furthermore, the Proposed Project would implement Metro design policies to ensure consistency with Policy 2c of the Lawndale General Plan Land Use Element, which states that the use of land shall include design features that create a positive impact for the surrounding area. The Proposed Project's unified design elements and landscape design would have an overall positive effect, as it would contribute positive visual elements, such as uniform landscaping, landscaped public space, and other amenities.

The Proposed Project would also be consistent with Policy 1.41.6 of the Redondo Beach General Plan Land Use Element, which requires that projects be designed and developed to achieve a high level of quality and distinctive character.

The Proposed Project would also be consistent with Policy LU.2.1 of the Torrance General Plan Land Use Element, which requires that new development is visually and functionally compatible with existing residential neighborhoods and industrial and commercial areas. The Proposed Project would also be consistent with the Hawthorne Boulevard Corridor Specific Plan within the City of Torrance, including Goal C, which intends to provide for an integrated and high-quality urban image of the Corridor as a whole, consistent with its functional role. This would be achieved through implementation of Metro design policies to ensure that the Proposed Project's design features would be visually and functionally compatible with existing land uses.

In addition, implementation of the Proposed Project would require the removal of existing trees and vegetation within the Metro ROW. However, trees would be replaced in compliance with Metro's Tree Policy (see Section 3.3-1.2 above), which requires a minimum tree replacement ratio of 2:1 (or 4:1 if the tree is considered a heritage tree), and the planting of California-native or other drought-tolerant trees.

Furthermore, the Proposed Project would primarily be located within the existing Metro ROW. Project elements outside of the Metro ROW, such as traction power substations (TPSS) and station entrances, would comply with local zoning ordinances, per PF-AES-1, as they pertain to scenic quality.

As discussed in more detail below with respect to KOPs 1 to 12, the Proposed Project, which would include implementation of PF-AES-1 and PF-AES-2 to ensure compliance with local ordinances and enhance the visual identity and character of the Proposed Project within surrounding communities, would not result in a conflict with applicable zoning or other regulations governing scenic quality. Therefore, the Proposed Project would be consistent with zoning requirements regarding scenic quality, and impacts would be **less than significant**.

KOP 1: View looking south from Marine Avenue towards the Proposed Project Elevated Alignment

As shown on Figure 3.3-56, existing views at KOP 1 from pedestrians and motorists traveling south along Marine Avenue consist mainly of hotels and commercial buildings, including signage, street trees of varying heights, overhead power lines, street and sidewalk lighting, and the existing Redondo Beach (Marine) Station. A large public artwork, titled “The Art of Surf” by Roark Gourley, decorative statue is also present within the hotel parking area adjacent to the Metro ROW. The existing Redondo Beach (Marine) Station is elevated above Marine Avenue and exhibits a blue plexiglass covering, as well as concrete structural elements attributed to the existing light rail line. Long range views consist of one- to two-story commercial buildings, additional street trees, and overhead power lines to the south. This is a view typically seen by patrons and employees of nearby hotels and commercial businesses in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3.2, the visual quality of the Redondo Beach (Marine) Station area is considered to be moderately low due to the moderate level of vividness, low level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 1 also shows views looking south along Marine Avenue toward the existing terminus of the Metro Green Line at the Redondo Beach (Marine) Station with the visual simulation of the Proposed Project. As shown in the visual simulation, the primary visual change is the extension of the elevated structure and light rail tracks. The elevated structure would consist of concrete, similar to the existing elevated segments of the Metro C Line. In addition, the overhead contact system (OCS) would be visible above the new light rail tracks. The view from KOP 1 represents a visual change compared to existing conditions and would block views to the south for motorists and pedestrians. However, changes in visual quality would be neutral since the Proposed Project components would be compatible with existing views of the Redondo Beach (Marine) Station and the urbanized visual character of Marine Avenue.

In addition, through the implementation of Metro design policies to ensure a high level of quality in design, the Proposed Project would be generally consistent with the local policies regarding visual character and quality, including Policy 1.41.6 of the Redondo Beach General Plan Land Use Element, which requires that projects be designed and developed to achieve a high level of quality and distinctive character, as discussed at the beginning of this section. Furthermore, the Proposed Project would not block long range views of any prominent visual features.

Figure 3.3-56. KOP 1 – Before and After Simulation View, View looking south from Marine Avenue towards the Proposed Project Elevated Alignment

KOP 2: View looking southeast from the Redondo Beach Park/Ride towards the Proposed Project Elevated Alignment

As shown on Figure 3.3-57, existing views at KOP 2 from pedestrians and commuters looking southeast from the existing Redondo Beach Park/Ride consist mainly of the existing elevated structure and the terminus of the light rail tracks at the Redondo Beach (Marine) Station. Parking areas, overhead power lines, existing commercial buildings, and mature trees and shrubs of varying heights are also visible. Long range views consist of the nearby hotels and large utility structures to the southeast. This is a view typically seen by commuters of the Redondo Beach Park/Ride and employees of the commercial buildings in the RSA. Other public views are limited to existing landscaped areas and lighting within adjacent parking areas. Redondo Beach Park/Ride and employees of the commercial buildings in the RSA. Other public views are limited to existing landscaped areas and lighting within adjacent parking areas. As discussed in Section 3.3-3.3.2, the visual quality of the Redondo Beach (Marine) Station area is considered to be moderately low due to the moderate level of vividness, low level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 2 also shows views from pedestrians and commuters looking southeast from the Redondo Beach Park/Ride with the visual simulation of the Proposed Project. As shown in the visual simulation, the primary visual change is the extension of the elevated structure within the Metro ROW, as well as the TPSS and associated fencing below the elevated structure. The OCS would also be visible above the new light rail tracks. A portion of the existing parking area within the Metro ROW would also be removed in order to accommodate the space requirements of the elevated light rail tracks and existing freight track. The view from KOP 2 represents a visual change compared to existing conditions and would block views to the southeast from the parking area and adjacent commercial buildings. However, changes in visual quality would be neutral since the Proposed Project components would be compatible with the urbanized visual character of the Redondo Beach Park/Ride area.

In addition, through the implementation of Metro design policies to ensure a high level of quality in design, the Proposed Project would be generally consistent with the local policies regarding visual character and quality, including the Redondo Beach General Plan Land Use Element and Redondo Beach Municipal Code, as discussed at the beginning of this section. Furthermore, the Proposed Project would not block long range views of any prominent visual features.

Figure 3.3-57. KOP 2 – Before and After Simulation View, View looking southeast from the Redondo Beach Park/Ride towards the Proposed Project Elevated Alignment

KOP 3: View looking south from Inglewood Avenue towards the Proposed Project Elevated Alignment

As shown on Figure 3.3-58, existing views at KOP 3 from pedestrians and motorists traveling south along Inglewood Avenue consist mainly of one- to two-story commercial buildings, including signage, a billboard, street trees of varying heights, overhead power lines, and street and sidewalk lighting. Long range views consist of commercial buildings and street trees to the south. This is a view typically seen by patrons and employees of commercial businesses in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3, the visual quality of Marine Avenue to Inglewood Avenue is considered to be low due to the low level of vividness, low level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

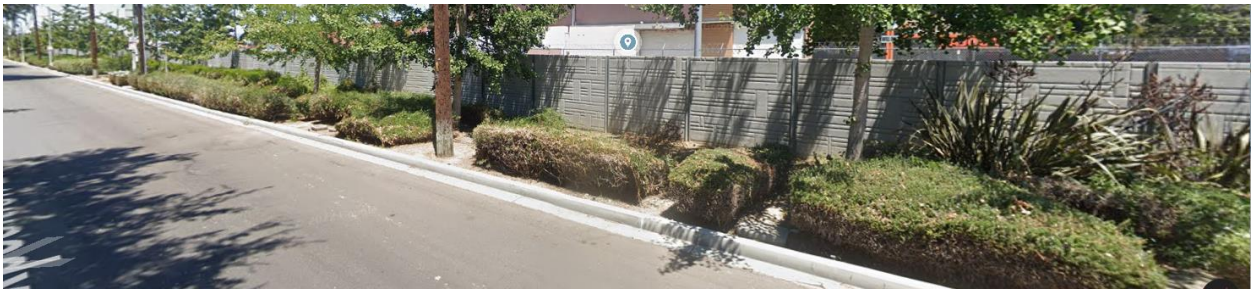
KOP 3 also shows views from pedestrians and motorists traveling south along Inglewood Avenue with the visual simulation of the Proposed Project. As shown in the visual simulation, the primary visual change is the addition of the elevated structure, as well as freight crossing gates and signage within the Metro ROW to provide safety for pedestrians and motorists. The addition of the elevated structure and light rail trains would affect the visual character of the project corridor by introducing new visible vertical features that would block views to the south from motorists and pedestrians traveling along Inglewood Avenue.

Mitigation measure MM-NOI-2, Soundwalls, as discussed in Section 3.6, Noise and Vibration, proposes a soundwall to minimize noise impacts to adjacent sensitive receivers (e.g., homes, schools, parks), which would further increase the scale of visual change; however, the soundwall would be designed in consideration of adjacent development. Soundwalls would be placed with appropriate setback distance from the tracks or at the edge of elevated structures. Materials, color, landscaping, and/or other aesthetic treatments would also be integrated into the design of the soundwall to minimize dominance and scale. Figure 3.3-59 shows examples of existing soundwalls adjacent to the Metro E Line (Expo). In addition, the OCS would be visible above the new light rail tracks; however, the OCS would visually blend into the existing numerous power transmission poles, towers, and lines that would remain in place in this area. As such, changes in visual quality would be neutral since the Proposed Project components would be compatible with the urbanized visual character of the RSA.

In addition, through the implementation of Metro design policies to ensure a high level of quality in design, the Proposed Project would be generally consistent with the local policies regarding visual character and quality, including Policy 1.41.6 of the Redondo Beach General Plan Land Use Element and Redondo Beach Municipal Code, as discussed further at the beginning of this section. Furthermore, the Proposed Project would not block long range views of any prominent visual features.

Figure 3.3-58. KOP 3 – Before and After Simulation View, View looking south from Inglewood Avenue towards the Proposed Project Elevated Alignment

Figure 3.3-59. Examples of Existing Metro Soundwalls



Above are three views of soundwalls adjacent to the existing Metro E Line (Expo).

Above is one view of soundwalls on an elevated alignment of the existing Metro L Line (Gold).

Source: Google Earth/Google Maps, 2022

KOP 4: View looking west from Manhattan Beach Boulevard towards the Proposed Project Elevated Alignment

As shown on Figure 3.3-60, existing views at KOP 4 from pedestrians and motorists traveling west along Manhattan Beach Boulevard consist mainly of one- to two-story commercial buildings, including signage, billboards, fencing, street trees of varying heights, street and sidewalk lighting, and overhead power lines. Long range views consist of mature trees and overhead power lines to the west. This is a view typically seen by patrons and employees of commercial businesses in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3, the visual quality of Marine Avenue to Inglewood Avenue is considered to be low due to the low level of vividness, low level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 4 also shows views from pedestrians and commuters looking west from Manhattan Beach Boulevard with the visual simulation of the Proposed Project. As shown in the visual simulation, the primary visual change is the addition of the elevated structure, as well as freight crossing gates and signage within the Metro ROW. The addition of the elevated structure would affect the visual character of the project corridor by introducing new visible vertical features that would block views to the west from motorists and pedestrians traveling along Manhattan Beach Boulevard.

Mitigation measure MM-NOI-2, as discussed in Section 3.6, Noise and Vibration, also proposes a soundwall to minimize noise impacts to adjacent sensitive receivers, which would further increase the scale of visual change; however, the soundwall would be designed in consideration of adjacent development. Soundwalls would be placed with appropriate setback distance from the tracks or at the edge of elevated structures. Materials, color, landscaping, and/or other aesthetic treatments would also be integrated into the design of the soundwall to minimize dominance and scale. Figure 3.3-59 shows examples of soundwalls in existing Metro Rail lines. In addition, the OCS would be visible above the new light rail tracks; however, the OCS would visually blend into the existing numerous power transmission poles, towers, and lines that would remain in place in this area. As such, changes in visual quality would be neutral since the Proposed Project components would be compatible with the urbanized visual character of the RSA.

In addition, through the implementation of Metro design policies to ensure a high level of quality in design, the Proposed Project would be generally consistent with the local policies regarding visual character and quality, including Goal 1 and Policy 2c of the Lawndale General Plan Land Use Element, Lawndale General Plan Conservation Element and Lawndale Municipal Code, as discussed further at the beginning of this section. Furthermore, the Proposed Project would not block long range views of any prominent visual features.

Figure 3.3-60. KOP 4 – Before and After Simulation View, View looking west from Manhattan Beach Boulevard towards the Proposed Project Elevated Alignment

KOP 5: View looking west from 159th Street towards the Proposed Project Elevated Alignment

As shown on Figure 3.3-61, existing views at KOP 5 from pedestrians and motorists traveling east along 159th Street consist mainly of one- to two-story residences, parked vehicles, chain link fencing, block walls adjacent to the existing residences, street and sidewalk lighting, overhead power lines, street trees of varying heights, and large ornamental trees on the western side of the Metro ROW. Long range views from the front yards of residences on 159th Street looking east consist of mature vegetation. This is a view typically seen by motorists traveling along 159th Street, patrons and employees of commercial businesses, and residents in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3, the visual quality of Inglewood Avenue to Artesia Boulevard is considered to be low due to the low level of vividness, low level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 5 also shows views from residents, pedestrians, and commuters looking west from 159th Street with the visual simulation of the Proposed Project. As shown in the visual simulation, the primary visual change is the addition of the elevated structure, as well as freight crossing gates and signage within the Metro ROW. The addition of the elevated structure would affect the visual character of the project corridor by introducing new visible vertical features that would block views to the southwest from motorists, pedestrians, and residents along 159th Street. Mitigation measure MM-NOI-2, as discussed in Section 3.6, Noise and Vibration, also proposes a soundwall to minimize noise impacts to adjacent sensitive receivers, which would further increase the scale of visual change; however, the soundwall would be designed in consideration of the adjacent development. Soundwalls would be placed with appropriate setback distance from the tracks or at the edge of elevated structures. Materials, color, landscaping, and/or other aesthetic treatments would also be integrated into the design of the soundwall to minimize dominance and scale. Figure 3.3-59 shows examples of soundwalls in existing Metro Rail lines. A portion of the grassy area, including trees, in the Metro ROW would be partially removed or trimmed to implement the Proposed Project. However, Metro's Tree Policy requires a minimum tree replacement ratio of 2:1 (or 4:1 if the tree is considered a heritage tree), and the planting of California-native or other drought-tolerant trees. Trees would also be replanted in a visually attractive and desirable manner to preserve and enhance the aesthetic character of the City of Lawndale, which would ensure consistency with Goal 1 of the City of Lawndale General Plan Land Use Element.

The scale and intensity of development related to the Proposed Project would noticeably alter the visual character of this area. Viewer groups, including residents in this area, would notice the visual changes associated with the Proposed Project due to its proximity to residential homes. However, the Proposed Project would not substantially degrade the visual character of the area, and its change to visual quality would be neutral. The existing visual quality in this area is considered to be low, as described in Section 3.3-3.3, and the viewer groups in this highly urbanized area are accustomed to the use of the existing Metro ROW by freight trains. Additionally, the Proposed Project's unified design elements and landscape design would contribute positive visual elements, such as uniform landscaping and landscaped public space.

In addition, through the implementation of Metro design policies to ensure a high level of quality in design, the Proposed Project would be generally consistent with the local policies regarding visual character and quality, including Goal 1 and Policy 2c of the Lawndale General Plan Land Use Element, Lawndale General Plan Conservation Element, and Lawndale Municipal Code, as discussed further at the beginning of this section. Furthermore, the Proposed Project would not block long range views of any prominent visual features.

Figure 3.3-61. KOP 5 – Before and After Simulation View, View looking west from 159th Street towards the Proposed Project Elevated Alignment

KOP 6: View looking northeast from 161st Street towards the Proposed Project Elevated Alignment

As shown on Figure 3.3-62, existing views at KOP 6 from pedestrians and motorists traveling east along 161st Street consist mainly of one- to two-story residences, fencing, parked vehicles, street and sidewalk lighting, overhead power lines, street trees of varying heights, and large ornamental trees on the western side of the Metro ROW. Long range views from the front yards of residences on 161st Street looking east consist of mature vegetation and utilities. This is a view typically seen by motorists traveling along 161st Street and residents in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3.2, the visual quality of Inglewood Avenue to Artesia Boulevard is considered to be low due to the low level of vividness, low level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 6 also shows views from residents, pedestrians, and motorists looking northeast from 161st Street with the visual simulation of the Proposed Project. As shown in the visual simulation, the primary visual change is the addition of the elevated structure, as well as freight crossing gates and signage within the Metro ROW. The addition of the elevated structure would affect the visual character of the project corridor by introducing new visible vertical features that would block views to the northeast from motorists, pedestrians, and residents along 161st Street. Mitigation measure MM-NOI-2, as discussed in Section 3.6, Noise and Vibration, also proposes a soundwall to minimize noise impacts to adjacent sensitive receivers, which would further increase the scale of visual change; however, the soundwall would be designed in consideration of adjacent development. Soundwalls would be placed with appropriate setback distance from the tracks or at the edge of elevated structures. Materials, color, landscaping, and/or other aesthetic treatments would also be integrated into the design of the soundwall to minimize dominance and scale. Figure 3.3-59 shows examples of soundwalls in Metro Rail lines. In addition, the OCS would be visible above the new light rail tracks; however, the OCS would visually blend into the existing numerous power transmission poles, towers, and lines that would remain in place in this area. A portion of the grassy area in the Metro ROW would be partially removed to implement the Project. Trees and other vegetation that exist within the Metro ROW would also be removed or trimmed. However, Metro's Tree Policy requires a minimum tree replacement ratio of 2:1 (or 4:1 if the tree is considered a heritage tree), and the planting of California-native or other drought-tolerant trees. Trees would also be replanted in a visually attractive and desirable manner to preserve and enhance the aesthetic character of the City of Lawndale, which would ensure consistency with Goal 1 of the City of Lawndale General Plan Land Use Element.

The scale and intensity of development related to the Proposed Project would noticeably alter the visual character of this area. Viewer groups, including residents in this area, would notice the visual changes associated with the Proposed Project due to its proximity to residential homes. However, the Proposed Project would not substantially degrade the visual character, and its change to visual quality would be neutral. The existing visual quality in this area is considered to be low, as described in Section 3.3-3.3, and the viewer groups in this urbanized area are accustomed to the use of the existing Metro ROW by freight trains. Additionally, the Proposed Project's unified design elements and landscape design would contribute positive visual elements, such as uniform landscaping and landscaped public space.

In addition, through the implementation of Metro design policies to ensure a high level of quality in design, the Proposed Project would be generally consistent with the local policies regarding visual character and quality, including Goal 1 and Policy 2c of the Lawndale General Plan Land Use Element, Lawndale General Plan Conservation Element, and Lawndale Municipal Code, as discussed at the beginning of this section. Furthermore, the Proposed Project would not block long range views of any prominent visual features.

Figure 3.3-62. KOP 6 – Before and After Simulation View, View looking northeast from 161st Street towards the Proposed Project Elevated Alignment

KOP 7: View looking west from 170th Street towards the Proposed Project At-Grade Alignment

As shown on Figure 3.3-63, existing views at KOP 7 from pedestrians and motorists traveling west along 170th Street consist mainly of one- to two-story residences, block walls and mature vegetation adjacent to existing residences, fencing, parked vehicles, street and sidewalk lighting, overhead power lines, and street trees of varying heights. Long range views on 170th Street looking west consist mainly of mature vegetation and overhead power lines. This is a view typically seen by motorists traveling along on 170th Street and residents in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3.2, the visual quality of Inglewood Avenue to Artesia Boulevard is considered to be low due to the low level of vividness, low level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 7 also shows views from residents, pedestrians, and commuters looking west from 170th Street with the visual simulation of the Proposed Project. As shown in the visual simulation, the primary visual change is the addition of the additional at-grade light rail crossing within the Metro ROW, as well as crossing gates and signage.

Mitigation measure MM-NOI-2, as discussed in Section 3.6, Noise and Vibration, also proposes a soundwall to minimize noise impacts to adjacent sensitive receivers, which would further increase the scale of visual change; however, the soundwall would be designed in consideration of adjacent development. Soundwalls would be placed with appropriate setback distance from the tracks or at the edge of elevated structures. Materials, color, landscaping, and/or other aesthetic treatments would also be integrated into the design of the soundwall to minimize dominance and scale. Soundwalls adjacent to at-grade intersections would be constructed with plexiglass to provide visibility for safety purposes, which also reducing noise impacts. Figure 3.3-59 shows examples of soundwalls in existing Metro Rail lines, including plexiglass material used at a Metro E Line (Expo) at-grade crossing. In addition, the OCS would be visible above the new light rail tracks, which would also represent a visual change.

The scale and intensity of development related to the Proposed Project would alter the visual character of this area, as there would be a visual change related to an increase in the bulk and mass of the existing at-grade crossing. However, the addition of the light rail tracks and light rail trains crossing 170th Street would be similar in scale, material, and form of the existing at-grade crossing.

In addition, through the implementation of Metro design policies to ensure a high level of quality in design, the Proposed Project would be generally consistent with the local policies regarding visual character and quality, including Goal 1 and Policy 2c of the Lawndale General Plan Land Use Element, Lawndale General Plan Conservation Element, and Lawndale Municipal Code, as discussed further at the beginning of this section. Furthermore, the Proposed Project would not block long range views of any prominent visual features.

Figure 3.3-63. KOP 7 – Before and After Simulation View, View looking west from 170th Street towards the Proposed Project At-Grade Alignment

KOP 8: View looking west from Grant Avenue towards the Proposed Project Relocated Freight Bridge and Elevated Alignment

As shown on Figure 3.3-64, existing views at KOP 8 from pedestrians and motorists traveling west along Grant Avenue consist mainly of the existing elevated freight crossing, one to two-story residences adjacent to the Metro ROW, large utility structures, street trees of varying heights, street and sidewalk lighting, overhead power lines, and mature vegetation within the landscaped roadway medians. This is a view typically seen by motorists traveling along on Grant Avenue and residents in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3.2, the visual quality of the Redondo Beach TC Station area is considered to be moderately low due to the low level of vividness, moderate level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 8 also shows views from pedestrians and commuters looking west from Grant Avenue with the visual simulation of the Proposed Project. As shown in the visual simulation, the primary visual change is the addition of the relocated freight bridge on the west side of the Metro ROW, while two new light rail bridges would be added on the east side of the Metro ROW. However, these visual elements would not block any existing views of visual resources. In addition, as shown in the visual simulation below, the mature trees that currently exist within the Grant Avenue median, directly east of the freight bridge, would also be removed.

Overall, the new bridges and support structures would consist of concrete, and would be similar in scale, material, and form of the existing elevated crossing. Mitigation measure MM-NOI-2, as discussed in Section 3.6, Noise and Vibration, also proposes a soundwall to minimize noise impacts to adjacent sensitive receivers, which would further increase the scale of visual change; however, the soundwall would be designed in consideration of adjacent development. Soundwalls would be placed with appropriate setback distance from the light rail tracks or at the edge of elevated structures. Materials, color, landscaping, and/or other aesthetic treatments would also be integrated into the design of the soundwall to minimize dominance and scale. Figure 3.3-59 shows examples of soundwalls in existing Metro Rail lines. The OCS would also be visible above the new light rail tracks; however, the OCS would visually blend into the existing numerous power transmission poles, towers, and lines that would remain in place in this area. Changes in visual quality would be neutral since the Proposed Project components would be compatible with the visual character of the RSA.

In addition, through the implementation of Metro design policies to ensure a high level of quality in design, the Proposed Project would be generally consistent with the local policies regarding visual character and quality, including Policy 1.41.6 of the Redondo Beach General Plan Land Use Element and Redondo Beach Municipal Code, as discussed further at the beginning of this section. Furthermore, the Proposed Project would not block long range views of any prominent visual features.

Figure 3.3-64. KOP 8 – Before and After Simulation View, View looking west from Grant Avenue towards the Proposed Project Relocated Freight Bridge and Elevated Alignment

KOP 9: View looking north from 182nd Street towards the Proposed Project At-Grade Alignment

As shown on Figure 3.3-65, existing views at KOP 9 from pedestrians and motorists traveling east along 182nd Street consist mainly of one- to two-story commercial structures, chain link fencing, utilities, and mature vegetation adjacent to existing businesses and within landscaped area. Long range views from the front yards of residences on 182nd Street looking north consist of the freight tracks within the Metro ROW, as well as vacant dirt areas. This is a view typically seen by motorists traveling along on 182nd Street and residents in the RSA, as well as pedestrians. Street and sidewalk lighting and overhead power lines are also visible in the existing view. As discussed in Section 3.3-3.3, the visual quality of 182nd Street to the intersection of Hawthorne Boulevard and 190th Street is considered to be moderately low due to the low level of vividness, moderate level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 9 also shows views from residents, pedestrians, and commuters looking north from 182nd Street with the visual simulation of the Proposed Project. As shown in the visual simulation, the primary visual change is the addition of the OCS and light rail tracks. The addition of light rail tracks and light rail trains would represent a visual change compared to existing conditions. The OCS would also be visible above the new light rail tracks; however, the OCS would visually blend into the existing numerous power transmission poles, towers, and lines that would remain in place in this area. This is also looking towards the location of the proposed Redondo Beach TC Station, which is not clearly visible in the simulation due to the distance.

The scale and intensity of development related to the Proposed Project would noticeably alter the visual character of this area. Viewer groups, including residents in this area, would notice the visual changes associated with the Proposed Project due to its proximity to residential homes. However, due to the urban nature of the RSA, and the visual presence of the existing freight tracks within the Metro ROW, the Proposed Project would not represent a substantial visual change from the existing environment. In addition, through the implementation of Metro design policies to ensure a high level of quality in design, the Proposed Project would be generally consistent with the local policies regarding visual character and quality, including Policy 1.41.6 the Redondo Beach General Plan Land Use Element and Redondo Beach Municipal Code, as discussed further at the beginning of this section. Furthermore, the Proposed Project would not block long range views of any prominent visual features.

Figure 3.3-65. KOP 9 – Before and After Simulation View, View looking north from 182nd Street towards the Proposed Project At-Grade Alignment

KOP 10: View looking east from Spreckels Court towards the Proposed Project At-Grade Alignment

As shown on Figure 3.3-66, existing views at KOP 10 from pedestrians and residents looking east from the Spreckels Court cul-de-sac consist mainly of one-story residences, the existing freight track on an earthen berm within the Metro ROW, block walls and mature vegetation adjacent to existing residences, street and sidewalk lighting, and overhead power lines. Long range views from the front yards of residences on Spreckels Court looking east consist of overhead power lines. This is a view typically seen by residents in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3, the visual quality of 182nd Street to the intersection of Hawthorne Boulevard and 190th Street is considered to be moderately low due to the low level of vividness, moderate level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 10 also shows views from residents and pedestrians looking east from Spreckels Court with the visual simulation of the Proposed Project. As shown in the visual simulation, the primary visual change is the new at-grade light rail tracks within the Metro ROW. Mitigation measure MM-NOI-2, as discussed in Section 3.6, Noise and Vibration, also proposes a soundwall to minimize noise impacts to adjacent sensitive receivers, which would further increase the scale of visual change; however, the soundwall would be designed in consideration of adjacent development. Soundwalls would be placed with appropriate setback distance from the tracks or at the edge of elevated structures. Materials, color, landscaping, and/or other aesthetic treatments would also be integrated into the design of the soundwall to minimize dominance and scale. Figure 3.3-59 shows examples of soundwalls in existing Metro Rail lines. In addition, the OCS would be visible above the new at-grade light rail tracks; however, the OCS would visually blend into the existing numerous power transmission poles, towers, and lines that would remain in place in this area.

The scale and intensity of development related to the Proposed Project would noticeably alter the visual character of this area. Viewer groups, including residents in this area, would notice the visual changes associated with the Proposed Project due to its proximity to residential homes. However, the Proposed Project would not represent a substantial change to existing views, as the Metro ROW is elevated in this area and is set back from existing residences, and viewer groups in this area are accustomed to the use of the Metro ROW by freight trains.

In addition, through the implementation of Metro design policies to ensure a high level of quality in design, the Proposed Project would be generally consistent with the local policies regarding visual character and quality, including Policy 1.41.6 of the Redondo Beach General Plan Land Use Element and Redondo Beach Municipal Code, as discussed further at the beginning of this section. Furthermore, the Proposed Project would not block long range views of any prominent visual features.

Figure 3.3-66. KOP 10 – Before and After Simulation View, View looking east from Spreckels Court towards the Proposed Project At-Grade Alignment

KOP 11: View looking west from 190th Street towards the Proposed Project Light Rail Bridge

As shown on Figure 3.3-67, existing views at KOP 11 from pedestrians and commuters traveling west along 190th Street consist mainly of the existing elevated Metro ROW crossing, one to three-story commercial buildings and parking garages, mature vegetation, street and sidewalk lighting, and overhead power lines. Long range views consist of commercial buildings to the west. This is a view typically seen by patrons and employees of commercial businesses in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3, the visual quality of 182nd Street to the Intersection of Hawthorne Boulevard and 190th Street is considered to be moderately low due to the low level of vividness, moderate level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 11 also shows views from commuters and pedestrians looking west from 190th Street with the visual simulation of the Proposed Project. As shown in the visual simulation, the primary visual change is the modified elevated new light rail bridge parallel to the existing freight bridge within the Metro ROW crossing. The new light rail bridge would be considered a new visual element in this area. However, this visual element would not block any existing views of visual resources. The new light rail bridge and support structures would consist of concrete, and would be similar in scale, material, and form of the existing elevated crossing. The OCS would be visible above the new light rail tracks; however, the OCS would visually blend into the existing numerous power transmission poles, towers, and lines that would remain in place in this area. Changes in visual quality would be neutral since the Proposed Project components would be compatible with the visual character of the RSA.

In addition, through the implementation of Metro design policies to ensure a high level of quality in design, the Proposed Project would be generally consistent with the local policies regarding visual character and quality, including Policy LU.2.1 of the Torrance General Plan Land Use Element, Community Resource Element, and Torrance Municipal Code, as discussed further at the beginning of this section. Furthermore, the Proposed Project and would not block long range views of any prominent visual features.

Figure 3.3-67. KOP 11 – Before and After Simulation View, View looking west from 190th Street towards the Proposed Project Elevated Alignment

KOP 12: View looking west from Crenshaw Boulevard towards the Torrance Transit Center Station

As shown on Figure 3.3-68, existing views at KOP 12 include the Torrance TC, Metro ROW, mature vegetation, fencing, and overhead power lines. Long range views consist of industrial warehouses to the southwest. This is a view typically seen by motorists traveling along Crenshaw Boulevard, patrons and employees of commercial businesses, and residents in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3, the visual quality of the Torrance TC Station area is considered to be moderately low due to the low level of vividness, moderate level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 12 also shows views from residents, commuters, and pedestrians looking west from Crenshaw Boulevard with the visual simulation of the Proposed Project. As shown in the visual simulation, the primary visual change is the addition of the Torrance TC Station, light rail tracks, retaining walls, and OCS. Views from the residential area along Crenshaw Boulevard and Dominguez Street toward the Metro ROW would be altered for residents and pedestrians looking west towards the Torrance TC Station. Due to the dense urban and visual environment of the RSA, and the visual presence of the existing Torrance TC and freight tracks within the Metro ROW, changes to existing views from adjacent residential and commercial areas would not be substantial.

In addition, through the implementation of Metro design policies to ensure a high level of quality in design, the Proposed Project would be generally consistent with the local policies regarding visual character and quality, including Policy LU.2.1 the Torrance General Plan Land Use Element, Community Resource Element, and Torrance Municipal Code, as discussed at the beginning of this section. Furthermore, the Proposed Project would not block long range views of any prominent visual features.

Figure 3.3-68. KOP 12 – Before and After Simulation View, View looking west from Crenshaw Boulevard towards the Torrance Transit Center Station

TRENCH OPTION

Less than Significant Impact. The Trench Option would be located in the same location as the Proposed Project. However, under the Trench Option, the light rail would be located within a trench, reducing its visibility and potential for conflicts with regulations regarding scenic quality. As described in Chapter 2, Project Description, throughout most of the Trench Option segment (from Redondo Beach (Marine) Street to 190th Street), the light rail tracks would be below-grade. South of 190th Street, there is only one alignment for the Proposed Project, and no Options.

Similar to the Proposed Project, operation of the Trench Option would represent a visual change as compared to existing conditions. An analysis of the potential of the Trench Option to affect visual character and quality is presented below in KOPs 6T and 7T, which are representative views of the trench alignment. The Trench Option is located in a primarily urbanized area with low existing visual quality, and as discussed throughout the KOP analysis below, viewers in the RSA would have a low to moderate sensitivity to this visual change.

Additionally, the Trench Option would be similar to the Proposed Project in that it would be consistent with the local policies regarding visual character and scenic quality, such as applicable policies for the cities of Hawthorne, Lawndale, and Redondo Beach listed in Table 3.3-1, Table 3.3-2, and Table 3.3-3, respectively. The Trench Option's approvals would include implementation of PF-AES-1 and PF-AES-2 to ensure compliance with local ordinances and enhance the visual identity and character within surrounding communities, and there would not be a conflict with applicable zoning or other regulations governing scenic quality. Therefore, the Trench Option would be consistent with zoning requirements regarding scenic quality, and impacts would be **less than significant**.

KOP 6T: View looking northeast from 161st Street towards the Trench Option Alignment

As shown on Figure 3.3-69, existing views at KOP 6T from pedestrians and motorists traveling east along 161st Street consist mainly of one- to two-story residences, fencing, parked vehicles, street and sidewalk lighting, overhead power lines, street trees of varying heights, and large ornamental trees on the western side of the Metro ROW. Long range views from the front yards of residences on 161st Street looking east consist of mature vegetation and utilities. This is a view typically seen by motorists traveling along 161st Street and residents in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3, the visual quality of Inglewood Avenue to Artesia Boulevard is considered to be low due to the low level of vividness, low level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 6T also shows views from residents, pedestrians, and motorists looking northeast from 161st Street with the visual simulation of the Trench Option. The primary visual changes for the Trench Option are the addition of the crossing gates, signage, and safety fencing, and to a lesser degree, the trench alignment, which would cross under the roadway at 161st Street. The Trench Option is not expected to alter visual character and quality of the area since the Trench Option would be consistent with the visual character of the existing at-grade crossing in the Metro ROW.

Furthermore, through the implementation of Metro design policies to ensure a high level of quality in design, the Trench Option would be generally consistent with the local policies regarding visual character and quality, including Goal 1 and Policy 2c of the Lawndale General Plan Land Use Element, Lawndale General Plan Conservation Element and Lawndale Municipal Code, as discussed further at the beginning of this section. Furthermore, the Trench Option would not block long range views of any prominent visual features.

Figure 3.3-69. KOP 6T – Before and After Simulation View, View looking northeast from 161st Street towards the Trench Option Alignment

KOP 7T: View looking west from 170th Street towards the Trench Option Alignment

As shown on Figure 3.3-70, existing views at KOP 7T from pedestrians and motorists traveling west along 170th Street consist mainly of one- to two-story residences, block walls and mature vegetation adjacent to existing residences, fencing, parked vehicles, street and sidewalk lighting, overhead power lines, and street trees of varying heights. Long range views on 170th Street looking west consist mainly of mature vegetation and overhead power lines. This is a view typically seen by motorists traveling along on 170th Street and residents in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3.2, the visual quality of Inglewood Avenue to Artesia Boulevard is considered to be low due to the low level of vividness, low level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 7T also shows views from residents, pedestrians, and commuters looking west from 170th Street with the visual simulation of the Trench Option. The primary visual changes for the Trench Option are the freight crossing gates, signage, and safety fencing, and to a lesser degree, the trench alignment, which would cross under the roadway at 170th Street. Mitigation measure MM-NOI-2, as discussed in Section 3.6, Noise and Vibration, also proposes a soundwall to minimize noise impacts to adjacent sensitive receivers, which would further increase the scale of visual change; however, the soundwall would be designed in consideration of adjacent development. Soundwalls would be placed with appropriate setback distance from the tracks or at the edge of elevated structures. Materials, color, landscaping, and/or other aesthetic treatments would also be integrated into the design of the soundwall to minimize dominance and scale. Soundwalls adjacent to at-grade intersections would be constructed with plexiglass to provide visibility for safety purposes, which also reducing noise impacts. Figure 3.3-59 shows examples of soundwalls in existing Metro Rail lines, including plexiglass material used at a Metro E Line (Expo) at-grade crossing. The Trench Option is not expected to alter visual character and quality of the area since the Trench Option would be consistent with the visual character of the existing at-grade freight rail crossing in the Metro ROW.

Furthermore, through the implementation of Metro design policies to ensure a high level of quality in design, the Trench Option would be generally consistent with the local policies regarding visual character and quality, including the Lawndale General Plan Land Use Element, Lawndale General Plan Conservation Element, and Lawndale Municipal Code. Furthermore, the Trench Option would not block long range views of any prominent visual features.

Figure 3.3-70. KOP 7T – Before and After Simulation View, View looking west from 170th Street towards the Trench Option Alignment

HAWTHORNE OPTION

Less than Significant Impact. Similar to the Proposed Project, operation of the Hawthorne Option would represent a visual change as compared to existing conditions. The light rail would be located on an elevated structure supported by columns and straddle bents, which has the potential to result in a higher degree of visual change. An analysis of the potential of the Hawthorne Option to affect visual character and quality is presented below in KOPs 13 to 23. The Hawthorne Option is located in a primarily urbanized area within a commercial corridor, and as discussed throughout the KOP analysis below, viewers in the RSA would have a low to moderate sensitivity to this visual change.

There are three historic buildings within the RSA of the Hawthorne Option that represent significant visual resources, including Moda Italia, Frank's Furniture, and Lightning Express Carwash. The Hawthorne Option has the potential to block pedestrian and motorist's views of the historic buildings within this portion of the RSA from certain vantage points. However, because the Hawthorne Option consists of an elevated alignment, views of the buildings' historical features would still be visible from the ground-level where the historical features are visually prominent. As such, the Hawthorne Option would not have impact the views or visual character of these historic resources.

The Hawthorne Option would be similar to the Proposed Project in that it would be consistent with the local policies regarding visual character and scenic quality, such as applicable policies for the cities of Hawthorne, Lawndale, Redondo Beach, and Torrance as listed in Table 3.3-1, Table 3.3-2, Table 3.3-3, and Table 3.3-4, respectively. In addition, implementation of the Hawthorne Option would require the removal of existing trees and vegetation. However, trees would be replaced in compliance with Metro's Tree Policy (see Section 3.3-1.2 above).

The Hawthorne Option's approvals would include implementation of PF-AES-1 and PF-AES-2 to ensure compliance with local ordinances and enhance the visual identity and character within surrounding communities, and there would not be a conflict with applicable zoning or other regulations governing scenic quality. Therefore, the Hawthorne Option would be consistent with zoning requirements regarding scenic quality, and impacts would be **less than significant**.

KOP 13: View looking north from Inglewood Avenue towards the Hawthorne Option Elevated Alignment

As shown on Figure 3.3-71, existing views at KOP 13 from pedestrians and motorists traveling north along Inglewood Avenue consist mainly of two gas stations, one to two-story commercial buildings, roadway signage, street and sidewalk lighting, and overhead power lines. Long range views consist of mature vegetation and the I-405 freeway crossing over Inglewood Avenue. This is a view typically seen by patrons and employees of commercial businesses in the RSA, as well as pedestrians. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 13 also shows views from commuters and pedestrians looking north from Inglewood Avenue with the visual simulation of the Hawthorne Option. As shown in the visual simulation, the primary visual change is the addition of the new elevated structure adjacent to the I-405 Freeway and the removal of a gas station. As discussed previously, the addition of the elevated light rail tracks and light rail trains would affect the visual character of the area by introducing new visible vertical features. Mitigation measure MM-NOI-2, as discussed in Section 3.6, Noise and Vibration, also proposes a soundwall to minimize noise impacts to adjacent sensitive receivers, which would further increase the scale of visual change; however, the soundwall would be designed in consideration of adjacent development. Soundwalls would be placed at the edge of the near track with appropriate setback distance from the tracks or at the edge of elevated structures. Materials, color, landscaping, and/or other aesthetic treatments would also be integrated into the design of the soundwall to minimize dominance and scale. Figure 3.3-59 shows examples of soundwalls in existing Metro Rail lines. In addition, the OCS would be visible above the new light rail tracks; however, the OCS would visually blend into the existing numerous power transmission poles, towers, and lines that would remain in place in this area. Overall, changes in visual quality would be neutral since the proposed elevated light rail tracks would run parallel to the I-405 freeway, and therefore, would have similar scale and massing to surrounding structures. Project components would be compatible with the visual character of the RSA.

Furthermore, through the implementation of Metro design policies to ensure a high level of quality in design, the Hawthorne Option would be generally consistent with the local policies regarding visual character and quality, including Goal 1 and Policy 2c of the Lawndale General Plan Land Use Element, Lawndale General Plan Conservation Element and Lawndale Municipal Code. Furthermore, the Hawthorne Option would not block long range views of any prominent visual features.

Figure 3.3-71. KOP 13 – Before and After Simulation View, View looking north from Inglewood Avenue towards the Hawthorne Option Elevated Alignment

KOP 14: View looking northwest from Condon Avenue towards the Hawthorne Option Elevated Alignment

As shown on Figure 3.3-72, existing views at KOP 14 from pedestrians and motorists traveling northwest along Condon Avenue consist mainly of the I-405 Freeway, two-story commercial buildings and warehouses, a large billboard, fencing, parked vehicles, street and sidewalk lighting, and overhead power lines. Long range views are limited by existing structures. This is a view typically seen by patrons and employees of commercial businesses in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3, the visual quality of Inglewood Avenue to Artesia Boulevard is considered to be low due to the low level of vividness, low level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 14 also shows views from commuters and pedestrians looking northwest from Condon Avenue with the visual simulation of the Hawthorne Option. As shown in the visual simulation, the primary visual change is the addition of the new elevated structure adjacent to the I-405 Freeway. In addition, the large billboard adjacent to the I-450 Freeway would be removed in this location to accommodate the Hawthorne Option. As discussed previously, the addition of the elevated light rail tracks and light rail trains would affect the visual character of the corridor by introducing new visible vertical features. The OCS would be visible above the new light rail tracks, which would represent a visual change in a view that does not include many existing overhead power transmission lines or poles. Overall, changes in visual quality would be neutral since the proposed elevated alignment would run parallel to the I-405 freeway and would have similar scale and massing to surrounding structures. Project components would be compatible with the visual character of the RSA.

Furthermore, through the implementation of Metro design policies to ensure a high level of quality in design, the Hawthorne Option would be generally consistent with the local policies regarding visual character and quality, including Goal 1 and Policy 2c of the Lawndale General Plan Land Use Element, Lawndale General Plan Conservation Element and Lawndale Municipal Code, as discussed further at the beginning of this section. Furthermore, the Hawthorne Option would not block long range views of any prominent visual features.

Figure 3.3-72. KOP 14 – Before and After Simulation View, View looking northwest from Condon Avenue towards the Hawthorne Option Elevated Alignment

KOP 15: View looking north from Grevillea Avenue towards the Hawthorne Option Elevated Alignment

As shown on Figure 3.3-73, existing views at KOP 15 from pedestrians, residents, and motorists traveling north along Grevillea Avenue consist mainly of one- to two-story residences, fencing, mature vegetation, a block wall adjacent to the I-405 Freeway, driveways, street and sidewalk lighting, and overhead power lines. This is a view typically seen by residents in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3, the visual quality of Inglewood Avenue to Artesia Boulevard is considered to be low due to the low level of vividness, low level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 15 also shows views from commuters, residents, and pedestrians looking north from Grevillea Avenue with the visual simulation of the Hawthorne Option. As shown in the visual simulation, the primary visual change is the addition of the new elevated structure adjacent to the I-405 Freeway. As discussed previously, the addition of the elevated light rail tracks and light rail trains would affect the visual character of the corridor by introducing new visible vertical features. Mitigation measure MM-NOI-2, as discussed in Section 3.6, Noise and Vibration, also proposes a soundwall to minimize noise impacts to adjacent sensitive receivers, which would further increase the scale of visual change; however, the soundwall would be designed in consideration of adjacent development. Soundwalls would be placed with appropriate setback distance from the tracks or at the edge of elevated structures. Materials, color, landscaping, and/or other aesthetic treatments would also be integrated into the design of the soundwall to minimize dominance and scale. Figure 3.3-59 shows examples of soundwalls in existing Metro Rail lines. In addition, the OCS would be visible above the new light rail tracks, which would represent a visual change in a view that does not include many existing overhead power transmission lines or poles.

Overall, changes in visual quality would be neutral since the proposed elevated alignment would run parallel to the I-405 freeway and would have similar scale and massing to surrounding structures. Project components would be compatible with the visual character of the RSA. However, viewer groups, including residents in this area, would notice the visual changes associated with the Hawthorne Option due to its close proximity to residential homes.

In addition, through the implementation of Metro design policies to ensure a high level of quality in design, the Hawthorne Option would be generally consistent with the local policies regarding visual character and quality, including Goal 1 and Policy 2c of the Lawndale General Plan Land Use Element, Lawndale General Plan Conservation Element, Hawthorne Boulevard Specific Plan, and Lawndale Municipal Code, as discussed further at the beginning of this section. Furthermore, the Hawthorne Option would not block long range views of any prominent visual features.

Figure 3.3-73. KOP 15 – Before and After Simulation View, View looking north from Grevillea Avenue towards the Hawthorne Option Elevated Alignment

KOP 16: View looking northeast from 161st Street towards the Hawthorne Option Elevated Alignment

As shown on Figure 3.3-74, existing views at KOP 16 from pedestrians and residents traveling east along 161st Street consist mainly of one to two-story residences, block walls adjacent to the I-405 Freeway, fencing, parked vehicles, street and sidewalk lighting, and overhead power lines. Long range views are currently limited due to the block wall adjacent to the I-405 Freeway. This is a view typically seen by residents in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3, the visual quality of Inglewood Avenue to Artesia Boulevard is considered to be low due to the low level of vividness, low level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 16 also shows views from residents and pedestrians looking northeast from 161st Street with the visual simulation of the Hawthorne Option. As shown in the visual simulation, the primary visual change is the addition of the new elevated structure adjacent to the I-405 Freeway. As discussed previously, the addition of the elevated light rail tracks and light rail trains would affect the visual character of the corridor by introducing new visible vertical features. Mitigation measure MM-NOI-2, as discussed in Section 3.6, Noise and Vibration, also proposes a soundwall to minimize noise impacts to adjacent sensitive receivers, which would further increase the scale of visual change; however, the soundwall would be designed in consideration of adjacent development. Soundwalls would be placed with appropriate setback distance from the tracks or at the edge of elevated structures. Materials, color, landscaping, and/or other aesthetic treatments would also be integrated into the design of the soundwall to minimize dominance and scale. Figure 3.3-59 shows examples of soundwalls in existing Metro Rail lines. In addition, the OCS would be visible above the new light rail tracks, which would represent a visual change in a view that does not include many existing overhead power transmission lines or poles.

Viewer groups, including residents in this area, would notice the visual changes associated with the Hawthorne Option due to its close proximity to residential homes. Overall, changes in visual quality would be neutral since the proposed elevated alignment would run parallel to the I-405 freeway and would have similar scale and massing to surrounding structures. Project components would be compatible with the visual character of the RSA.

In addition, through the implementation of Metro design policies to ensure a high level of quality in design, the Hawthorne Option would be generally consistent with the local policies regarding visual character and quality, including Goal 1 and Policy 2c of the Lawndale General Plan Land Use Element, Lawndale General Plan Conservation Element, Hawthorne Boulevard Specific Plan, and Lawndale Municipal Code, as discussed further at the beginning of this section. Furthermore, the Hawthorne Option would not block long range views of any prominent visual features.

Figure 3.3-74. KOP 16 – Before and After Simulation View, View looking northeast from 161st Street towards the Hawthorne Option Elevated Alignment

KOP 17: View looking west/northwest from 162nd Street towards the Hawthorne Option Elevated Alignment

As shown on Figure 3.3-75, existing views at KOP 17 from pedestrians and motorists traveling north along Hawthorne Boulevard consist mainly of the existing one- to two-story commercial buildings, signage, landscaped roadway medians, street trees of varying heights, street and sidewalk lighting, and overhead power lines. This is a view typically seen by motorists traveling along Hawthorne Boulevard, employees of the commercial businesses in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3, the visual quality of the I-405 Bridge to Redondo Beach Boulevard is considered to be moderately low due to the low level of vividness, moderate level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 17 also shows views from commuters and pedestrians looking north/northeast from 162nd Street with the visual simulation of the Hawthorne Option. As shown in the visual simulation, the primary visual change is the addition of the new elevated structure along the center of Hawthorne Boulevard, which includes straddle bent columns. As discussed previously, the addition of the elevated light rail tracks and light rail trains would affect the visual character of the RSA by introducing new visible vertical features. Mitigation measure MM-NOI-2, as discussed in Section 3.6, Noise and Vibration, also proposes a soundwall to minimize noise impacts to adjacent sensitive receivers, which would further increase the scale of visual change; however, the soundwall would be designed in consideration of adjacent development. Soundwalls would be placed with appropriate setback distance from the tracks or at the edge of elevated structures. Materials, color, landscaping, and/or other aesthetic treatments would also be integrated into the design of the soundwall to minimize dominance and scale. Figure 3.3-59 shows examples of soundwalls in existing Metro Rail lines. In addition, the OCS would be visible above the new light rail tracks, which would represent a visual change in a view that does not include many existing overhead power transmission lines or poles.

Trees and other vegetation that exist within the median of Hawthorne Boulevard would be removed or trimmed to implement the Hawthorne Option. However, Metro's Tree Policy requires a minimum tree replacement ratio of 2:1 (or 4:1 if the tree is considered a heritage tree), and the planting of California-native or other drought-tolerant trees. Trees would also be replanted in a visually attractive and desirable manner to preserve and enhance the aesthetic character of the City of Lawndale, which would ensure consistency with Goal 1 of the City of Lawndale General Plan Land Use Element.

Overall, changes in visual quality would be neutral since the form and materials of the proposed elevated structure would be compatible with the character and context of the commercial uses in the RSA, as well as Hawthorne Boulevard as a transportation corridor. The Hawthorne Option's unified design elements and landscape design would contribute positive visual elements, such as uniform landscaping, landscaped public space, and other amenities, and would not substantially degrade the visual character of the area.

Furthermore, through the implementation of Metro design policies to ensure a high level of quality in design, the Hawthorne Option would be generally consistent with the local policies regarding visual character and quality, including Goal 1 and Policy 2c of the Lawndale General Plan Land Use Element, Lawndale General Plan Conservation Element, Hawthorne Boulevard Specific Plan, and Lawndale Municipal Code, as discussed further at the beginning of this section. Furthermore, the Hawthorne Option would not block long range views of any prominent visual features.

Figure 3.3-75. KOP 17 – Before and After Simulation View, View looking west/northwest from 162nd Street towards the Hawthorne Option Elevated Alignment

KOP 18: View looking northwest from south of 163rd Street towards the Hawthorne Option Elevated Alignment

As shown on Figure 3.3-76, existing views at KOP 18 from pedestrians and motorists traveling north along Hawthorne Boulevard south of 163rd Street consist mainly of one- to two-story residences and commercial buildings, landscaped medians along Hawthorne Boulevard, parking areas, street trees of varying heights, street and sidewalk lighting, and overhead power lines. Long range views consist of signage and the I-405 Freeway. This is a view typically seen by motorists traveling along Hawthorne Boulevard, employees of the commercial businesses in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3, the visual quality of the I-405 Bridge to Redondo Beach Boulevard is considered to be moderately low due to the low level of vividness, moderate level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 18 also shows views from commuters and pedestrians looking northeast from Hawthorne Boulevard south of 163rd Street with the visual simulation of the Hawthorne Option. As shown in the visual simulation, the primary visual change is the addition of the new elevated structure along the center of Hawthorne Boulevard. Landscaped medians would be removed below the new elevated structure, which would represent a visual change. The addition of the elevated light rail tracks and light rail trains would affect the visual character of the corridor by introducing new visible vertical features that would block views to the northwest from motorists and pedestrians along Hawthorne Boulevard. Mitigation measure MM-NOI-2, as discussed in Section 3.6, Noise and Vibration, also proposes a soundwall to minimize noise impacts to adjacent sensitive receivers, which would further increase the scale of visual change; however, the soundwall would be designed in consideration of adjacent development. Soundwalls would be placed with appropriate setback distance from the tracks or at the edge of elevated structures. Materials, color, landscaping, and/or other aesthetic treatments would also be integrated into the design of the soundwall to minimize dominance and scale. Figure 3.3-59 shows examples of soundwalls in existing Metro Rail lines. In addition, the OCS would be visible above the light rail tracks, which would represent a visual change in a view that does not include many overhead power transmission lines or poles. Trees and other vegetation that exist within the Hawthorne Boulevard median would be removed or trimmed to implement the Hawthorne Option. However, Metro's Tree Policy requires a minimum tree replacement ratio of 2:1 (or 4:1 if the tree is considered a heritage tree), and the planting of California-native or other drought-tolerant trees. Trees would also be replanted in a visually attractive and desirable manner to preserve and enhance the aesthetic character of the City of Lawndale, which would ensure consistency with Goal 1 of the Lawndale General Plan Land Use Element.

Overall, changes in visual quality would be neutral since the form and materials of the proposed elevated structure would be compatible with the character and context of the commercial uses in the RSA, as well as Hawthorne Boulevard as a transportation corridor. The Hawthorne Option's unified design elements and landscape design would contribute positive visual elements, such as uniform landscaping, landscaped public space, and other amenities, and would not substantially degrade the visual character of the area.

Furthermore, through the implementation of Metro design policies to ensure a high level of quality in design, the Hawthorne Option would be generally consistent with the local policies regarding visual character and quality, including Goal 1 and Policy 2c of the Lawndale General Plan Land Use Element, Lawndale General Plan Conservation Element, Hawthorne Boulevard Specific Plan, and Lawndale Municipal Code, as discussed further at the beginning of this section. Furthermore, the Hawthorne Option would not block long range views of any prominent visual features.

Figure 3.3-76. KOP 18 – Before and After Simulation View, View looking northwest from Hawthorne Boulevard towards the Hawthorne Option Elevated Alignment

KOP 19: View looking northwest from 166th Street towards the Hawthorne Option Elevated Alignment

As shown on Figure 3.3-77, existing views at KOP 19 from pedestrians, residents, and motorists traveling east along 166th Street consist mainly of one- to two-story commercial buildings, a gas station, commercial signage, landscaped medians along Hawthorne Boulevard, parking areas, street trees of varying heights, street and sidewalk lighting, and overhead power lines. Long range views from the front yards of residences on 166th Street looking east consist of mature vegetation and commercial businesses in the distance. This is a view typically seen by motorists traveling along 166th Street, residents in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3, the visual quality of the I-405 Bridge to Redondo Beach Boulevard is considered to be moderately low due to the low level of vividness, moderate level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 19 also shows views from residents, commuters, and pedestrians looking north from the corner of 166th Street with the visual simulation of the Hawthorne Option. As shown in the visual simulation, the primary visual change is the addition of the new elevated structure along the center of Hawthorne Boulevard. Landscaped medians would be removed below the new elevated structure, which would represent a visual change. The addition of the elevated light rail tracks and light rail trains would affect the visual character of the RSA by introducing new visible vertical features that would block views to the northwest from motorists and pedestrians along Hawthorne Boulevard. Mitigation measure MM-NOI-2, as discussed in Section 3.6, Noise and Vibration, also proposes a soundwall to minimize noise impacts to adjacent sensitive receivers, which would further increase the scale of visual change; however, the soundwall would be designed in consideration of adjacent development. Soundwalls would be placed with appropriate setback distance from the tracks or at the edge of elevated structures. Materials, color, landscaping, and/or other aesthetic treatments would also be integrated into the design of the soundwall to minimize dominance and scale. Figure 3.3-59 shows examples of soundwalls in existing Metro Rail lines. In addition, the OCS would be visible above the new light rail tracks, which would represent a visual change in a view that does not include many overhead power transmission lines or poles. Trees and other vegetation that exist within the Hawthorne Boulevard median would be removed or trimmed to implement the Hawthorne Option. However, Metro's Tree Policy requires a minimum tree replacement ratio of 2:1 (or 4:1 if the tree is considered a heritage tree), and the planting of California-native or other drought-tolerant trees. Trees would also be replanted in a visually attractive and desirable manner to preserve and enhance the aesthetic character of the City of Lawndale, which would ensure consistency with Goal 1 of the City of Lawndale General Plan Land Use Element.

Overall, changes in visual quality would be neutral since the form and materials of the proposed elevated structure would be compatible with the character and context of the commercial uses in the RSA, as well as Hawthorne Boulevard as a transportation corridor. The Hawthorne Option's design elements and landscape design would contribute positive visual elements, such as uniform landscaping, landscaped public space, and other amenities, and would not substantially degrade the visual character.

Furthermore, The Hawthorne Option's unified design elements and landscape design would contribute positive visual elements, such as uniform landscaping, landscaped public space, and other amenities, and would not substantially degrade the visual character of the area. the Hawthorne Option would be generally consistent with the local policies regarding visual character and quality, including Goal 1 and Policy 2c of the Lawndale General Plan Land Use Element, Lawndale General Plan Conservation Element, Hawthorne Boulevard Specific Plan, and Lawndale Municipal Code, as discussed further at the beginning of this section. Furthermore, the Hawthorne Option would not block long range views of any prominent visual features.

Figure 3.3-77. KOP 19 – Before and After Simulation View, View looking northwest from 166th Street towards the Hawthorne Option Elevated Alignment

KOP 20: View looking north/northwest from Redondo Beach Boulevard towards the Hawthorne Option Elevated Alignment

As shown on Figure 3.3-78, existing views at KOP 20 from pedestrians and motorists traveling north from the intersection of Hawthorne Boulevard and Redondo Beach Boulevard consist mainly of one- to two-story commercial buildings, including signage, landscaped medians along Hawthorne Boulevard, parking areas, street trees of varying heights, street and sidewalk lighting, and overhead power lines. Long range views consist of mature vegetation and commercial businesses in the distance. This is a view typically seen by motorists traveling north along Hawthorne Boulevard, patrons, and employees of commercial businesses in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3, the visual quality of the South Bay Galleria Station area is considered to be moderately low due to the low level of vividness, low level of intactness, and moderate level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 20 also shows views from commuters and pedestrians looking north/northeast from Hawthorne Boulevard with the visual simulation of the Hawthorne Option. As shown in the visual simulation, the primary visual change is the addition of the new elevated structure along the center of Hawthorne Boulevard. Landscaped medians would be removed, which would also represent a visual change. The addition of the elevated light rail tracks and light rail trains would affect the visual character of the project corridor by introducing new visible vertical features that would block views to the north/northwest from motorists and pedestrians along Hawthorne Boulevard. Mitigation measure MM-NOI-2, as discussed in Section 3.6, Noise and Vibration, also proposes a soundwall to minimize noise impacts to adjacent sensitive receivers, which would further increase the scale of visual change; however, the soundwall would be designed in consideration of adjacent development. Soundwalls would be placed with appropriate setback distance from the tracks or at the edge of elevated structures. Materials, color, landscaping, and/or other aesthetic treatments would also be integrated into the design of the soundwall to minimize dominance and scale. Figure 3.3-59 shows examples of soundwalls in existing Metro Rail lines. In addition, the OCS would be visible above the new light rail tracks, which would represent a visual change in a view that does not include many existing overhead power transmission lines or poles. Trees and other vegetation that exist within the Hawthorne Boulevard median would be removed or trimmed to implement the Hawthorne Option. However, Metro's Tree Policy requires a minimum tree replacement ratio of 2:1 (or 4:1 if the tree is considered a heritage tree), and the planting of California-native or other drought-tolerant trees. Trees would also be replanted in a visually attractive and desirable manner to preserve and enhance the aesthetic character of the City of Lawndale, which would ensure consistency with Goal 1 of the Lawndale General Plan Land Use Element.

Overall, changes in visual quality would be neutral since the form and materials of the proposed elevated structure would be compatible with the character and context of the commercial uses in the RSA, as well as Hawthorne Boulevard as a transportation corridor. The Hawthorne Option's unified design elements and landscape design would contribute positive visual elements, such as uniform landscaping, landscaped public space, and other amenities, and would not substantially degrade the visual character of the area.

Furthermore, through the implementation of Metro design policies to ensure a high level of quality in design, the Hawthorne Option would be generally consistent with the local policies regarding visual character and quality, including Goal 1 and Policy 2c of the Lawndale General Plan Land Use Element, Lawndale General Plan Conservation Element, Hawthorne Boulevard Specific Plan, and Lawndale Municipal Code, as discussed further at the beginning of this section. Furthermore, the Hawthorne Option would not block long range views of any prominent visual features.

Figure 3.3-78. KOP 20 – Before and After Simulation View, View looking north/northwest from Hawthorne Boulevard towards the Hawthorne Option Elevated Alignment

KOP 21: View looking south from Artesia Boulevard towards the Hawthorne Option Elevated Alignment

As shown on Figure 3.3-79, existing views at KOP 21 from pedestrians and motorists traveling along Hawthorne Boulevard at Artesia Boulevard consist mainly of the South Bay Galleria, landscaped medians along Hawthorne Boulevard, street trees of varying heights, street and sidewalk lighting, and overhead power lines. Long range views consist of mature vegetation in the distance. This is a view typically seen by motorists traveling south along Hawthorne Boulevard, patrons and employees of commercial businesses in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3, the visual quality of the I-405 Bridge to Redondo Beach Boulevard is considered to be moderately low due to the low level of vividness, moderate level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 21 also shows views from commuters, residents, and pedestrians looking north/northeast from Artesia Boulevard with the visual simulation of the Hawthorne Option. As shown in the visual simulation, the primary visual change is the addition of the new South Bay Galleria Station, and the associated elevated structure along the center of Hawthorne Boulevard. Views from Hawthorne Boulevard would be altered for motorists and pedestrians looking north/northwest towards the South Bay Galleria Station. In addition, the OCS would be visible above the new light rail tracks, which would represent a visual change in a view that does not include many existing overhead power transmission lines or poles.

Viewer groups, including residents in this area, would notice the visual changes associated with the Hawthorne Option due to its close proximity to residential homes. Despite the noticeable change in visual character due to implementation of the Hawthorne Option, the proposed elevated structure would be compatible with the character and context of the commercial uses in the RSA, as well as Hawthorne Boulevard as a transportation corridor. The Hawthorne Option's unified design elements and landscape design would contribute positive visual elements, such as uniform landscaping, landscaped public space, and other amenities, and would not substantially degrade the visual character of the area.

In addition, through the implementation of Metro design policies to ensure a high level of quality in design, the Hawthorne Option would be generally consistent with the local policies regarding visual character and quality, including Policy LU.2.1 of the Torrance General Plan Land Use Element, Torrance General Plan Community Resource Element, Hawthorne Boulevard Corridor Specific Plan, and Torrance Municipal Code, as discussed further at the beginning of this section. Furthermore, the Hawthorne Option would not block long range views of any prominent visual features.

Figure 3.3-79. KOP 21 – Before and After Simulation View, View looking south from Artesia Boulevard towards the Hawthorne Option Elevated Alignment

KOP 22A: View looking west from 178th Street towards the Hawthorne Option Elevated Alignment

As shown on Figure 3.3-80, existing views at KOP 22A from pedestrians, residents, and motorists traveling along Hawthorne Boulevard include one to two-story commercial structures, including signage, landscaped medians along Hawthorne Boulevard, street trees of varying heights, street and sidewalk lighting, and overhead power lines. Long range views consist of mature vegetation. This is a view typically seen by motorists traveling south along Hawthorne Boulevard, patrons and employees of commercial businesses in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3, the visual quality of the I-405 Bridge to Redondo Beach Boulevard is considered to be moderately low due to the low level of vividness, moderate level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 22A also shows views from commuters, residents, and pedestrians looking west from the residential area at 178th Street with the visual simulation of the Hawthorne Option. As shown in the visual simulation, the primary visual change is the addition of the new elevated structure along the center of Hawthorne Boulevard. Landscaped medians would be removed below the new elevated structure, which would also represent a visual change.

The addition of the elevated light rail tracks and light rail trains would affect the visual character of the project corridor by introducing new visible vertical features that would block views to the west from motorists, pedestrians, and residents along 178th Street. Mitigation measure MM-NOI-2, as discussed in Section 3.6, Noise and Vibration, also proposes a soundwall to minimize noise impacts to adjacent sensitive receivers, which would further increase the scale of visual change; however, the soundwall would be designed in consideration of adjacent development. Soundwalls would be placed with appropriate setback distance from the tracks or at the edge of elevated structures. Materials, color, landscaping, and/or other aesthetic treatments would also be integrated into the design of the soundwall to minimize dominance and scale. Figure 3.3-59 shows examples of soundwalls in existing Metro Rail lines. In addition, the OCS would be visible above the new light rail tracks, which would represent a visual change in a view that does not include many existing overhead power transmission lines or poles.

Viewer groups, including residents in this area, would notice the visual changes associated with the Hawthorne Option due to its close proximity to residential homes. Despite the noticeable change in visual character due to implementation of the Hawthorne Option, the proposed elevated structure would be compatible with the character and context of the commercial uses in the RSA, as well as Hawthorne Boulevard as a transportation corridor. The Hawthorne Option's unified design elements and landscape design would contribute positive visual elements, such as uniform landscaping, landscaped public space, and other amenities, and would not substantially degrade the visual character of the area.

In addition, through the implementation of Metro design policies to ensure a high level of quality in design, the Hawthorne Option would be generally consistent with the local policies regarding visual character and quality, including Policy LU.2.1 of the Torrance General Plan Land Use Element, Torrance General Plan Community Resource Element, Hawthorne Boulevard Corridor Specific Plan, and Torrance Municipal Code, as discussed further at the beginning of this section. Furthermore, the Hawthorne Option would not block long range views of any prominent visual features.

Figure 3.3-80. KOP 22A – Before and After Simulation View, View looking west from 178th Street towards the Hawthorne Option Elevated Alignment

KOP 22B: View looking east from South Bay Galleria towards the Hawthorne Option Elevated Alignment

As shown on Figure 3.3-81, existing views at KOP 22B from pedestrians, residents, and motorists traveling along Hawthorne Boulevard near the South Bay Galleria and 178th Street include one to two-story residential structures, landscaped medians along Hawthorne Boulevard, street trees of varying heights, street and sidewalk lighting, and overhead power lines. Long range views consist of mature vegetation in the distance. This is a view typically seen by motorists traveling south along Hawthorne Boulevard, patrons and employees of commercial businesses in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3, the visual quality of the I-405 bridge to Redondo Beach Boulevard is considered to be moderately low due to the low level of vividness, moderate level of intactness, and low level of unity. There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 22B also shows views from commuters, residents, and pedestrians looking east from Hawthorne Boulevard near the South Bay Galleria and 178th Street with the visual simulation of the Hawthorne Option. As shown in the visual simulation, the primary visual change is the addition of the new elevated structure along the center of Hawthorne Boulevard. Landscaped medians would be removed below the new elevated structure, which would also represent a visual change. In addition, the OCS would be visible above the new light rail tracks, which would represent a visual change in a view that does not include many existing overhead power transmission lines or poles.

Overall, changes in visual quality would be neutral since the form and materials of the proposed elevated structure would be compatible with the character and context of the commercial uses in the RSA, as well as Hawthorne Boulevard as a transportation corridor. The Hawthorne Option's unified design elements and landscape design would contribute positive visual elements, such as uniform landscaping, landscaped public space, and other amenities, and would not substantially degrade the visual character of the area.

Furthermore, through the implementation of Metro design policies to ensure a high level of quality in design, the Hawthorne Option would be generally consistent with the local policies regarding visual character and quality, including Policy LU.2.1 of the Torrance General Plan Land Use Element, Torrance General Plan Community Resource Element, Hawthorne Boulevard Corridor Specific Plan, and Torrance Municipal Code, as discussed further at the beginning of this section. Furthermore, the Hawthorne Option would not block long range views of any prominent visual features.

Figure 3.3-81. KOP 22B – Before and After Simulation View, View looking east from Hawthorne Boulevard near 178th Street towards the Hawthorne Option Elevated Alignment

KOP 23: View looking south/southeast from south of 186th Street towards the Hawthorne Option Elevated Alignment

As shown on Figure 3.3-82, existing views at KOP 23 from pedestrians and motorists traveling south along Hawthorne Boulevard south of 186th Street near the South Bay Estates mobile home park consist mainly of existing one- to two-story commercial buildings, signage, landscaped roadway medians, street trees of varying heights, street and sidewalk lighting, and overhead power lines. Long range views are limited due to existing commercial structures. This is a view typically seen by motorists traveling along Hawthorne Boulevard, patrons and employees of commercial businesses in the RSA, as well as pedestrians. As discussed in Section 3.3-3.3, the visual quality of 182nd Street to the intersection of Hawthorne Boulevard and 190th Street is considered to be moderately low due to the low level of vividness, moderate level of intactness, and low level of unity There are no visual resources within this area, and there are no unique views of the local mountains or coastline, and no protected views.

KOP 23 also shows views from commuters and pedestrians looking southeast from Hawthorne Boulevard south of 186th Street near the South Bay Estates mobile home park with the visual simulation of the Hawthorne Option. As shown in the visual simulation, the primary visual change is the addition of the new elevated structure as it crosses Hawthorne Boulevard, including the straddle bent columns. Mitigation measure MM-NOI-2, as discussed in Section 3.6, Noise and Vibration, also proposes a soundwall to minimize noise impacts to adjacent sensitive receivers, which would further increase the scale of visual change; however, the soundwall would be designed in consideration of adjacent development. Soundwalls would be placed with appropriate setback distance from the tracks or at the edge of elevated structures. Materials, color, landscaping, and/or other aesthetic treatments would also be integrated into the design of the soundwall to minimize dominance and scale. Figure 3.3-59 shows examples of soundwalls in existing Metro Rail lines. In addition, the OCS would be visible above the new light rail tracks, which would represent a visual change in a view that does not include many existing overhead power transmission lines or poles.

Changes in visual quality would be neutral since Project components would be compatible with the visual character of the RSA. The Hawthorne Option's unified design elements and landscape design would contribute positive visual elements, such as uniform landscaping, landscaped public space, and other amenities, and would not substantially degrade the visual character of the area.

Furthermore, through the implementation of Metro design policies to ensure a high level of quality in design, the Hawthorne Option would be generally consistent with the local policies regarding visual character and quality, including the Policy LU.2.1 of the Torrance General Plan Land Use Element, Torrance General Plan Community Resource Element, and Torrance Municipal Code, as discussed further at the beginning of this section. Furthermore, the Hawthorne Option would not block long range views of any prominent visual features.

Figure 3.3-82. KOP 23 – Before and After Simulation View, View looking south/southeast from Hawthorne Boulevard south of 186th Street towards the Hawthorne Option Elevated Alignment

3.3-4.4 Would the Proposed Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area, or create new shade or shadows that would substantially affect outdoor recreation facilities or other public areas?

3.3-4.4.1 Construction Impacts

Less than Significant Impact with Mitigation. Because the Proposed Project is located in an urbanized area, there is a substantial amount of existing lighting and glare. The existing sources of light and glare in the RSA consist of mainly exterior building lights, lighted signs, streetlights, roadways, signal lights, and parking area lights, as well as roadway lighting and safety lighting at the existing Metro ROW and Redondo Beach (Marine) Station. Shading sources include buildings, other structures, utilities, and vegetation.

Construction activities would occur mainly during daytime hours, and construction related illumination would be temporary and limited to safety and security purposes. Temporary construction-related lighting poles and fixtures would be installed in their place to provide comparable illuminance levels. Construction activities are not anticipated to result in a substantial source of light or glare. However, if nighttime construction is required, residential uses around the Metro ROW could be affected if light spills over to the residences or if lighting is not shielded to limit glare at these residences. Therefore, there would be a significant impact related to light or glare during construction, and mitigation would be required. Mitigation measure MM-AES-1 would be implemented to ensure that construction lighting would be shielded and directed downward and away from adjacent residential and commercial areas.

Construction activities have the potential to temporarily alter shading because construction activities would introduce heavy equipment (i.e., cranes, bulldozers, scrapers, and trucks). With the exception of cranes, construction equipment, trucks, and related elements visible during the construction phase would only temporarily cast minimal shadows because a majority of this equipment does not have significant height and mass. Overall, any shading that would occur as a result of construction activities would be temporary and intermittent for the construction period. The potential for construction activities to result in shading and shadows would be minimal.

Therefore, with implementation of MM-AES-1, the Proposed Project would have a **less than significant impact with mitigation** related to light and glare, as well as shading and shadows during construction activities.

TRENCH OPTION

Less than Significant Impact with Mitigation. The Trench Option would involve construction activities that would result in temporary construction-related lighting similar to the Proposed Project, though for a longer duration. Construction activities are not anticipated to result in a substantial source of light or glare. However, if nighttime construction is required there would be a significant impact. Implementation of MM-AES-1 would ensure that construction lighting would be shielded and directed downward and away from adjacent residential and commercial areas to reduce potential impacts from temporary construction-related lighting.

Construction activities has the potential to temporarily alter shading because construction activities would introduce heavy equipment (i.e., bulldozers, scrapers, and trucks). Construction equipment, trucks, and related elements visible during the construction phase would only temporarily cast minimal shadows because a majority of this equipment does not have significant height and mass. Overall, any shading that would occur as a result of construction activities would be temporary and intermittent for

the construction period. The potential for construction activities to result in shading and shadows would be minimal.

Therefore, with implementation of MM-AES-1, the Trench Option would have a **less than significant impact with mitigation** related to light and glare, as well as shading and shadows during construction activities.

HAWTHORNE OPTION

Less than Significant Impact with Mitigation. The Hawthorne Option would involve construction activities that would result in similar temporary construction-related lighting. Construction activities are not anticipated to result in a substantial source of light or glare. However, if nighttime construction is required there would be a significant impact. Implementation of MM-AES-1 would ensure that construction lighting would be shielded and directed downward and away from adjacent residential and commercial areas to reduce potential impacts from temporary construction-related lighting.

Construction activities has the potential to temporarily alter shading because construction activities would introduce heavy equipment (i.e., cranes, bulldozers, scrapers, and trucks). With the exception of cranes, construction equipment, trucks, and related elements visible during the construction phase would only temporarily cast minimal shadows because a majority of this equipment does not have significant height and mass. Overall, any shading that would occur as a result of construction activities would be temporary and intermittent for the construction period. The potential for construction activities to result in shading and shadows would be minimal.

Therefore, with implementation of MM-AES-1, the Hawthorne Option would have a **less than significant impact with mitigation** related to light and glare, as well as shading and shadows during construction activities.

3.3-4.4.2 Operational Impacts

Less than Significant Impact. The Proposed Project is within an urbanized area with various sources of existing nighttime lighting. The Proposed Project includes several elements, such as glass, metal surfaces, and additional lighting that could create new sources of glare. However, the existing sources of light at the existing Redondo Beach (Marine) Station do not generate substantial glare. Thus, it is not anticipated that the Proposed Project would generate substantial glare.

During operation, the Proposed Project would be lit to provide adequate lighting for maintenance activities and ensure a safe environment. New light sources would include security lighting and point sources of lighting at the Redondo Beach TC Station and Torrance TC Station that would contribute to the overall ambient nighttime lighting conditions in the RSA. However, the lighting would be comparable to existing lighting for the existing Redondo Beach (Marine) Station. As part of the Project, PF-AES-2 would be implemented, which would require all lighting be compliant with Metro Design Standards. The lighting would also comply with applicable lighting regulations that would be verified during the permitting process, and would be hooded, angled away from adjacent land uses. The increase in light that would be generated by the Proposed Project would not adversely affect day or nighttime views in the area.

During operation, the Proposed Project would include at-grade and elevated configurations throughout the alignment. Supporting columns would be required in order to support the elevated structures in the northern segment of the alignment, and the Redondo Beach TC Station would also be elevated. The shade and shadow pattern created by the elevated structures would change throughout the day and seasonally. An adverse shadow impact could occur when new shadows substantially affect existing

outdoor recreation facilities, such as parks, playgrounds, or similar. Although there are several outdoor recreational facilities present within the RSA, none are located adjacent to the proposed elevated structures. El Nido Park is located adjacent to the Metro ROW near 182nd Street at the Redondo Beach/Torrance border, and at this location, the Proposed Project would be located at-grade on a berm. As such, the Proposed Project would be located at a slightly higher elevation than the park. However, any shadows cast by the new OCS would be minimal, given the distance of the light rail guideway from the main recreational areas and also because the edge of the park is lined with tall trees that are taller than the OCS.

Therefore, the Proposed Project would have a **less than significant impact** related to light and glare, as well as shading and shadows during operation.

TRENCH OPTION

Less than Significant Impact. During operation, similar to the Proposed Project, the Trench Option would be lit to provide adequate lighting for maintenance activities and to ensure a safe environment. New light sources would include security lighting that would contribute to the overall ambient nighttime lighting conditions in the RSA. PF-AES-2 would also be implemented for the Trench Option, which would require all lighting be compliant with Metro Design Standards. The lighting would also comply with applicable lighting regulations that would be verified during the permitting process, which would ensure that lighting would be hooded, and angled away from adjacent land uses. The increase in light that would be generated by the Trench Option would not adversely affect day or nighttime views in the area.

During operation, the Trench Option would operate in the same location as the Proposed Project, but it would be within a trench below the street level. At El Nido Park, the only outdoor recreation facility close enough to be considered for analysis, the light rail tracks would be in a trench, and it would not cause an adverse shadow impact. Therefore, the Trench Option would have a **less than significant impact** related to light and glare, as well as shading and shadows during operation.

HAWTHORNE OPTION

Less than Significant Impact. During operation, similar to the Proposed Project, the Hawthorne Option would be lit to provide adequate lighting for maintenance activities and to ensure a safe environment. New light sources would include security lighting and point sources of lighting at the proposed South Bay Galleria Station that would contribute to the overall ambient nighttime lighting conditions in the RSA. However, the lighting would be comparable to existing lighting for the existing Redondo Beach (Marine) Station. PF-AES-2 would also be implemented for the Hawthorne Option, which would require all lighting be compliant with Metro Design Standards. The lighting would also comply with applicable lighting regulations that would be verified during the permitting process, which would ensure that lighting would be hooded, and angled away from adjacent land uses. The increase in light that would be generated by the Hawthorne Option would not adversely affect day or nighttime views in the area.

During operation, the Hawthorne Option would operate on an elevated structure. Supporting columns would be required in order to support the elevated structures, OCS, and station platform. The proposed elevated South Bay Galleria Station would be located in the median of Hawthorne Boulevard approximately halfway between Artesia Boulevard and 177th Street, featuring a center platform. The shade and shadow pattern created by the elevated structures and station would change throughout the day and seasonally. An adverse shadow impact could occur when new shadows substantially affect existing outdoor recreation facilities, such as parks, playgrounds, or similar. Although there are several outdoor recreation facilities present within the RSA, none are located near the Hawthorne Option or

close enough to be shaded substantially. The nearest outdoor recreation facility to the Hawthorne Option is Columbia Park, located approximately 405 feet east/northeast of the proposed elevated structure, between 186th Street and 190th Street. There is also intervening development between the proposed elevated structure and the park. As such, due to the location of the Hawthorne Option, the potential for an adverse shadow impact would be limited.

Therefore, the Hawthorne Option would have a **less than significant impact** related to light and glare, as well as shading and shadows during operation.

3.3-5 Mitigation Measures

MM-AES-1 – Construction Lighting

During nighttime construction activities lighting, including "down lighting," shall be directed toward the interior of the construction staging area and shall be shielded so that it would not spill over into adjacent light-sensitive areas.

3.3-6 Project Impacts Remaining After Mitigation

3.3-6.1 Proposed Project

With the incorporation of the mitigation measures described in Section 3.3-5, the Proposed Project would not result in any significant impacts related to aesthetics. Therefore, impacts from Proposed Project construction and operation would be less than significant after mitigation.

3.3-6.2 Trench Option

With the incorporation of the mitigation measures described in Section 3.3-5, the Trench Option would not result in any significant impacts related to aesthetics. Therefore, impacts from Trench Option construction and operation would be less than significant after mitigation.

3.3-6.3 Hawthorne Option

With the incorporation of the mitigation measures described in Section 3.3-5, the Hawthorne Option would not result in any significant impacts related to aesthetics. Therefore, impacts from Hawthorne Option construction and operation would be less than significant after mitigation.

3.3-7 Cumulative Impacts

The methodology for cumulative analysis and a description of relevant projects and projections are included in Section 3.0, Introduction. The geographic scope of the cumulative analysis for aesthetics is the same as the RSA described in Section 3.3-2.1, within a quarter-mile of the Proposed Project and Options. These related projects include the following development and transportation projects:

- Hawthorne Boulevard Corridor Improvement Project
- Construction of a southbound right-turn lane on Inglewood Avenue at Manhattan Beach Boulevard.
- Upgrade of six existing traffic signals on Grant Avenue between Inglewood Avenue and Aviation Boulevard.
- South Bay Galleria Improvement Project
- Torrance Industrial Exchange
- I-405 Auxiliary Lanes Improvement Project

3.3-7.1 Proposed Project

Scenic Vistas

No scenic vistas are present in the RSA, and the RSA is characterized by a primarily urban environment featuring a major power transmission corridor that dominates many of the views in the RSA. In addition, there are no unique views of the local mountains or coastline, no visual resources, and no protected views that exist within the RSA. Overall, the Proposed Project in combination with the related projects would not block views of surrounding mountains and landscapes, or block views from view corridors of public streets, sidewalks, and properties where construction would occur. As such, the Proposed Project in combination with past, present, and probable future projects would not result in a cumulatively significant impact to scenic vistas during construction or operation.

Scenic Highways

There are no designated state scenic highways within the RSA. The Proposed Project in combination with related projects would not damage any scenic resources within a state scenic highway. As such, the Proposed Project in combination with past, present, and probable future projects would not result in a cumulatively significant impact to scenic highways during construction or operation.

Conflicts with Regulations on Scenic Quality

Construction of the Proposed Project in combination with the related projects described above would represent a temporary change in the visual quality and character of the RSA. This temporary change during construction would be similar to the related projects and other construction projects in the RSA, which would also have a temporary impact on visual character and quality of the RSA and its surroundings compared to existing conditions.

During construction, the Proposed Project would be fenced off with a chain-linked fence and construction noise barriers, resulting in a contrast and change in visual character from the existing roadways and public viewing areas. However, as discussed previously, through implementation of PF-AES-2, Metro would verify that construction activities comply with applicable zoning regulations within the Cities of Lawndale, Redondo Beach, and Torrance throughout the duration of construction. Construction of the Proposed Project in combination with the related projects would represent a temporary change in the visual quality and character of the RSA. In addition, the Proposed Project and other related projects would comply with the best management practices, as well as the development standards within each City related to scenic quality during construction, which would be verified during each City's permitting process to reduce impacts. As such, the Proposed Project in combination with past, present, and probable future projects would not result in a cumulatively significant impact to related to conflicts with regulations on scenic quality during construction.

The KOPs described in Section 3.1-4.3.2 were used to assess the potential visual character and quality impacts associated with operation of the Proposed Project. While there would be a visual change compared to existing conditions, the Proposed Project would not conflict with local regulations related scenic quality. As such, the Proposed Project in combination with past, present, and probable future projects would not result in a cumulatively significant impact to related to conflicts with regulations on scenic quality during operation.

Light and Glare

The RSA is urbanized and has a substantial amount of existing lighting and glare. Construction of the Proposed Project could result in construction-related illumination. In addition, nighttime construction

lighting may be used by the Proposed Project. Related projects described above may be constructed during the same timeframe as the Proposed Project and may also require night-time lighting. The Proposed Project in combination with past, present, and probable future projects could contribute to the existing cumulative impact. The Proposed Project would implement Mitigation measure AES-1, which would ensure that construction lighting would be shielded and directed downward and away from adjacent residential and commercial areas. Similar to the Proposed Project, the related projects would be expected to comply with applicable regulations with each City related to light and glare, and to incorporate mitigation measures that would reduce light and glare impacts to the maximum extent feasible. Therefore, the Proposed Project's incremental contribution to cumulatively significant impacts during construction would not be cumulatively considerable.

During operation, the Proposed Project would be lit to provide adequate lighting for maintenance activities and ensure a safe environment. As part of the Proposed Project, PF-AES-2 would be implemented, which would require all lighting be compliant with Metro Design Standards. The lighting would also comply with applicable lighting regulations that would be verified during the permitting process. The Proposed Project would not create a substantial source of light or glare that would adversely affect day or nighttime views in the area. Related projects would also be expected to comply with applicable city regulations related to light and glare, and to incorporate mitigation measures that would reduce light and glare impacts to the maximum extent feasible. Further, they would be expected to be consistent and compatible with any surrounding residential sensitive receptors with respect to light and glare. Therefore, the Proposed Project's incremental contribution to cumulatively significant impacts during operation would not be cumulatively considerable.

3.3-7.2 Trench Option

The Trench Option's potential for cumulative effects would largely be similar to that the Proposed Project, although because it would be below-grade, during operation it would be less visible and therefore have a lower potential to contribute to cumulative aesthetic impacts. Similar to the Proposed Project, the Trench Option combined with past, present, and probable future projects would not have a cumulatively significant impact related to scenic vistas, scenic highways, and conflicts with regulations on scenic quality. The Trench Option's incremental contribution to cumulatively significant impacts related to light and glare during construction and operation would not be cumulatively considerable.

3.3-7.3 Hawthorne Option

The Hawthorne Option's potential for cumulative effects would be similar to that of the Proposed Project, although the elevated structure would be more visually dominating than the at-grade components of the Proposed Project during construction and operation. Similar to the Proposed Project, the Hawthorne Option combined with past, present, and probable future projects would not have a cumulatively significant impact related to scenic vistas, scenic highways, and conflicts with regulations on scenic quality. The Hawthorne Option's incremental contribution to cumulatively significant impacts related to light and glare during construction and operation would not be cumulatively considerable.

3.4 AIR QUALITY

This section of the Draft EIR provides an analysis of the potential impacts on air quality.

3.4-1 Regulatory Framework

Federal, state, regional, and local regulations concerning air quality are described in the following sections, along with the methodology and significance thresholds used for evaluating impacts.

3.4-1.1 Federal Regulations

Clean Air Act (CAA)

The Federal CAA governs air quality at the national level and the U.S. Environmental Protection Agency (USEPA) is responsible for enforcing the regulations provided in the CAA. Under the CAA, the USEPA is authorized to establish National Ambient Air Quality Standards (NAAQS) that set protective limits on concentrations of air pollutants in ambient air. Enforcement of the NAAQS is required under the 1977 CAA and subsequent amendments. The USEPA also regulates emission sources that are under the exclusive authority of the federal government, such as aircrafts, ships, and certain types of locomotives. The USEPA has jurisdiction over emission sources outside state waters (e.g., beyond the outer continental shelf) and establishes various emission standards, including those for vehicles sold in states other than California.

Federal Criteria Air Pollutants

In accordance with the provisions of the CAA, USEPA identified six “criteria air pollutants" for which the federal government has established primary and secondary NAAQS to protect public health and environmental quality. The primary federal standards have been set at concentrations designed to prevent environmental exposures that would be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Criteria air pollutants include carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), and lead (Pb). The properties and associated health effects of exposure to these pollutants are discussed below; also provided are descriptions of ultrafine particulate matter (ultrafine PM), diesel PM and toxic air contaminants (TACs) as pollutants of air quality concern for which air quality standards have not been specifically established.

CO is a colorless and odorless gas formed by the incomplete combustion of fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas such as the Project location, automobile exhaust accounts for the majority of CO emissions. CO is a non-reactive air pollutant that dissipates relatively quickly, so ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions; primarily wind speed, topography and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, a typical situation at dusk in urban areas between November and February. The highest levels of CO typically occur during the colder months of the year when inversion conditions are more frequent. In terms of human health, CO competes with oxygen—often replacing it in the blood—thus reducing the blood’s ability to transport oxygen to vital organs. The results of excess CO exposure can be dizziness, fatigue and impairment of central nervous system functions.

O_3 is a colorless gas that is formed in the atmosphere when reactive organic gases (ROG)—which include volatile organic compounds (VOC) and nitrogen oxides (NO_X)—react in the presence of ultraviolet

sunlight. O_3 is not a primary pollutant directly emitted to the atmosphere; it is a secondary pollutant formed by complex interactions involving two or more chemical compounds. Emissions of ROG and NO_X that drive atmospheric O_3 formation are primarily attributed to automobile exhaust and industrial sources. Meteorology and terrain play major roles in O_3 formation. Ideal conditions occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures, and clear skies. Automobile travel serves as the greatest source of ozone-producing gases. Short-term exposure (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern changes, restricted breathing, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes.

NO_2, like O_3, is formed in the atmosphere through a chemical reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as NO_X and are major contributors to O_3 formation. NO_2 also contributes to the formation of PM_{10} (discussed below). High concentrations of NO_2 can cause breathing difficulties and result in a brownish-red cast to the atmosphere with reduced visibility. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase of bronchitis in children (2 and 3 years old) has also been observed at concentrations below 0.3 parts per million (ppm).

Particulate matter (PM) comprises very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids and metals. Particulate matter also forms when gases, emitted from industries and motor vehicles, undergo chemical reactions in the atmosphere. PM_{10} and $PM_{2.5}$ represent fractions of particulate matter classified by particle size: PM_{10} includes all suspended particulates less than 10 microns in diameter (about 1/7 the thickness of a human hair), and $PM_{2.5}$ comprises a subset of PM_{10} less than 2.5 microns in diameter (roughly 1/28 the diameter of a human hair). Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood burning stoves and fireplaces; dust from construction, landfills and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. $PM_{2.5}$ results from fuel combustion (e.g., motor vehicles, power generation and industrial facilities), residential fireplaces and wood stoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as SO_2, NO_X and VOC.

PM_{10} and $PM_{2.5}$ can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. $PM_{2.5}$ poses greater risks to human health than large particulate matter. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. Very small particles of substances, such as lead, sulfates and nitrates can cause lung damage directly. These substances can be absorbed into the blood stream and cause damage throughout the body. These substances can transport absorbed gases, such as chlorides or ammonium, into the lungs and cause injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, as well as produce haze and reduce regional visibility.

Ultrafine PM emissions form during engine combustion and in the atmosphere immediately after leaving exhaust pipes as emitted gases. Ultrafine PM emissions then condense and rapidly dilute and cool. Internal combustion engines have been identified as significant sources of ultrafine PM. A significant proportion of diesel emission particles have diameters smaller than 100 nanometer (nm) or 0.1 micrometer (µm). Particles emitted from gasoline-powered engines are generally less than 80 nm (0.08 µm) in diameter. Particles from compressed natural gas fueled engines are smaller than from diesel emissions, with the majority between 20 nm and 60 nm (0.02 µm – 0.06 µm). In laboratory toxicity

studies, a greater inflammatory and oxidative stress response has been elicited from ultrafine particles compared to larger particles at comparable mass doses. Oxidative stress is a term to describe cell, tissue or organ damage caused by reactive oxygen species. After inhalation, ultrafine particles may penetrate rapidly into lung tissue; and some portions may be translocated to other organs of the body. Additionally, ultrafine particles have been found to penetrate cells and subcellular organelles. In cell cultures exposed to ambient particles, ultrafine particles have been found in mitochondria where they induced structural damage.

SO_2 is a colorless, pungent gas that forms primarily through the combustion of sulfur-containing fossil fuels. Main sources of SO_2 emissions are coal and oil used in power plants and industries. Generally, the highest levels of SO_2 are found near large industrial complexes. In recent years, atmospheric SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels. SO_2 is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. SO_2 can also harm plant leaves and erode iron and steel. Sulfur oxides (SO_X) refer to any of several compounds of sulfur and oxygen, the most important of which is SO_2.

Pb in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline combustion, the manufacture of batteries, paint, ink, ceramics, and ammunition, and secondary lead smelting facilities. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phase-out of leaded gasoline reduced the overall prevalence of airborne lead by nearly 95%. With the phase-out of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities have become emission sources of greater concern. Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient performance, psychomotor performance, reaction time, and growth.

Ambient Air Quality Standards

The CAA grants the USEPA authority to designate areas as attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant based on whether the NAAQS have been met on a regional scale. The NAAQS are summarized in Table 3.4-1. As part of its enforcement responsibilities, the USEPA requires each state with nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the timeframe identified in the SIP.

The State of California has also developed its own ambient air quality standards that are generally more stringent (protective) than the NAAQS. These standards are referred to as the California Ambient Air Quality Standards (CAAQS) and are also displayed in Table 3.4-1.

Table 3.4-1. Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS	NAAQS
Ozone (O_3)	1-Hour	0.09 ppm (180 µg/m^3)	--
	8-Hour	0.07 ppm (137 µg/m^3)	0.07 ppm (137 µg/m^3)
Carbon Monoxide (CO)	1-Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
	8-Hour	9.0 ppm (10 mg/m^3)	9.0 ppm (10 mg/m^3)
Nitrogen Dioxide (NO_2)	1-Hour	0.18 ppm (339 µg/m^3)	0.10 ppm (188 µg/m^3)
	Annual Average	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)
Sulfur Dioxide (SO_2)	1-Hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3)
	24-Hour	0.04 ppm (105 µg/m^3)	--
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m^3	150 µg/m^3
	Annual Average	20 µg/m^3	--
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	--	35 µg/m^3
	Annual Average	12 µg/m^3	12 µg/m^3
Lead (Pb)	30-Day Average	1.5 µg/m^3	--
	3-Month Average	--	0.15 µg/m^3
Visibility Reducing Particles	8-Hour	Extinction of 0.23 per kilometer	No National Standard
Sulfates	24-Hour	25 µg/m^3	No National Standard
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m^3)	No National Standard
Vinyl Chloride	24-Hour	0.01 ppm (26 µg/m^3)	No National Standard

Source: CARB, 2016a

Toxic Air Contaminants (TACs)

TACs are generally defined as those contaminants that are known or suspected to cause serious health problems but do not have a corresponding ambient air quality standard. These air pollutants may increase a person's risk of developing cancer and/or other serious health effects; however, the emission of a toxic chemical does not automatically create a health hazard. Other factors such as the concentration of the chemical and its toxicity, meteorological conditions at the time of release, and the terrain all influence whether the emissions could be hazardous to human health. TACs are emitted by a variety of industrial processes such as petroleum refining, electric utility and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. TACs can exist as PM_{10} and $PM_{2.5}$ or as vapors (gases), and include metals, other particles, gases absorbed by particles, and certain vapors from fuels and other sources.

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments of 1990, whereby Congress mandated that the USEPA regulate 188 air toxics, also known as hazardous air pollutants. The USEPA has assessed this expansive list in its rule on the Control of Hazardous Air Pollutants from Mobile Sources and identified a group of 93 compounds emitted from mobile sources. In addition, the USEPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-hazard contributors to cancer risk. These are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter.

Diesel exhaust is a pollutant of special concern in the South Coast Air Basin (SCAB). Diesel exhaust is composed of two phases, gas and particle, both of which contribute to human health risk upon exposure. The gas phase is composed of many of the urban hazardous air pollutants, such as acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde and polycyclic aromatic hydrocarbons. The particle phase is also composed of many different types of particles by size or composition. Fine and ultrafine diesel particulates are of the greatest health concern and may be composed of elemental carbon with adsorbed compounds such as organic compounds, sulfate, nitrate, metals and other trace elements. Diesel exhaust is emitted from a broad range of diesel engines; the on-road diesel engines of trucks, buses and cars, and the off-road diesel engines that include locomotives, marine vessels and heavy-duty equipment. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil and whether an emission control system is present.

Diesel exhaust causes health effects from both short-term (acute) exposures and long-term (chronic) exposures. The nature and severity of health effects depends upon several factors including the dose and duration of exposure. Individuals also react differently to different levels of exposure. There is limited information on exposure to diesel PM specifically but there is substantial evidence to indicate that inhalation exposure to diesel exhaust causes acute and chronic health effects. Acute exposure to diesel exhaust may cause irritation to the eyes, nose, throat and lungs, some neurological effects such as lightheadedness. Acute exposure may also elicit a cough or nausea as well as exacerbate asthma. Chronic inhalation exposure to diesel PM in experimental animal studies has shown a range of dose-dependent lung inflammation and cellular changes in the lung and immunological effects. Based upon human and laboratory studies, there is considerable evidence that diesel exhaust is a likely carcinogen. Human epidemiological studies demonstrate an association between diesel exhaust exposure and increased lung cancer rates in occupational settings.

3.4-1.2 State Regulations

California Clean Air Act (CCAA)

Air quality in California is also governed by more stringent regulations under the CCAA. The CCAA is administered by the CARB at the state level and by the air districts at the regional and local levels. The CCAA requires all areas of the state to achieve and maintain the California Ambient Air Quality Standards (CAAQS) by the earliest feasible date. The CAAQS are also summarized in Table 3.4-1, above. The CARB, a department of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, the CARB conducts research, designates the CAAQS, compiles emission inventories, develops suggested control measures, provides oversight of local programs, and prepares the SIP. The CARB also establishes emissions standards for motor vehicles sold in California, consumer products (i.e., hair spray, aerosol paints, and charcoal lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

Toxic Air Contaminant Identification and Control Act

The CARB's statewide comprehensive air toxics program was established in the early 1980s. The Toxic Air Contaminant Identification and Control Act created California's program to reduce exposure to air toxics. Under the Toxic Air Contaminant Identification and Control Act, the CARB is required to prioritize the identification and control of air toxics emissions. In selecting substances for review, the CARB must consider criteria relating to the risk of harm to public health, such as the amount or potential amount of

emissions, manner of and exposure to usage of the substance in California, persistence in the atmosphere, and ambient concentrations in the community. The Toxic Air Contaminant Identification and Control Act also require CARB to use available information gathered from the Air Toxics Hot Spots Information and Assessment Act to include in the prioritization of compounds.

The CARB classified particulate emissions from diesel-fueled engines (diesel PM) as TACs in August 1998. Following the identification process, the CARB was required by law to determine if there was a need for further control, which led to the risk management phase of the program. For the risk management phase, CARB formed the Diesel Advisory Committee to assist in the development of a risk management guidance document and a risk reduction plan. With the assistance of the Advisory Committee and its subcommittees, CARB developed the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles and the Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines.

The Diesel Advisory Committee approved these documents on September 28, 2000, paving the way for the next step in the regulatory process: the control measure phase. During the control measure phase, specific statewide regulations designed to further reduce diesel PM emissions from diesel-fueled engines and vehicles have and continue to be evaluated and developed. The goal of each regulation is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce diesel PM emissions.

3.4-1.3 Regional Regulations

Southern California Association of Governments (SCAG)

While Southern California is a leader in reducing emissions and ambient levels of air pollutants are improving, the SCAG region continues to have the worst air quality in the nation. The SCAG region encompasses six counties (Imperial, Los Angeles, Orange, Riverside, San Bernardino and Ventura) and 191 cities in an area covering more than 38,000 square miles. SCAG is the Metropolitan Planning Organization for the six-county region and is required to prepare an RTP/SCS every four years that provides a comprehensive framework and outlook for guiding growth in population, housing, and employment. The most recent iteration of the SCAG RTP/SCS that has been formally adopted is the *Connect SoCal 2020–2045 RTP/SCS* (Connect SoCal), which was officially adopted in September 2020 and forecasts regional growth projections through the horizon year of 2045.

Connect SoCal is built on the Connect SoCal Growth Vision, which devised a growth priority hierarchy in order to optimize opportunities for shorter trip distances and drivers to switch to electric vehicles. The Growth Vision directs growth towards specific types of transit-oriented planning areas by the following priority: Transit Priority Areas, Livable Corridors, Job Centers, High Quality Transit Areas, and Neighborhood Mobility Areas. Development in these areas will be guided by the following Connect SoCal strategies to reduce air pollutant emissions: focusing growth near destinations and mobility options; promoting diverse housing choice; leveraging technology innovations; supporting implementation of sustainability policies; and promoting a green region. Connect SoCal builds on previous planning initiatives to promote strategies and policies that will improve mobility, reduce congestion, create more connected communities, and produce co-benefits that will enhance regional air quality.

South Coast Air Quality Management District (SCAQMD)

The SCAQMD was created to coordinate air quality planning efforts throughout Southern California. The SCAQMD is the agency principally responsible for comprehensive air pollution control in the region.

Specifically, the SCAQMD is responsible for monitoring air quality, as well as planning, implementing, and enforcing programs designed to attain and maintain state and federal ambient air quality standards. Programs that were developed include air quality rules and regulations that regulate stationary sources, area sources, point sources and certain mobile source emissions. The SCAQMD is also responsible for establishing stationary source permitting requirements and ensuring that new, modified or relocated stationary sources do not create net emission increases.

The SCAQMD monitors air quality within the Project Area. The SCAQMD has jurisdiction over an area of 10,743 square miles, consisting of the SCAB and the Riverside County portion of the Salton Sea Air Basin and Mojave Desert Air Basin. SCAB is a subregion of the SCAQMD's jurisdiction and covers an area of 6,745 square miles, including all of Orange County and the non-desert portions of Los Angeles, Riverside and San Bernardino Counties. SCAB is bounded by the Pacific Ocean to the west; the San Gabriel Mountains, San Bernardino and San Jacinto Mountains to the north and east; and the San Diego County line to the south.

The SCAQMD is directly responsible for reducing emissions from stationary (area and point), mobile, and indirect sources to meet state and federal ambient air quality standards. The agency has fulfilled this requirement by preparing a series of Air Quality Management Plans (AQMP). The most recent of these—the 2022 AQMP—was adopted by the Governing Board of the SCAQMD on December 2, 2022. The 2022 AQMP was prepared to comply with the state and federal CAAs and amendments, to accommodate growth, to reduce the high levels of pollutants in the SCAB, to meet state and federal AAQS, and to minimize the fiscal impact that pollution control measures have on local economies.

The 2016 AQMP represents a thorough analysis of existing and potential regulatory control options, includes available, proven, and cost-effective strategies, and seeks to achieve multiple goals in partnerships with other entities promoting efficiencies in energy use, transportation, and goods movement. The document incorporates projections of regional growth from the Connect SoCal 2020–2045 RTP/SCS pertaining to population, housing, employment, and vehicle travel within the SCAB into its prescriptive approach for reducing regional air pollution. The 2022 AQMP includes both stationary and mobile source strategies to address the challenge of reducing NO_X emissions sufficiently to achieve attainment of the O_3 NAAQS (SCAQMD, 2022). All projects in the SCAQMD jurisdiction are subject to SCAQMD rules and regulations, including, but not limited to the following:

Rule 401 Visible Emissions – This rule prohibits an air discharge that results in a plume that is as dark as or darker than what is designated as No. 1 Ringelmann Chart by the United States Bureau of Mines for an aggregate of three minutes in any one hour.

Rule 402 Nuisance – This rule prohibits the discharge of "such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of people or the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property."

Rule 403 Fugitive Dust – This rule requires that future projects reduce the amount of particulate matter entrained in the ambient air as a result of fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions from any active operation, open storage pile, or disturbed surface area.

Rule 1113 Architectural Coatings – This rule limits VOC in architectural coatings used in the SCAQMD jurisdiction. These limits are application-specific and are updated as availability of low-VOC products expands.

Rule 1166 Volatile Organic Compound Emissions from Decontaminated Soil – This rule sets requirements to control the emission of VOC from excavating, grading, handling, and treating VOC-contaminated soil as a result of leakage from storage or transfer operations, accidental spillage, or other deposition.

Rule 1168 Adhesive and Sealant Applications – This rule reduces emissions of VOCs and eliminates emissions of chloroform, ethylene dichloride, methylene chloride, perchloroethylene, and trichloroethylene from the application of adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers, or any other primers.

Rule 1466 Control of Particulate Emissions from Soils with Toxic Air Contaminants – This rule provides best management practices (BMP) to minimize the amount of off-site fugitive dust emissions containing toxic contaminants by reducing particulate emissions in the ambient air as a result of earth-moving activities—such as dredging, excavating, grading, earth-cutting and filling, loading, unloading, handling, mechanized land clearing, treating, stockpiling, transferring, and removing of soil that contains applicable toxic air contaminants—from sites that meet applicability requirements as defined by USEPA (Superfund National Priorities List site), the California Department of Toxic Substances Control (Brownfield or Cleanup Program site), the State Water Resources Control Board or Regional Water Quality Control Board (Site Cleanup Program site), or a county, local or state regulatory agency as a Hazardous Materials Release site.

Regulation XIII New Source Review – This regulation contains Rules 1300 through 1325, which sets forth pre-construction review requirements for new, modified, or relocated facilities, to ensure that the operation of such facilities does not interfere with progress in attainment of the NAAQS, and that future growth within SCAQMD is not unnecessarily restricted. The specific air quality goal of this regulation is to achieve no net increases from new or modified permitted sources of nonattainment air contaminants or their precursors.

Metro

Approved by the Metro Board of Directors on September 24, 2020, the Moving Beyond Sustainability Plan establishes agency-wide sustainability goals, targets, and strategies for the next ten years. The Plan includes energy, water, emissions and pollution control, materials and construction/operations, climate adaptation and resiliency, livable neighborhoods, equity, and economic and workforce development goals. Metro has also prepared the Climate Action and Adaptation Plan 2019 that commits the agency to reducing greenhouse gas (GHG) emissions by 79% relative to 2017 levels by 2030 and 100% by 2050.The Draft Moving Beyond Sustainability Plan, published in 2020, establishes agency-wide sustainability goals, targets, and strategies for the next ten years. The Plan will include energy, water, emissions and pollution control, materials and construction/operations, climate adaptation and resiliency, livable neighborhoods, equity, and economic and workforce development goals.

Metro recently implemented several policies and plans aimed at improving system-wide sustainability and minimizing detrimental air quality and climate change impacts from operations and new projects, collectively overseen by the Countywide Sustainability Planning Program. These plans and policies constitute the framework for the Metro Climate Action and Adaptation Plan, which is Metro's foundation for its Sustainability Implementation Plan. Strategies for achieving the objectives set forth in the Metro Climate Action and Adaptation Plan were analyzed in the Metro Energy and Resource Report. The Metro policies and plans that most directly apply to reducing emissions of air pollutants that would result from implementation of the Project include the Construction Demolition Debris Recycling and

Reuse Policy, Environmental Policy, and the Green Construction Policy, all of which are incorporated into the Metro Countywide Sustainability Planning Policy and Implementation Plan.

Metro published its Construction and Demolition Debris Recycling and Reuse Policy (GEN 51) to encourage responsible practices that will enhance reliance on recyclable and recycled products and reduce environmental impacts from waste disposal in landfills. The policy dictates that Metro must give preference to recyclable and recycled products in the selection of construction materials to the maximum extent feasible during design and construction of proposed projects, as well as mandating that Metro shall not use any landfill or recycling facility that does not present and maintain acceptable documentation indicating their legitimacy for disposal or diversion purposes. Construction debris or wastes that cannot be recycled or reused on site shall be manifested, transported, and disposed to the most appropriate facility. Metro shall ensure that any material used in the design or construction of all structures would not adversely affect the performance, safety or the environment of the transportation system.

Metro's Environmental Policy was prepared to provide guidance in identifying potential environmental impacts generated by development activities and developing mitigation measures to address those impacts; operating and maintaining Metro vehicles and facilities to minimize negative impacts on the environment; reducing consumption of natural resources; and reducing and/or diverting the amount of solid waste going to landfills. Metro is committed to planning and constructing projects and operating and maintaining facilities and vehicles in a manner that will protect human health and the environment.

Strategies outlined in the Environmental Policy to reduce air quality impacts include, but are not limited to: compliance with all environmental, federal, state, and local laws and regulations; restoration of the environment by providing mitigation, corrective action, and monitoring to ensure that environmental commitments are implemented; avoidance of environmental degradation by minimizing releases to air, water, and land; prevention of pollution and conservation of resources by reducing waste and reusing materials; and ensuring that the planning, design, construction and operation of facilities and services consider environmental protection and sustainable features.

Metro adopted the Green Construction Policy in 2011 to reduce environmental impacts from construction activities associated with Metro projects. The policy provides requirements for identifying and mitigating air emission impacts on human health, the environment, and the climate of on-road and off-road construction equipment and generators used in construction and development activities; implementing appropriate BMPs to complement equipment mitigations; and implementing strategies to ensure compliance with applicable rules and regulations. The Green Construction Policy includes requirements for off-road construction equipment to meet Tier 4 off-road emission standards where feasible or be outfitted with Best Available Control Technology devices certified by CARB; on-road heavy-duty diesel trucks or equipment with a gross vehicle weight rating of 19,500 pounds or greater to comply with USEPA 2007 on-road emission standards for PM and NO_X; and for the utilization of grid-based electric power at any construction site where feasible.

Best Management Practices in the Green Construction policy include, but are not limited to: maintaining equipment according to manufacturer's specifications; restricting idling of construction equipment and on-road heavy-duty trucks to a maximum of five minutes when not in use; use of diesel particulate traps or Best Available Control Technology as feasible; configuration of haul routes to conform to local requirements to minimize traversing through congested streets, near sensitive receptor areas, and during peak traffic periods; and limiting traffic speeds on unpaved roads to less than 15 miles per hour.

3.4-1.4 Local Regulations

City of Lawndale

The City of Lawndale General Plan contains goals, policies, and programs that focus on air quality described in the following section. The AQMP, a subsection of the Resource Management chapter of the General Plan, was developed to address air pollution levels, reduce the health and economic impacts of air pollution, comply with the requirements of the AQMP for the SCAB, increase awareness of local responsibility for air quality conservation and emissions reduction, and coordinate local efforts that impact air quality both locally and in the region. The goals, policies, and programs contained within the AQMP that apply to the Project are shown in Table 3.4-2.

Table 3.4-2. City of Lawndale – Relevant Air Quality Goals, Policies, and Programs

Goal/Policy/Program	Description
City of Lawndale Air Quality Management Plan	
Goal 3	The City shall participate in the efficient management of transportation facilities and improvements to transportation system infrastructure, using cost-effective system management and innovative demand-management techniques.
Goal 3a	Policy 3a states that transit improvements and facility development (such as light rail transit) will accompany the City's TDM measures.
Goal 6	Solutions to air pollution problems must be coordinated among the local, regional, county, and state governments.
Policy 6a	The City shall implement air quality policies in cooperation with the Environmental Protection Agency (EPA), the SCAQMD and SCAG. The City shall also participate in the development and update of the regional air quality management plans required under federal and state law.
Implementation Program 1	Efficient Land Use
Program 1.6	The City shall encourage growth to occur in an around activity centers, transportation node corridors, underutilized infrastructure systems, and areas needing redevelopment.
Program 1.9	The City shall adopt ordinances that ensure sensitive receptor facilities are sited away from significant sources of air pollution.
Implementation Program 3	Improved Transportation Management
Program 3.3	The City shall support the extension of light rail, trolley and other mass transit services. The City shall also influence rail transit alignment and bus station locations for maximum commuter access to shopping centers and work districts and to minimize local air pollutant impacts at seriously congested intersections.
Program 3.4	The City shall restrict construction to off-peak hours to improve traffic flow and reduce vehicle delays and shall provide city traffic officers to manage traffic flow during major construction projects.
Implementation Program 4	Increased Energy Efficiency
Program 4.7	The City shall encourage, through zoning regulations or modifications to the Building code, the use of building materials and methods that minimize the emissions of Reactive Organic Gases, particulates, and ozone layer-depleting chemicals.
Implementation Program 6	Promote Inter-agency Communications
Program 6.2	The City shall coordinate with SCAQMD, SCAG, CARB, and other local, state, and national agencies in efforts to plan and implement clean air strategies for the South Coast Air Basin.
Program 6.3	The City shall ensure that all proposed projects comply with the Regional Growth Management and Air Quality Plans.

Source: City of Lawndale, 1996

City of Redondo Beach

The City of Redondo Beach General Plan contains goals, policies, and programs that focus on air quality described in the following section. The Land Use Element and Transportation and Circulation Element of the General Plan are the two documents designed to regulate air quality within the City. Goals, policies, and programs designed to regulate air quality are shown in Table 3.4-3.

Table 3.4-3. City of Redondo Beach – Relevant Air Quality Goals, Policies, and Programs

Goal/Policy/Program	Description
City of Redondo Beach General Plan, Land Use Element	
Goal 1R	The City shall ensure the protection and maintenance of environmental resources.
Policy 1.60.4	The City shall establish local procedures, requirements, and programs as to maintain local and regional environmental quality and mitigate impacts; including air quality management.
Implementation Program 1.1	The City shall ensure the provisions for the compliance of local development projects with regional requirements for air quality (AQMP).
City of Redondo Beach General Plan, Transportation and Circulation Element	
Goal G6	The City shall favor development that purposefully integrates itself with surrounding transportation facilities.
Policy P1	The City supports transit-oriented development that reduces automobile trips.

Source: City of Redondo Beach, 1993a; 2009a; 2009b

City of Torrance

The City of Torrance has established policies and objectives for the regulation of air quality within its General Plan; the Community Resources Element and Circulation and Infrastructure Element contain objectives and policies designed to regulate air quality as shown in Table 3.4-4.

Table 3.4-4. City of Torrance – Relevant Air Quality Objectives and Policies

Objective/Policy	Description
City of Torrance General Plan, Community Resources Element	
Objective CR.13	The City shall contribute to the improvement of local and regional ambient air quality to benefit the health of all.
Policy CR.13.1	The City shall continue to participate in the efforts of the State Air Resources Board and SCAQMD to meet State and federal air quality standards.
Policy CR.13.2	The City shall work with neighboring cities to implement local and regional projects that improve mobility on railways, reduce emissions, and improve air quality.
Policy CR.13.5	The City shall support air quality and energy and resource conservation by encouraging alternative modes of transportation such as transit.
Policy CR.13.8	The City shall promote energy-efficient building construction and operation practices that reduce emissions and improve air quality.
City of Torrance General Plan, Circulation, and Infrastructure Element	
Objective C1.7	The City shall expand and optimize the use of local and regional bus and other transit systems as alternatives to the automobile.
Policy C1.7.9	The City shall support light rail usage by providing connection and creating efficient transfer opportunities through the Torrance Transit System.

Source: City of Torrance, 2010b; 2010c

3.4-2 Methodology

3.4-2.1 Resource Study Area

The resource study area (RSA) for the regional air quality emissions analysis is the extent of the South Coast Air Basin (SCAB), shown in Figure 3.4-1. Per SCAQMD's guidance, for the localized emissions analysis, the RSA is 500 meters (1,640 feet) from the Project alignment (SCAQMD, 2019b). The localized RSA is shown in Figure 3.4-2 for the Proposed Project, Trench Option, and the Hawthorne Option.

3.4-2.2 Construction Air Quality Methodology

Within the SCAQMD jurisdiction, emissions from individual CEQA projects are evaluated on both regional and localized scales, for which the District has established separate thresholds of significance. The regional-level analysis considers all sources of air pollutant emissions, both on the Project site and at remote or mobile locations, while the localized analysis focused on emissions from on-site sources and how they could affect nearby sensitive receptors. Sources of air pollutant emissions involved in construction of the Project would include heavy-duty construction equipment exhaust, fugitive dust (particulate matter) generated by material movement and ground disturbance, haul truck trips used for material import and off-site disposal trips, and vehicle trips associated with crew workers and vendors delivering materials to and from the construction sites. The 2022 California Emissions Estimator Model (CalEEMod) is the preferred land use development emissions tool for estimating air pollutant emissions under CEQA (CAPCOA, 2022a).

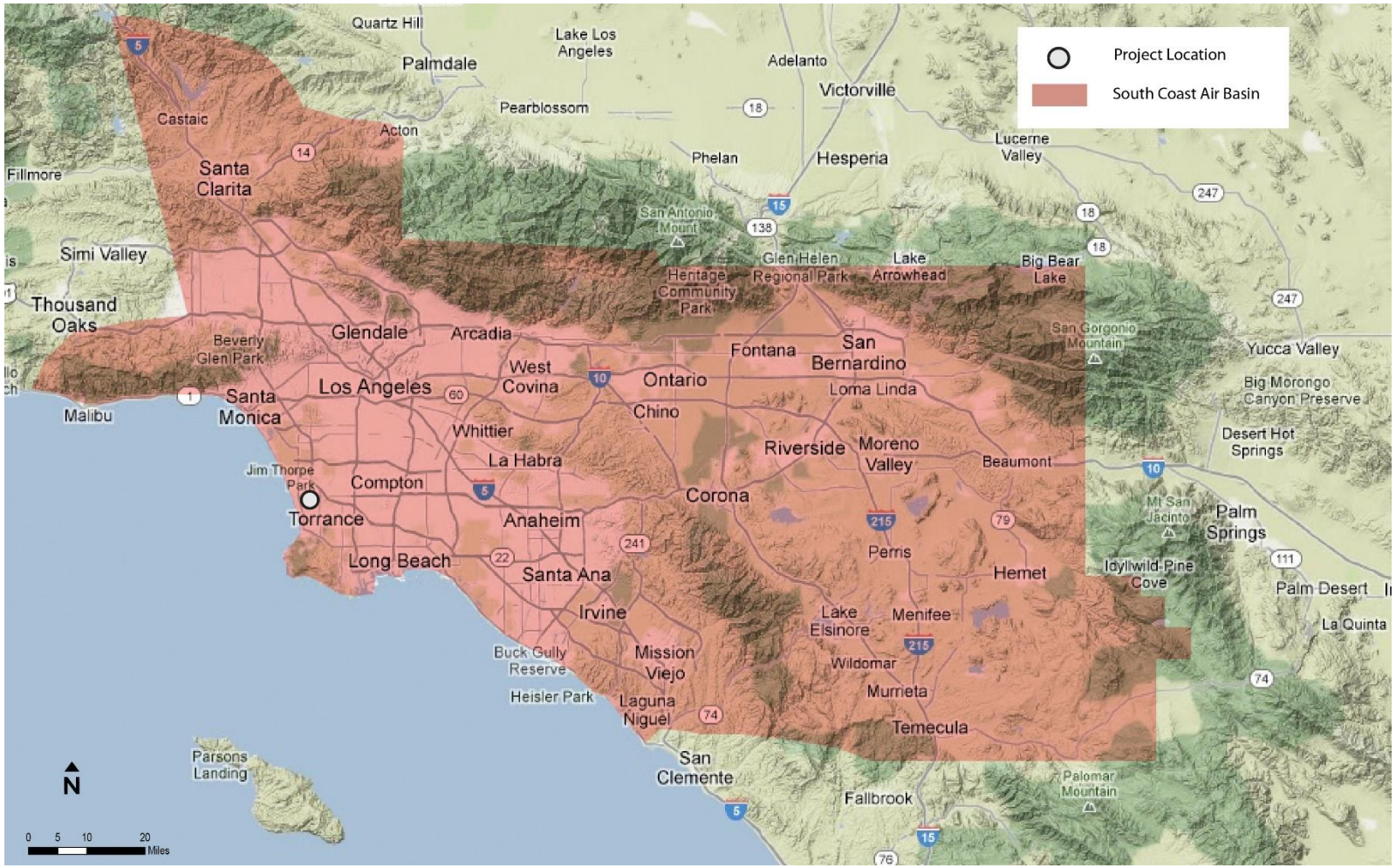
CalEEMod was used to prepare reasonably conservative estimates of the potential maximum daily regional and localized emissions that would be generated by the sources involved in construction activities. The analysis relied on information provided by Metro to characterize daily vehicle and equipment inventories that would be required to complete each phase of construction. Construction activities would generate emissions from off-road equipment usage (through engine exhaust and fugitive dust), on-road vehicle travel (truck hauling, vendor deliveries, and workers commuting), architectural coating, and paving. Table 3.4-5 provides an overview of the sources of air pollutant emissions that are accounted for in CalEEMod during construction. Emissions from sources located on the individual construction sites were analyzed in accordance with the SCAQMD Localized Significance Threshold (LST) methodology based on the regional location and proximity of sensitive land uses.

Table 3.4-5. Construction Emissions Sources

Phase(s)	Activity	Source(s)	Pollutants
All Phases	Off-Road Equipment Use	Engine Exhaust	VOC, NO_X, CO, SO_X, PM_{10}, $PM_{2.5}$
All Phases	On-Road Vehicle Trips	Engine Exhaust	VOC, NO_X, CO, SO_X, PM_{10}, $PM_{2.5}$
All Phases	On-Road Vehicle Trips	Engine Evaporative Losses	VOC
All Phases	On-Road Vehicle Trips	Brake & Tire Wear	PM_{10}, $PM_{2.5}$
All Phases	On-Road Vehicle Trips	Re-Entrained Road Dust	PM_{10}, $PM_{2.5}$
Demolition	Mechanical Pulverization	Demolition Debris Dust	PM_{10}, $PM_{2.5}$
Demolition/Excavation	Truck Loading	Fugitive Dust	PM_{10}, $PM_{2.5}$
Site Clearing, Grading	Ground Disturbance	Fugitive Dust (Dozers/Graders)	PM_{10}, $PM_{2.5}$
Roadway Restoration/ Parking Lot	Paving	Off-Gassing (Evaporation)	VOC

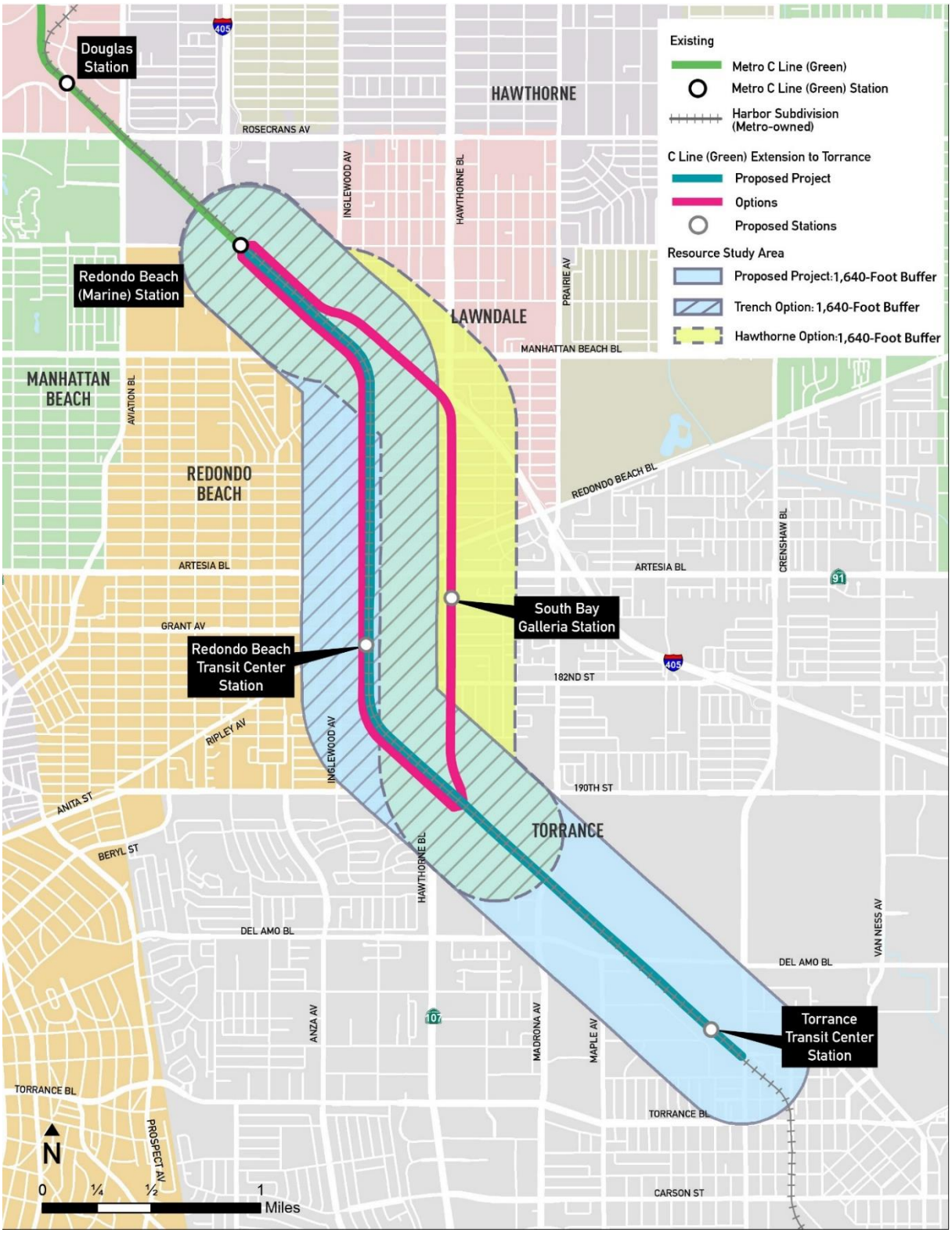
Source: CAPCOA, 2022a

Figure 3.4-1. Resource Study Area (Regional)



Source: STV, 2020

Figure 3.4-2. Resource Study Area (Local)



Source: TAHA, 2022

3.4-2.2.1 Proposed Project Construction

Construction of the Proposed Project would commence in spring 2027 and is anticipated to last for approximately five years—excluding a period of approximately 10 months between Systems Construction and Testing/Commissioning activities during which no equipment would be in use—with operations beginning in early 2033. Table 3.4-6 summarizes the phases comprising the Proposed Project construction schedule and the daily construction crew vehicles and truckloads of material export or import that would be involved during construction of each component. Comprehensive equipment inventories were developed by Metro that contained all equipment that would be required to complete each phase of Proposed Project construction. Throughout the course of construction, the daily activities involving equipment and vehicles would fluctuate, and only a subset of the equipment needed to complete construction would be in use on a daily basis. Construction of the Proposed Project would involve a total of approximately 556,100 CY of total import and export. Maximum daily hauling activity would be approximately 106 truckloads of material being moved, which would occur in fall of 2027.

Table 3.4-6. Proposed Project Construction Activity Summary

Phase	Approximate Duration (Months)	Daily Crew Vehicle Trips (Round Trips)	Maximum Daily Haul Loads
Early Utility Relocation	18	40	2
Project Start-Up	6	40	101
Final Utility Relocations	15	40	2
Freight Track Bridges	10	25	1
Freight Retaining Walls	12	40	60
LRT Retaining Walls	8	40	7
Freight At-Grade Crossings	4	25	2
LRT Guideway Bridges	25	25	6
Freight Trackwork (BNSF)	4	40	21
Stations and Access	18	40	1
LRT Trackwork	15	40	21
Systems Construction	12	20	0
Testing/Commissioning	9	15	0

Source: STV, 2022
LRT = light rail

Based on the construction schedule and forecasted resource allocation, it was conservatively assumed that no more than 40 pieces of equipment would be active on-site on a given day during construction of the Proposed Project. Haul trucks involved in Proposed Project construction would have average capacities of 30 cubic yards (CY) based on design information, and the haul route was assumed to have a one-way length of 35 miles (70 miles roundtrip) based on the anticipated sites where material will be disposed (assumed to be Irwindale, California for this analysis). Additionally, it was assumed that 10% of soil would be contaminated and need to be disposed of at a specialized site. Soil Safe of California Incorporated, in San Bernardino County is approximately 70 miles to the east of the Proposed Project

(140 miles roundtrip); this location was incorporated into the analysis for the disposal of contaminated soils.

Maximum daily hauling truckloads during construction of the Proposed Project would be during overlapping utility relocations, project startup activities, and construction of the freight track bridges, resulting in up to 212 daily one-way truck trips (which includes the return trips for each truckload). Up to 210 construction crew vehicles may be employed on the days of maximum construction activities. The analysis of air quality impacts considered both regional-scale and localized emissions, and daily ground disturbance was estimated in accordance with SCAQMD guidance (SCAQMD, 2019b).

3.4-2.2.2 Trench Option Construction

Construction of the Trench Option would begin in spring 2027 and would be completed in spring 2035, with the primary difference relative to the Proposed Project being the trenching activities that would take place for approximately three years. Trench Option construction would require approximately 642,700 CY of total import and export, approximately 86,600 CY more than the Proposed Project, reflected in the higher numbers of maximum daily haul loads during retaining wall installation and trenching along the alignment. Similar to the Proposed Project, a maximum of 40 pieces of off-road construction equipment would be present onsite during construction of the Trench Option. The magnitude of daily source activity and resulting emissions would fluctuate throughout the construction period, and maximum emissions characterized in this analysis would not occur every day. Maximum daily hauling activities would involve up to approximately 243 truckloads of material being moved (486 truck trips), which would occur during the overlap of light rail guideway trenching, BNSF freight trackwork, construction of stations and access, and light rail trackwork in the summer of 2031 based on the preliminary schedule. Table 3.4-7 summarizes the construction schedule for the Trench Option.

Table 3.4-7. Trench Option Construction Activity Summary

Phase	Approximate Duration (Months)	Daily Crew Vehicle Trips (Round Trips)	Maximum Daily Haul Loads
Early Utility Relocation	18	40	2
Project Start-Up	6	40	35
Final Utility Relocations	15	40	2
Freight Track Bridges	8	25	2
Freight Retaining Walls	18	40	54
LRT Guideway Bridges	32	25	4
LRT Retaining Walls	8	40	110
Freight At-Grade Crossings	4	25	4
LRT Guideway Trench	36	40	200
Freight Trackwork (BNSF)	25	40	21
Stations and Access	20	40	1
LRT Trackwork	15	40	21
Systems Construction	12	20	0
Testing/Commissioning	9	15	0

Source: STV, 2022
LRT = light rail

3.4-2.2.3 Hawthorne Option Construction

Construction of the Hawthorne Option would begin in spring 2029 and would be completed in early 2035. Hawthorne Option construction would involve the combined import and export of approximately 564,700 CY of material, approximately 8,600 CY more than the Proposed Project, with average truck trips of 35 miles. Construction of the Hawthorne Option would also involve a maximum 40 total active pieces of equipment onsite during any individual phase or combination of overlapping phases. The emissions analysis for construction of the Hawthorne Option evaluated potential regional and localized air quality impacts in accordance with SCAQMD guidance. Maximum daily hauling activities during construction of the Hawthorne Option are projected to be 75 truckloads of material being moved (150 truck trips) during utility relocations and project startup in fall 2029. Table 3.4-8 summarizes the construction schedule for the Hawthorne Option.

Table 3.4-8. Hawthorne Option Construction Activity Summary

Phase	Approximate Duration (Months)	Daily Crew Vehicle Trips (Round Trips)	Maximum Daily Haul Loads
Early Utility Relocation	18	40	1
Project Start-Up	6	40	73
Final Utility Relocations	15	40	1
LRT Guideway Bridges	35	60	27
Freight Retaining Walls	6	40	35
LRT Retaining Walls	8	40	1
Freight Trackwork (BNSF)	8	40	21
Stations and Access	22	40	1
LRT Trackwork	14	40	21
Systems Construction	12	20	0
Testing/Commissioning	9	15	0

Source: STV, 2022
LRT = light rail

3.4-2.3 Operational Air Quality Methodology

The assessment of potential air quality impacts associated with implementation of the Project evaluated both direct and indirect sources of air pollutant emissions during future operation. Air quality impacts are typically characterized by estimates of air pollutant emissions that are analyzed on either daily or annual timescales in terms of pounds per day or tons per year of pollutants emitted, respectively.

Spurred by Senate Bill 743—originally adopted in 2013—the CEQA Guidelines were updated in 2018 to incorporate vehicle miles traveled (VMT) as the preferred metric for analyzing transportation impacts under CEQA. In response to the updated CEQA Guidelines, the Office of Planning and Research (OPR) published a Technical Advisory on Evaluating Transportation Impacts in CEQA in December 2018 (OPR, 2018b) and CEQA Review of Sustainable Transportation Projects Technical Advisory (OPR, 2021), and Caltrans has published guidance for analyzing transportation impacts for state highway system projects under CEQA (Caltrans, 2020c). The OPR guidance relates directly to the Project, while the Caltrans guidance provides insight as to Caltrans approach to establishing a CEQA baseline for long-range transportation projects. OPR considers “sustainable transportation projects” to be those that encourage the use of active transportation, transit, and zero-emission vehicles (ZEVs).

3.4-2.3.1 CEQA Review of Sustainable Transportation Projects

Generally, light rail projects are understood to improve regional connectivity and air quality through induced changes to mobility patterns spurred by the provision of an alternative mode of transportation that replaces and reduces vehicle trips. The OPR guidance recommends streamlining CEQA analyses of potential impacts to transportation and transportation-related emissions for transit and active transportation projects that are widely recognized to reduce on-road VMT and associated vehicle emissions (OPR, 2018b; OPR, 2021). The OPR recommendation is based on programmatic review of public transit and active transportation projects, which consistently demonstrate reductions in pollutant emissions from on-road vehicles through implementation of transit systems. The determination of

potentially significant operational air quality impacts is streamlined for the Proposed Project, as it would not introduce a new substantial permanent source of air pollutant emissions into the Affected Area and would induce changes to regional transportation patterns that would decrease VMT and associated air pollutant emissions.

The OPR recommends streamlining the emissions impact analysis for transit and active transportation projects that displace vehicle trips and reduce on-road VMT; therefore, operational emissions are primarily addressed qualitatively with the exception of changes in regional on-road VMT. Mobile source air pollutant emissions from on-road vehicle traffic were quantified using the CARB EMFAC2021 model to demonstrate the long-term benefits associated with Project implementation. The model is developed using the statewide mobile source emissions inventory and produces emission rates in units of grams of pollutant emitted per VMT based on the year of analysis, regional location, vehicle fleet mix, local meteorology, and speed of travel. Aggregate average emission rates were produced for Los Angeles County in 2042. To estimate daily emissions for the Proposed Project, Trench Option, and Hawthorne Option, the daily VMT reduction corresponding to each operational scenario was multiplied by the corresponding emission factor for each pollutant. The emission factors used in the demonstrative analysis apply to exhaust emissions per VMT, with the exception of particulate matter emission rates that account for brake wear, tire wear, and resuspended road dust.

3.4-2.3.2 Establishing a Future Baseline for CEQA Impacts Assessment of Transportation Projects

Typically, in a CEQA analysis, project-related impacts are compared to existing conditions. However, pursuant to CEQA Guidelines Section 15125(a)(2), a lead agency has the discretion to exclusively use a future conditions baseline for the purposes of determination of significance under CEQA in instances where using an existing conditions baseline would be misleading or without informational value. Use of an existing conditions baseline for operational impacts would be misleading for the Proposed Project because it would fail to account for the regional background—or ambient—growth in population, traffic, and transportation infrastructure that would occur between the existing conditions baseline year of 2021 and the future conditions (i.e., the 2021 existing conditions will be substantially altered by regional growth that will occur independent of the project, which, in turn, would obscure the impacts that are attributable to implementation of the Proposed Project and would not provide the reader with an accurate and meaningful delineation of project-related impacts). Considering such growth is critical when determining future effects for transit projects designed to reduce traffic congestion and associated air quality impacts over time. Isolating the Proposed Project's impacts from ancillary changes in the environment would result in a misleading analysis. Caltrans recent guidance on CEQA assessments for projects on the state highway system invokes the same rationale about ambient regional growth not being considered in conjunction with project-specific effects (Caltrans, 2020c).

Therefore, for quantification of operational air pollutant emissions, Project emissions are defined as the difference between a Project alternative (2042) and the existing conditions in 2019 adjusted for regional growth that would occur by 2042, pursuant to Section 15125(a)(1)(2) of the State CEQA Guidelines that provides for the use of a projected future conditions (beyond the date of project operations) baseline. For the Project, this "projected future conditions baseline" is 2042 without the Project Conditions. The horizon year (2042) of the regional travel demand Corridor Based Model 2018 (CMB18), which incorporates Metro Measure M projects identified in the Measure M Expenditure Plan, roadway improvements, and other transit improvements anticipated to occur throughout the transit corridor, was selected as the Project design year. Use of this 2042 design year represents a characterization of the holistic, long-term benefits of the Project as transit-oriented development expands within the GSA and throughout the region. Notably, because operations of the Proposed Project and Options would reduce

VMT in any year, operational air quality impacts would be less than significant in all years, including under an existing (2021) baseline. For the reasons described above, however, the use of a future (2042) baseline provides a more accurate assessment of the long-term operational air quality benefits of the Proposed Project and Options.

Project emissions greater than thresholds for a given air pollutant would be considered significant under CEQA.

3.4-2.4 Significance Thresholds

As discussed in the following subsections, the thresholds of significance used to assess the air quality impacts of the Proposed Project, Trench Option, and Hawthorne Option are based on Appendix G of the CEQA Guidelines and SCAQMD's CEQA Air Quality Handbook.

3.4-2.4.1 State CEQA Guidelines

As provided by the Environmental Checklist Form provided in Appendix G of the State CEQA Guidelines, implementation of the Project may have a significant impact on air quality if during temporary construction activities or long-term future operations the Proposed Project would:

a. Conflict with or obstruct implementation of the applicable air quality plan;

b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard;

c. Expose sensitive receptors to substantial pollutant concentrations;

d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The State CEQA Guidelines delegate authority to set thresholds of significance related to air quality to the regional air quality management and pollution control districts: "the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon" to make significance determinations based on the criteria above. The air quality impacts assessment for the Project addressed each of the criteria listed above using applicable SCAQMD guidance.

3.4-2.4.2 SCAQMD CEQA Air Quality Handbook

The SCAQMD published a CEQA Air Quality Handbook to provide local governments and consultants who prepare environmental documents with guidance for analyzing and mitigating air quality impacts of projects within its jurisdiction (SCAQMD, 2001). SCAQMD methodologies recommend that air pollutant emissions be analyzed in both regional and local contexts. Regional emissions refer to all emissions that would be associated with construction and operation of a project, while localized emissions refer to only those emissions that would be produced by sources located on the project site. The SCAQMD established maximum daily screening threshold values for air pollutant emissions from CEQA projects within the SCAB. The mass daily thresholds were derived using regional emissions modeling techniques to prevent the occurrence of air quality violations that would obstruct implementation of the AQMP and hinder efforts to improve regional air quality. Table 3.4-9 presents the SCAQMD significance thresholds for regional emissions resulting from construction and operations.

Table 3.4-9. SCAQMD Air Quality Significance Thresholds – Regional Mass Daily Thresholds

Pollutant	Construction (Pounds/Day)	Operations (Pounds/Day)
Volatile Organic Compounds (VOC)	75	55
Nitrogen Oxides (NO_X)	100	55
Carbon Monoxide (CO)	550	550
Sulfur Oxides (SO_X)	150	150
Respirable Particulate Matter (PM_{10})	150	150
Fine Particulate Matter ($PM_{2.5}$)	55	55
Lead (Pb)	3	3

Source: SCAQMD, 2019

In addition to regional significance thresholds, SCAQMD has developed specific CEQA LST screening values that apply to only sources of emissions situated on the Project site. According to the SCAQMD, localized emissions at project sites could result in a significant air quality impact if air pollutant concentrations exceeded the following threshold values presented in Table 3.4-10. Since the SCAB is in nonattainment for PM_{10} and $PM_{2.5}$ under the California standards, the threshold is established as an incremental "allowable change" in concentration as a result of Project implementation.

Table 3.4-10. SCAQMD Air Quality Significance Thresholds – Localized Significance Thresholds

Pollutants and Averaging Time	Construction[1]	Operations[1]
Nitrogen Dioxide (NO_2) – Annual Average Nitrogen Dioxide (NO_2) – 1-Hour Average	0.03 ppm (CAAQS) 0.18 ppm (CAAQS)	0.03 ppm (CAAQS) 0.18 ppm (CAAQS)
Carbon Monoxide (CO) – 8-Hour Average Carbon Monoxide (CO) – 1-Hour Average	9.0 ppm (CAAQS) 20 ppm (CAAQS)	9.0 ppm (CAAQS) 20 ppm (CAAQS)
Sulfur Dioxide (SO_2) – 24-Hour Average Sulfur Dioxide (SO_2) – 1-Hour Average	0.04 ppm (CAAQS) 0.075 ppm (NAAQS)	0.04 ppm (CAAQS) 0.075 ppm (NAAQS)
Respirable Particulate Matter (PM_{10}) – Annual Average[2] Respirable Particulate Matter (PM_{10}) – 24-Hour Average[2]	1.0 µg/m^3 10.4 µg/m^3	1.0 µg/m^3 2.5 µg/m^3
Fine Particulate Matter ($PM_{2.5}$) – 24-Hour Average[2]	10.4 µg/m^3	2.5 µg/m^3

Source: SCAQMD, 2019

[1] Ambient air quality thresholds based on SCAQMD Rule 1303 Table A-2 unless otherwise stated.

[2] Threshold is based on SCAQMD Rule 403 control requirement of 50 µg/m^3 averaged over five hours.

The SCAQMD devised area-specific Mass Rate Look-Up Tables based on the Project Source-Receptor Area (SRA), project site size, and proximity of sensitive receptors to the Project site. The Mass Rate Look-Up Tables are provided in Appendix C to the SCAQMD Final Localized Significance Threshold Methodology and represent maximum allowable daily emissions from sources situated on the Project site that will not result in the CAAQS being exceeded at sensitive receptor locations. The Project is located in SRA 3 – Southwest Coastal Los Angeles County. Operation of the Project will not introduce a new substantial stationary source of direct air pollutant emissions into the RSA. Therefore, the localized emissions analysis focused on construction only (see Table 3.4-11). The thresholds are specific to an active construction zone of one or two acres with a 25-meter distance between the construction zone and sensitive receptors. Due to the linear nature of the project, construction zones would typically be two acres or less at a specific location. The analysis of overlapping activities considered sites with up to five acres of daily disturbance for disclosure purposes. As for the receptor distance, 25 meters is the shortest distance established by the SCAQMD for the assessment of localized impacts.

Table 3.4-11. Localized Screening Thresholds for Source Receptor Area 3 – Construction

Site Size (Acres)	Receptor Distance (Meters)	Localized Emissions Limit (Pounds/Day)			
		CO	NO_X	PM_{10}	$PM_{2.5}$
1	25	664	91	5	3
2	25	967	131	8	5
5	25	1,796	197	15	8

Source: SCAQMD, 2009

In addition to the mass daily thresholds for criteria pollutants and O_3 precursors, SCAQMD established CEQA significance thresholds related to TACs and odorous emissions. As a diverse class of pollutants, TACs include many different pollutants with varying degrees of toxicity and that affect human health in different ways. Within the field of health risk assessment, carcinogenic risk and non-carcinogenic hazards can be determined based on multipollutant exposures. According to SCAQMD methodology, health effects from carcinogenic air toxics are described in terms of excess incremental individual cancer risk. "Individual Cancer Risk" is the likelihood that a person continuously exposed to TAC concentrations over a 70-year lifetime will contract cancer based on the use of standard risk assessment methodology. SCAQMD established a project-specific TAC carcinogenic exposure threshold of an incremental excess cancer risk of 10 cases per million (1×10^{-5}). Carcinogenic risks are typically assessed on timescales of years to decades, with the default duration for a residential exposure being 30 years.

Within the greater Los Angeles area, diesel particulate matter is the primary driver of ambient carcinogenic risks to which communities are exposed. Diesel-fueled construction equipment would generate emissions of diesel particulate matter during the several years construction activities would be ongoing. However, all construction contractors will be required to ensure compliance with the Metro Green Construction Policy, which mandates that all construction equipment greater than 50 horsepower be outfitted with engines meeting Tier 4 Final emissions standards, as well as the application of diesel particulate filters where feasible. Tier 4 Final engines produce substantially lower emissions of diesel particulate matter relative to previous generations, reducing emissions by 90% relative to Tier 3. Compliance with the Metro Green Construction Policy will preclude the possibility of unhealthy exposures of sensitive receptors to TAC concentrations during Proposed Project construction.

For non-carcinogenic TACs, the acute and chronic exposures should not exceed a combined calculated Hazard Index value of 1.0, based on the sum of pollutant-specific Hazard Quotients calculated relative to their respective reference-exposure levels (RELs).

Regarding cumulative impacts, the SCAQMD recognizes that emissions for individual projects that remain below the thresholds shown in Table 3.4-9 would be considered less than significant at the project level and would not be cumulatively considerable. If maximum daily emissions would exceed applicable threshold values during construction or operations, opportunities to mitigate and reduce those emissions are required to be explored and implemented as feasible.

Construction and operation of certain land use development projects may create public nuisances related to visible dust plumes and odors. The SCAQMD air quality significance thresholds address odorous emissions by invoking compliance with SCAQMD Rule 402. A project may have a significant air quality impact if construction or operation of that project create a public nuisance condition in violation of SCAQMD Rule 402. Visible dust plumes are controlled through the enforcement of SCAQMD Rule 401 and SCAQMD Rule 403.

3.4-2.5 Project Features

As described in Chapter 2, Project Description, a number of features have been incorporated into the project to ensure compliance with the laws, guidelines, or best practices of federal, state, local, and regional agencies. The following project features have been developed for air quality.

PF-AQ-1. Metro Green Construction Policy Compliance

Established by formal adoption of the Green Construction Policy, Metro commits to the following construction equipment requirements, construction BMPs, and implementation strategies for all construction projects performed on Metro properties or rights-of-way.

- Construction equipment shall incorporate, where feasible, emissions-reducing technology such as hybrid drives and specific fuel economy standards.
- Maintain equipment according to manufacturer specifications.
- Idling of construction equipment and heavy-duty trucks shall be restricted to a maximum of five minutes when not in use (certain exceptions apply based on CARB exemptions).
- All off-road diesel-powered construction equipment greater than 50 horsepower (hp) shall meet Tier-4 off-road emission standards at a minimum.
- All on-road heavy-duty trucks with a gross vehicle weight rating greater than or equal to 14,000 pounds must have engines meeting U.S. 2010 on-road emission standards.
- Where applicable and feasible, work with local jurisdictions to improve traffic flow by signal synchronization during construction activities.
- Use electric power in lieu of diesel power where available.
- Generators: every effort shall be made to utilize grid-based electric power at any construction site, where feasible. Where access to the power grid is not available, on-site generators must:
    - Meet a 0.01 gram per brake-horsepower-hour (g/bhp-hr) standard for PM; or,
    - Be equipped with Best Available Control Technology (BACT) for PM emissions reductions.
- Inspections: Metro shall conduct inspections of construction sites and affected off-road and on-road equipment and generator as well as compliance with air quality rules.
- Records: Prior to Notice to Proceed (NTP) to commence construction and to be verified afterwards consistent with project contract requirements and through enforcement provisions above, the Contractor shall submit to Metro the following information for all construction equipment to be used on Metro properties or rights-of-way:
    - A certified statement that all construction equipment used conform to the requirements specified above;
    - A list of all the equipment and vehicles (i.e., off-road equipment, include the CARB-issued Equipment Identification Number) to be used;
    - A copy of each Contractor's certified EPA rating and applicable paperwork issued either by CARB, SCAQMD, and any other jurisdiction that has oversight over the equipment.

PF-AQ-2. SCAQMD Rule 403 Compliance

Construction of the Proposed Project would implement the following BMPs in compliance with SCAQMD Rule 403 – Fugitive Dust:

- Backfilling: Backfill material stabilization when actively handling or inactive and stabilize soil at completion of activity.
- Clearing/Grubbing: Maintain stability of soil through watering of site prior to, during, and after all clearing/grubbing activities.
- Cut and Fill: Pre-water soils prior to cut and fill activities using water trucks; stabilize soil during and after activities.
- Debris Hauling: All trucks hauling dirt, sand, soil, or other loose materials are to be tarped with a fabric cover and maintain a freeboard height of 12 inches.
- Demolition Activities: Prohibit demolition activities when wind speeds exceed 25 mph; apply water to disturbed soils after demolition is completed or at the end of each day of cleanup.
- Disturbed Soil: Stabilize disturbed soil throughout the construction site by limiting vehicular traffic and disturbance on soil where possible and applying water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes (Rule 401 – Visible Emissions).
- Disturbed Surface Areas: Apply dust suppression in sufficient quantity and frequency to maintain a stabilized surface; apply water at three-hour intervals to at least 80% of the un-stabilized area.
- Earth-Moving Activities: Pre-apply water to depth of proposed cuts and reapply as necessary to maintain soils in a damp condition and to ensure that visible dust plumes do not exceed 100 feet in any direction.
- Importing/Exporting of Bulk Materials: Stabilize material with tarps or other suitable enclosures on trucks while loading/unloading to reduce fugitive dust emissions and maintain at least six inches of freeboard on haul vehicle; provide water during loading/unloading to prevent dust plumes.
- Staging Areas and Unpaved Roads: Stabilize surface areas and limit vehicle speeds to 15 miles per hour.
- Stockpiles/Bulk Material Handling: stabilize stockpiled materials with intermittent watering and limit stockpiles to eight feet in height within 100 yards of off-site occupied buildings.
- Trenching: Stabilize surface soils with pre-watering where trencher or excavator and support equipment will operate; wash mud and soils from equipment at completion of activities.

PF-AQ-3. Metro Moving Beyond Sustainability Strategic Plan Compliance

Construction and operation of the Proposed Project and options will adhere to the commitments established by the Metro Moving Beyond Sustainability Strategic Plan (MBSSP) 2020, including, but not limited to the application of renewable diesel requirements for contractors and identify opportunities to decarbonize fuel sources at construction sites.

PF-AQ-4. Metro Rail Design Guidelines

The Proposed Project and options will be designed in accordance with the Metro Rail Design Criteria and the Metro Systemwide Station Design Standards Policy, which includes the installation of high-efficiency LED lighting in all fixtures to reduce electricity consumption.

3.4-3 Affected Environment / Existing Conditions

3.4-3.1 Regional Air Quality Conditions

The CAA requires the USEPA to designate areas as attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant based on whether representative pollutant concentrations within the area have consistently been measured below the NAAQS. The USEPA has classified the Los Angeles County portion of the SCAB as a NAAQS nonattainment area for O_3, $PM_{2.5}$, and Pb and a maintenance area for PM_{10} and CO. Table 3.4-12 presents the federal attainment status of the Los Angeles County portion of the SCAB.

Table 3.4-12. State/National Attainment Status for Criteria Pollutant Standards – Los Angeles County

Pollutant	Averaging Time	CAAQS Status	NAAQS Status
Ozone (O_3)	1-Hour	Nonattainment	Nonattainment (Extreme)
	8-Hour	Nonattainment	Nonattainment (Extreme)
Carbon Monoxide (CO)	1-Hour	Attainment	Attainment (Maintenance)
	8-Hour	Attainment	Attainment (Maintenance)
Nitrogen Dioxide (NO_2)	1-Hour	Attainment	Unclassifiable/Attainment
	Annual Average	Attainment	Attainment (Maintenance)
Sulfur Dioxide (SO_2)	1-Hour	Attainment	Unclassifiable/Attainment
	24-Hour	Attainment	Unclassifiable/Attainment
Respirable Particulate Matter (PM_{10})	24-Hour	Nonattainment	Attainment (Maintenance)
	Annual Average	Nonattainment	No Federal Standard
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No State Standard	Nonattainment (Serious)
	Annual Average	Nonattainment	Nonattainment (Moderate)
Lead (Pb)	30-Day Average	Attainment	No Federal Standard
	3-Month Average	Attainment	Nonattainment (Partial)

Source: CARB, 2016a

The CCAA requires CARB to designate areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data shows that a state standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a state standard and are not used as a basis for designating areas as nonattainment. The Los Angeles County portion of the SCAB is designated as a CAAQS nonattainment area for O3, PM10, and PM2.5.

3.4-3.2 Local Air Quality Conditions

The attainment status designations are based on concentrations of air pollutants measured at air monitoring sites throughout the SCAB. The SCAQMD divides SCAB into 38 SRAs, the boundaries of which were determined by the proximity to the nearest air monitoring station and local topography and meteorological patterns. The SCAQMD operates a total of 43 air monitoring sites that are used to characterize air quality within the 38 SRAs. The Project is located in SRA 3 (Southwest Coastal Los Angeles County). Air quality conditions in SRA 3 are characterized by concentrations of air pollutants measured at the LAX Hastings monitoring station approximately 5.5 miles northwest of the RSAs. Table

3.4-13 displays the air quality data recorded at the LAX Hastings monitoring site between 2018–2020, with $PM_{2.5}$ data supplemented from the nearby North Long Beach monitoring station.

Table 3.4-13. Monitored Air Quality Data

Pollutant	Metric	Maximum Concentrations and Frequencies of Exceeded Standards		
		2018	2019	2020
Ozone (O_3)	Maximum 1-Hour Concentration Days > 0.09 ppm (CAAQS)	0.074 0	0.082 0	0.117 1
	Maximum 8-Hour Concentration Days > 0.070 ppm (NAAQS/CAAQS)	0.065 0	0.067 0	0.074 2
Carbon Monoxide (CO)	Maximum 1-Hour Concentration Days > 20 ppm (CAAQS)	1.8 0	1.8 0	1.6 0
	Maximum 8-Hour Concentration Days > 9.0 ppm (NAAQS/CAAQS)	1.5 0	1.3 0	1.3 0
Nitrogen Dioxide (NO_2)	Maximum 1-Hour Concentration Days > 0.10 ppm (NAAQS)	0.060 0	0.057 0	0.060 0
	Annual Average Exceed 0.030 ppm (CAAQS)?	0.009 No	0.010 No	0.010 No
Sulfur Dioxide (SO_2)	Maximum 1-Hour Concentration Days > 0.075 ppm (NAAQS)	0.012 0	0.008 0	0.006 0
	Maximum 24-Hour Concentration Days > 0.040 ppm (CAAQS)	0.005 0	0.004 0	0.003 0
Respirable Particulate Matter (PM_{10})	Maximum 24-Hour Concentration Days > 50 µg/m^3 (CAAQS)	45.0 0	62.0 2	43.0 0
	Annual Average Concentration Exceed 20 µg/m^3 (CAAQS)?	20.5 Yes	19.2 No	22.5 Yes
Fine Particulate Matter ($PM_{2.5}$)	Maximum 24-Hour Concentration Days > 35 µg/m^3 (NAAQS)	79.6 6	28.0 0	66.0 4
	Annual Average Concentration Exceed 12 µg/m^3 (NAAQS/CAAQS)?	11.4 No	9.2 No	12.5 Yes

Source: CARB, 2016a; SCAQMD, 2018, 2019a, 2020

As shown in Table 3.4-13, concentrations of O_3 and $PM_{2.5}$ exceeded the NAAQS multiple times during the three-year monitoring period and concentrations of O_3, PM_{10}, and $PM_{2.5}$ exceeded the CAAQS on numerous occasions. Concentrations of CO, NO_2, and SO_2 remained well below the applicable air quality standards. The air monitoring data are demonstrative of the SCAB-area nonattainment status designations for the County.

The SCAQMD has initiated several comprehensive urban air toxics studies—referred to as the multiple air toxics exposure studies (MATES)—to evaluate conditions within the SCAB. The MATES V study included extensive regional air monitoring and modeling designed to characterize cancer risk throughout the SCAB. Contaminant concentrations were modeled based on a 2-kilometer gridding system encompassing the SCAB and coastal shipping lanes. Regional modeling analysis performed by the SCAQMD yielded the highest risks from air toxics surrounding the port areas (with a maximum modeled risk of about 1,100 excess cancers per million), followed by the LAX area (approximately 700–1,000 per million) and the Central Los Angeles heavy transportation corridor (approximately 700–900 per million).

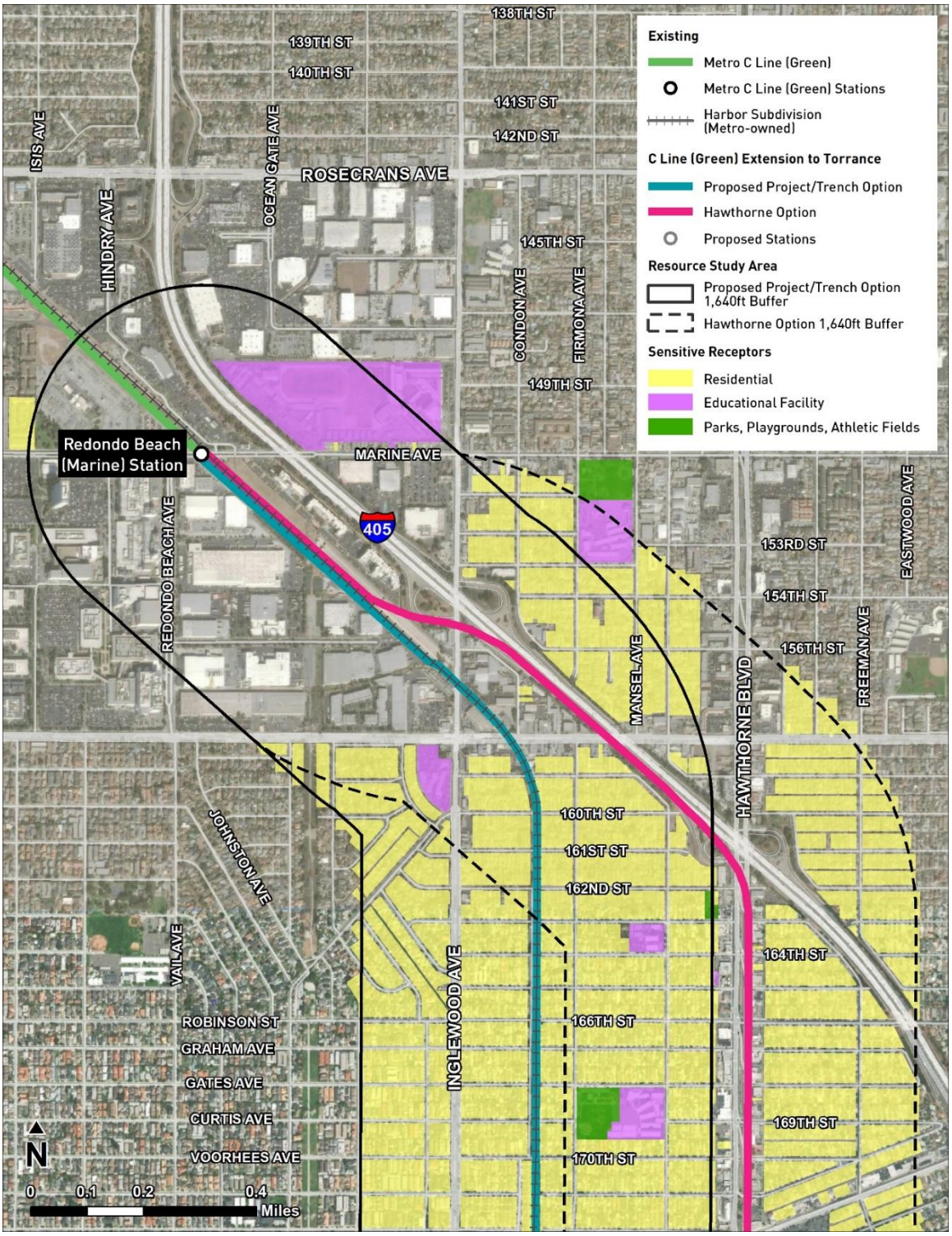
Based on the MATES V Data Visualization, background ambient cancer risk within the RSA is estimated to be between 450–500 cases per million.

The MATES V estimated the average SCAB-wide carcinogenic risk from multiple exposure pathways to air toxics to be 455 excess cases per million. Approximately 48% of this risk was attributed to emissions associated with off-road mobile sources and approximately 40% was attributed to on-road mobile sources, with approximately 7% from area sources and 5% from point sources. Diesel PM comprised approximately 72% of the total ambient carcinogenic risk, and average diesel PM concentrations were 53% lower than those measured in MATES IV. Overall, the 2018–2019 MATES V study concluded that emissions of carcinogens within the SCAB had decreased by 48% since the 2012–2013 MATES IV Study, and both the average SCAB monitored (40% decrease) and modeled (54% decrease) ambient carcinogenic risks had been substantially reduced over the six-year timeframe between MATES publications.

3.4-3.3 Sensitive Receptors

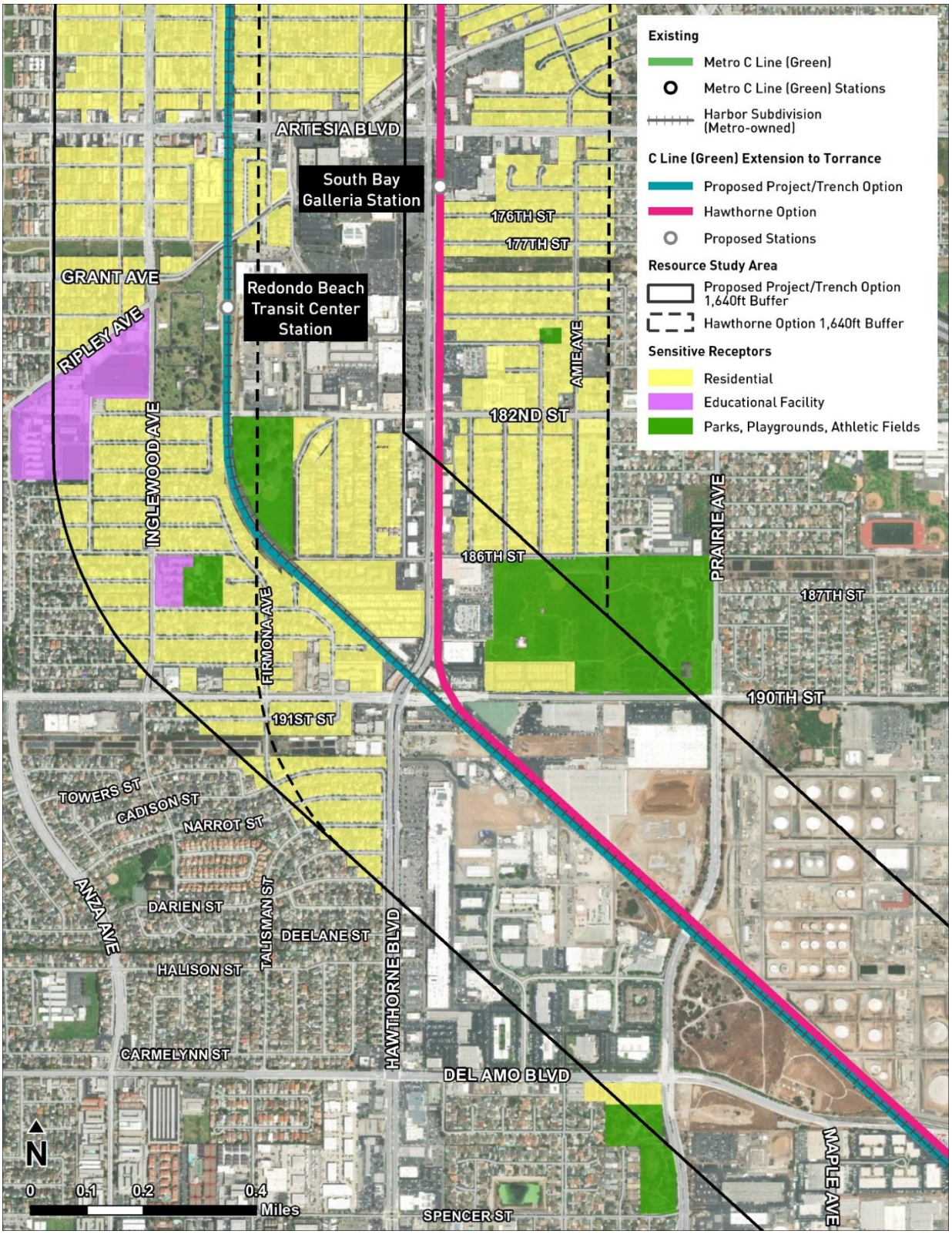
Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. The CARB has identified the following groups who are most likely to experience adverse health effects due to exposure to air pollution: children less than 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. According to the SCAQMD, land uses that constitute sensitive receptors include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. The SCAQMD recommends that air quality assessments consider the potential localized impacts to sensitive receptors at distances up to 500 meters (1,640 feet) from project sites, depending on the proximity of sensitive land uses. The Proposed Project is located in a developed urban setting near many land uses that qualify as sensitive receptors. Sensitive receptors within the localized RSA are shown in Figure 3.4-3 through Figure 3.4-5.

Figure 3.4-3. Air Quality Sensitive Receptors



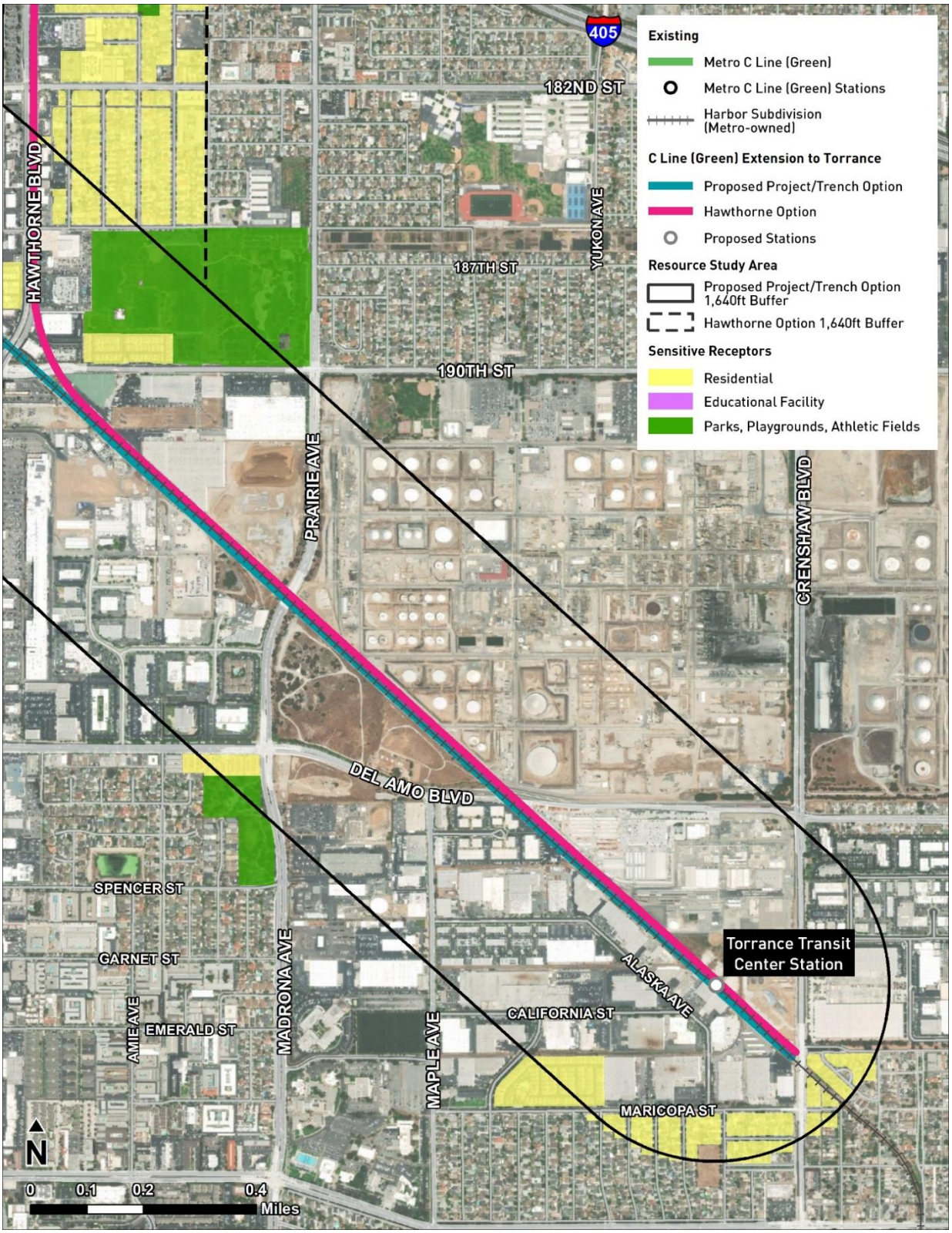
Source: TAHA, 2022

Figure 3.4-4. Air Quality Sensitive Receptors



Source: TAHA, 2022

Figure 3.4-5. Air Quality Sensitive Receptors



Source: TAHA, 2022

3.4-4 Environmental Impacts

3.4-4.1 Would the Project conflict with or obstruct implementation of the applicable air quality plan?

CEQA Guidelines Section 15125 provides that the environmental document should evaluate a project's consistency with regional plans including, but not limited to, the applicable air quality attainment or maintenance plan, regional transportation plans, regional housing allocation plans, and plans for the reduction of GHG emissions. The SCAQMD *CEQA Air Quality Handbook* provides that the environmental document should discuss with project's consistency with the current AQMP, as well as consistency with other relevant regional plans that include the SCAG Growth Management Plan (GMP) and Regional Mobility Plan (RMP) in addition to the Air Quality Element of the local government's General Plan. The applicable air quality plan for the Proposed Project is the SCAQMD 2022 AQMP and the applicable regional transportation and GHG emissions reduction plans are the SCAG *Connect SoCal* 2020–2045 RTP/SCS and the Metro 2020 MBSSP.

The following analysis addresses consistency with applicable SCAQMD and SCAG policies, inclusive of regulatory compliance. The SCAQMD *CEQA Air Quality Handbook* indicates that, "only new or amended General Plan Elements, Specific Plans, and significant projects need to undergo a consistency review" with the AQMP because the emissions control strategies contained therein are "based on projections from local General Plans" (SCAQMD, 2008). In accordance with the procedures established in SCAQMD's *CEQA Air Quality Handbook*, the impact discussion addresses the following criteria to determine whether the proposed project is consistent with applicable SCAQMD and SCAG planning objectives, as well as local General Plans:

[a] Would the proposed project create any impacts related to air quality violations, such as:

- An increase in the frequency or severity of existing air quality violations;
- Causing or contributing to any new air quality violations; or,
- Delaying timely attainment of air quality standards or the interim emission reductions specific in the AQMP.

[b] Would the proposed project exceed the assumptions utilized in preparing the AQMP:

- Is the proposed project consistent with the population and employment growth projections upon which AQMP forecasted emission levels are based;
- Does the proposed project incorporate mitigation measures to reduce potentially significant impacts; or,
- To what extent is proposed project development consistent with the AQMP land use policies and control measures?

The violations that are referred to in the first criterion are occurrences of the State and federal ambient air quality standards being exceeded anywhere in the SCAB. Consistency with the AQMP is evaluated primarily on long-term emissions because the AQMP is developed to attain the NAAQS within the SCAB that has been designated as nonattainment for O_3, $PM_{2.5}$, and Pb. In order to be found consistent, an air quality modeling analysis should demonstrate that implementation of the project would not exacerbate the frequency or severity of ambient air quality standards being exceeded. The SCAQMD developed its regional and localized air quality significance thresholds as a screening tool for CEQA projects to streamline the impacts assessment related to air quality violations. The air quality impacts assessment

for the project involved quantifying maximum daily emissions of air pollutants that would be generated during construction and future operations and comparing them to the SCAQMD mass daily thresholds at the regional and localized scales. Although short-term or infrequent emissions in excess of the SCAQMD mass daily thresholds during construction activities would be considered to potentially contribute to air quality violations, those violations would not necessarily be considered to render a project inconsistent with the AQMP, as evidenced by the analyses of construction emissions within the SCAQMD 2016 AQMP Program EIR and the SCAG 2020 *Connect SoCal* Program EIR (SCAQMD, 2016c; SCAG, 2020b). Since the preparation of these environmental documents, the air quality violation criteria has been included within AQMP consistency.

The second indicator of AQMP consistency is assessed by determining potential effects of temporary construction activities and permanent facility operations on population, housing, and employment projections that were used in the development of the AQMP and the RTP/SCS. If implementation of the proposed project would render the assumptions invalid by introducing growth within the SCAQMD jurisdiction that exceeds projections incorporated into the AQMP, a significant air quality impact may occur. The project is a transit infrastructure improvement project that would not introduce any new growth in residential (population/housing) or nonresidential (employment) land uses to the RSA. The SCAQMD acknowledges that transportation projects should be compared to the assumptions in the Regional Mobility Plan because many of these transportation projects are relied upon in the AQMP to reduce emissions through displacing vehicle trips and reducing congestion (SCAQMD, 2008). The criterion related to regional growth assumptions is addressed qualitatively for both construction and operation of the Proposed Project and Options because their implementation would not directly or indirectly introduce new growth to the RSA.

3.4-4.1.1 Construction Impacts

Less than Significant Impact. Consistent with the provisions of the SCAQMD *CEQA Air Quality Handbook*, an air quality modeling analysis was performed to identify potential impacts during temporary construction activities involved in implementing the Proposed Project. Construction of the Proposed Project would generate temporary emissions of regulated air pollutants through the sources summarized in Table 3.4-5. A programmatic schedule for construction of the Proposed Project was developed through collaboration with Metro and the project design team to identify timeframes during which the maximum daily construction activities would occur. Off-road equipment and on-road vehicle inventories were compiled for each activity summarized in Table 3.4-6 and scaled to account for a maximum of 40 active pieces of equipment per day.

CalEEMod was used to estimate the daily pollutant emissions that would be generated during construction of the Proposed Project. Table 3.4-15 under Section 3.4-4.2.1 presents the maximum daily regional-scale emissions that would be generated during the activities summarized above and compares them to the applicable SCAQMD regional mass daily thresholds. Table 3.4-21 under Section 3.4-4.3.1 presents the maximum daily emissions that would be generated by sources located on the Proposed Project construction sites in accordance with the SCAQMD *LST Methodology* and compares them to the corresponding LST screening values for SRA 3. As shown in Table 3.6-15 under Section 3.6-4.2.1 and Table 3.6-21 under Section 3.6-4.3.1, maximum daily regional and localized emissions would remain below the applicable mass daily thresholds developed by the SCAQMD.

Additionally, construction of the Proposed Project would include PF-AQ-1, Metro Green Construction Policy Compliance, and adhere to the requirements of Metro's *Green Construction Policy* for off-road equipment, generators, and on-road trucks, as well as PF-AQ-2, SCAQMD Rule 403 Compliance, and

implement recommended BMPs identified in SCAQMD Rule 403 to control and minimize excess emissions of air pollutants, and PF-AQ-3, Metro Moving Beyond Sustainability Compliance. Furthermore, all heavy-duty trucks would comply with CARB Airborne Toxic Control Measure (ATCM) 2485—which limits the idling of vehicles to no more than five minutes in any particular location to reduce diesel emissions—and the Truck and Bus Regulation. The emissions modeling for the Proposed Project assumed that construction contractors would enforce compliance with these control strategies and Metro would conduct monitoring to ensure effective implementation.

Regulatory policies and control measures related to emissions during construction of the Proposed Project are summarized in Table 3.4-14. Compliance with these control measures and implementation of the BMPs would ensure that pollutant emissions produced during construction of the Proposed Project would be minimized. Therefore, construction of the Proposed Project would result in a **less than significant impact** related to air quality violations.

Table 3.4-14. Project Construction Regulatory Control Measures

Source Category	Control Measure
METRO GREEN CONSTRUCTION POLICY	
Off-Road Equipment	1. Construction equipment shall incorporate, where feasible, emissions-reducing technology such as hybrid drives and specific fuel economy standards. 2. Idling shall be restricted to a maximum of five minutes, except as provided in the exceptions to the applicable CARB regulations regarding idling. 3. Equipment engine specifications: Beginning January 1, 2015, all off-road diesel-powered equipment greater than 50 hp shall meet Tier 4 off-road emission standards at a minimum. In addition—if not already supplied with a factory-equipped diesel particulate filter—all construction equipment shall be outfitted with Best Available Control Technology (BACT) devices certified by CARB. Any emission control device used by the Contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.
Generators	Every effort shall be made to utilize grid-based electric power at any construction site, where feasible. Where access to the power grid is not available, on-site generators must: 1) meet a 0.01 gram-per-brake-horsepower-hour (g/bhp-hr) standard for PM, or 2) be equipped with BACT for PM emissions reduction.
On-Road Heavy Duty Trucks	1. Trucks or equipment hauling material such as debris or any fill material shall be fully covered while operating at, to, and from the Metro site. 2. Idling shall be restricted to a maximum of five minutes, except as provided in the exceptions to the applicable CARB regulations.

Source Category	Control Measure
Additional Metro Best Management Practices	1. Maintain equipment according to manufacturer's specifications. 2. Maintain a buffer zone that is a minimum of 1,000 feet between truck traffic and sensitive receptors, where feasible. 3. Where applicable and feasible, work with local jurisdictions to improve traffic flow by signal synchronization. 4. If feasible and as allowed by local jurisdictions, configure construction parking to minimize traffic interference. 5. Enforce truck parking restrictions, where applicable. 6. Prepare haul routes that conform to local requirements to minimize traversing through congested streets or near sensitive receptors. 7. Provide dedicated turn lanes for movement of construction trucks and equipment on- and off-site, as feasible. 8. Schedule construction activities that affect traffic flow on the arterial system to off-peak hours to the extent practicable. 9. Use electric power in lieu of diesel power where available. 10. Traffic speeds on all unpaved roads to be 15 miles per hour or less.
SCAQMD RULE 403 (FUGITIVE DUST)	
Backfilling, Clearing and Grubbing, Cut and fill, Demolition, Disturbed soil, Earth-moving activities	Apply water to materials/stockpiles to prevent visible dust plumes and stabilize wind erodible surfaces.
Importing/exporting of bulk materials	Maintain at least six inches of freeboard on haul vehicles; use tarps or other suitable enclosures.
Road shoulder maintenance	Apply chemical dust suppressants and/or washed gravel to maintain a stabilized surface after maintenance.
Staging areas	Limit size of staging areas and limit vehicle speeds to 15 miles per hour.
CARB REGULATIONS	
Truck and Bus Regulation	By January 1, 2023, all trucks and buses must have 2010 model year engines or newer.
Airborne Toxic Control Measure 13 CCR Section 2485	Drivers of diesel-fueled commercial motor vehicles with gross vehicle weight rating greater than 10,000 pounds shall not idle the vehicle's primary diesel engine longer than five minutes at any location.

Source: SCAQMD, 2005; Metro, 2011b; CARB, 2019b

The second criterion to be addressed regarding AQMP consistency is whether implementation of the Proposed Project would exceed assumptions incorporated into the AQMP or other relevant regional plans. Examples of assumptions that are accounted for in the AQMP include regional population and housing projections, petroleum fuel refining forecasts, solid waste disposal estimates, and electrical demand. The SCAG RTP/SCS is subject to Air Quality Conformity requirements and is prepared using regional growth projections and includes regionally significant transportation infrastructure projects.

Construction of the Proposed Project would not introduce new growth in population or housing to the RSA. The construction crews contracted for the Proposed Project would be predominantly from the local employee pool, and it is not anticipated that construction activities would result in construction workers moving to the area to perform the work. Construction of the Proposed Project would involve the temporary use of off-road equipment and on-road vehicles that would consume petroleum fuels.

However, the quantity of fuel consumption would not require additional refining capacity at the regional petroleum processing facilities. Additionally, the Proposed Project is programmed in the *Connect SoCal* 2020–2045 RTP/SCS as a financially-constrained project under the listing "Green Line South Bay Extension" (RTP ID 1TR1001), meaning that its implementation has been accounted for in the federally approved transportation conformity determinations for those planning documents. Therefore, construction of the Proposed Project would result in a **less than significant impact** related to AQMP consistency.

TRENCH OPTION

Significant Impact and Unavoidable. The analysis of AQMP consistency for construction of the Trench Option is structured like the analysis for the Proposed Project. The possibility of exacerbating the frequency or severity of air quality violations or delaying attainment of the air quality standards was evaluated using the SCAQMD regional mass daily screening thresholds. The maximum daily regional emissions analyzed in Table 3.4-16 and the maximum daily localized emissions analyzed in Table 3.4-22 are representative of maximum daily emissions that would be generated during construction of the Trench Option. Similar to the Proposed Project, the emissions analysis for the Trench Option conservatively assume that 90% would make a 70-mile round trip and 10% —hauling contaminated soils—of trucks would make a 140-mile round trip. With 486 truck trips associated with the Trench Option, more than the Proposed Project or Hawthorne Option, more and longer trips would need to be made during construction.

The regional emissions analysis presented in Table 3.4-16 determined that maximum daily emissions of NO_X could exceed the applicable SCAQMD threshold of 100 pounds per day (lbs./day) during periods of maximum daily trucking activities associated with the light rail guideway trench construction between 2029–2031. Although the off-site NO_X emissions from trucking activities would be distributed along the entirety of the haul route and it is unlikely that maximum daily activities would be frequently occurring, this impact would be potentially significant at the regional scale with regards to AQMP consistency as the Trench Option could contribute to air quality violations.

Mitigation measure MM-AQ-1, Zero or Near Zero Emissions Haul Trucks, would be implemented, which would require the contractor to use zero emissions (ZE) or near zero emissions (NZE) to the extent feasible for trucking activities. While ZE and NZE trucks are becoming increasingly available, the availability of these trucks to the extent required to bring NO_x emissions below the SCAQMD regional emissions threshold cannot be guaranteed and could still be exceeded during construction.

The localized emissions analysis for the Trench Option presented in Table 3.4-22 within Section 3.4-4.3.1 determined that construction of the Trench Option would not have the potential to generate emissions from on-site sources (i.e., equipment exhaust and fugitive dust) in excess of the applicable SCAQMD LST screening values. Therefore, construction of the Trench Option would result in less than significant air quality impacts at the localized level.

Regarding assumptions incorporated into the AQMP and other regional plans, like the Proposed Project, construction of the Trench Option would not require additional refining capacity at the regional petroleum processing facilities. Construction of the Trench Option would not introduce new growth in population or housing to the RSA that would require comparison to the Regional Growth Management Plan or the Regional Housing Needs Assessment, and contracted construction crews would be locally sourced from the existing employment pool in the greater metropolitan area. Therefore, construction of the Trench Option would result in a less than significant impact related to growth assumptions derived from General Plans that were accounted for in the AQMP emissions inventory.

Construction of the Trench Option would also include PF-AQ-1, PF-AQ-2, and PF-AQ-3 as well as comply with CARB Airborne Toxic Control Measure (ATCM) 2485. Regulatory policies and control measures that would regarding emissions during construction are summarized in Table 3.4-14. Compliance with these control measures and implementation of the BMPs would ensure that pollutant emissions produced during construction of the Trench Option would be minimized. However, construction of the Trench Option would result in a **significant and unavoidable** impact related to air quality violations and AQMP consistency.

HAWTHORNE OPTION

Less than Significant Impact. The analysis of AQMP consistency for construction of the Hawthorne Option is structured like the analysis for the Proposed Project. The possibility of exacerbating the frequency or severity of air quality violations or delaying attainment of the air quality standards was evaluated using the SCAQMD regional mass daily screening thresholds. The maximum daily regional emissions analyzed in Table 3.4-17 and the maximum daily localized emissions analyzed in Table 3.4-23 are representative of maximum daily emissions that would be generated during construction of the Hawthorne Option. As disclosed in the regional and localized analyses shown in Section 3.4-4.2.1 and Section 3.4-4.3.1, respectively, construction of the Hawthorne Option would not have the potential to exacerbate air quality violations within the SCAB.

Construction of the Hawthorne Option would also include PF-AQ-1, PF-AQ-2, and PF-AQ-3 , as well as comply with CARB ATCM 2485. Regulatory policies and control measures related emissions during construction are summarized in Table 3.4-14. Compliance with these control measures and implementation of the BMPs would ensure that pollutant emissions produced during construction of the Hawthorne Option would be minimized. Therefore, construction of the Hawthorne Option would result in a less than significant environmental impact related to air quality violations.

Regarding assumptions incorporated into the AQMP and other regional plans, like the Proposed Project and Trench Option, construction of the Hawthorne Option would not require additional refining capacity at the regional petroleum processing facilities. Construction of the Hawthorne Option would not introduce new growth in population or housing to the RSA that would require comparison to the Regional Growth Management Plan or the Regional Housing Needs Assessment, and contracted construction crews would be locally sourced from the existing employment pool in the greater metropolitan area. Construction of the Hawthorne Option would not have any material impacts related to permanent regional growth in population, housing, or employment. Therefore, construction of the Hawthorne Option would result in a **less than significant impact** related to AQMP consistency.

3.4-4.1.2 Operational Impacts

Less than Significant Impact. Following the completion of construction activities, operation of the Proposed Project would involve the continuation of the existing Metro C Line (Green) light rail along the new 4.5-mile corridor extended to the proposed Torrance Transit Center (TC) Station. The light rail vehicles would be propelled by electricity and would not directly consume petroleum fuels whose combustion would create air pollutant emissions. Electricity would be provided through six new TPSS stations installed along the light rail corridor that would be connected to the Southern California Edison (SCE) power grid. The TPSS facilities would not contain sources capable of emitting ozone precursors and criteria pollutants into the atmosphere. Emissions of air pollutants that would be produced indirectly at electricity-generating facilities are regulated under permitting programs administered by the SCAQMD and are not under the purview of CEQA for the Proposed Project and options. Operation of the Proposed Project would not introduce a new permanent source of air pollutant emissions to the SCAB.

Additionally, with PF-AQ-4, Metro Rail Design Guidelines, light fixtures at stations and other facilities would use high-efficiency LED lighting to reduce electricity consumption.

The primary effect of Proposed Project operations on regional air quality would be through the reduction of on-road VMT associated with increased transit ridership. Implementation of the Proposed Project was estimated to offset approximately 34,566 VMT (using the operating pattern that attracts the least ridership) relative to 2042 without Project conditions on a daily basis through the displacement of passenger vehicle trips. The expansion of high quality transit infrastructure and reduction of VMT that would occur with implementation of the Proposed Project are key objectives of the SCAG RTP/SCS and would have a beneficial effect on air quality. Table 3.4-18 under Section 3.4-4.2.2 presents the estimated daily emissions benefits from the displaced on-road VMT during future Proposed Project operations in 2042. Operation of the Proposed Project would not exacerbate the frequency or severity of air quality violations or interfere with the emissions reduction targets outlined the AQMP.

Proposed Project operations would not introduce new permanent growth in population or housing to the SCAB or SCAG region. The extension of the light rail corridor would result in a marginal increase in regional electricity demand but would not require the expansion of SCE capacity or substantial changes to its existing electrical infrastructure. The Proposed Project is programmed in the financially-constrained projects list in the *Connect SoCal* 2020–2045 RTP/SCS, for which Amendment 1 was found to conform by the Federal Highway Administration on January 4, 2022. Long-term operation of the Proposed Project beginning in 2031 would not compromise the validity of the growth projections incorporated into the 2016 AQMP or the 2020–2045 RTP/SCS. Therefore, this impact would be **less than significant**.

TRENCH OPTION

Less than Significant Impact. The assessment of potential air quality impacts resulting from operation of the Trench Option related to AQMP consistency is like the analysis for the Proposed Project. The Trench Option would follow the same alignment as the Proposed Project, would employ the same Metro light rail vehicles propelled by electricity supplied by the new TPSS facilities connected to the SCE grid, and incorporate PF-AQ-4. Since the Trench Option would follow the same alignment as the Proposed Project, it is anticipated that projected ridership would be essentially identical given the same station locations and accessibility. Implementation of the Trench Option would displace approximately 34,566 daily VMT from the regional roadway network through increased transit ridership, which would result in the daily emissions reductions shown in Table 3.4-19 under impact discussion 3.4-4.2.2 (Metro, 2023). Operation of the light rail corridor with implementation of the Trench Option would not introduce a new permanent source of air pollutant emissions to the RSA and would not conflict with or obstruct implementation of the AQMP through the exacerbation of air quality violations.

The Trench Option operation would similarly not introduce new permanent growth in population, housing, or employment to the RSA. Operation of the Trench Option would expand the high quality transit infrastructure network and provide enhanced accessibility to commercial districts along the corridor for commuters. The Trench Option is sufficiently described in its entry for the RTP/SCS financially-constrained projects list and is accounted for in the conformity determination. Therefore, long-term operation of the Trench Option would result in a **less than significant impact** related to AQMP consistency.

HAWTHORNE OPTION

Less than Significant Impact. The assessment of potential air quality impacts resulting from operation of the Hawthorne Option related to AQMP consistency is structured congruently to the analysis for the Proposed Project. The Hawthorne Option would follow a different alignment than the Proposed Project and Trench Option, resulting in different station locations and access points. The Hawthorne Option light rail operations would employ the same Metro light rail vehicles propelled by electricity supplied by the new TPSS facilities connected to the SCE grid and incorporate PF-AQ-4. Based on preliminary ridership forecasts and regional transportation modeling, implementation of the Hawthorne Option would displace approximately 34,922 daily VMT from the regional roadway network through increased transit ridership, which would result in the daily emissions reductions shown in Table 3.4-20 under impact discussion 3.4-4.2.2. Operation of the light rail corridor with implementation of the Hawthorne Option would not introduce a new permanent source of air pollutant emissions to the RSA and would not conflict with or obstruct implementation of the AQMP through the exacerbation of air quality violations.

The Hawthorne Option operation would similarly not introduce new permanent growth in population, housing, or employment to the RSA. Operation of the Hawthorne Option would expand the high quality transit infrastructure network and provide enhanced accessibility to commercial districts along the corridor for commuters. The Hawthorne Option is sufficiently described in its entry for the RTP/SCS financially-constrained projects list and is accounted for in the conformity determination. Therefore, long-term operation of the Hawthorne Option would result in a **less than significant impact** related to AQMP consistency.

3.4-4.2 Would the Project 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?

3.4-4.2.1 Construction Impacts

Less than Significant Impact. As discussed within Section 3.4-3.1, the RSA is currently designated as nonattainment of the NAAQS for O_3, and $PM_{2.5}$ and is designated nonattainment of the CAAQS for O_3, PM_{10}, and $PM_{2.5}$. The nonattainment designations represent an existing and ongoing cumulative air quality impact, and CEQA projects within the SCAQMD jurisdiction must demonstrate that they will not generate emissions in excess of the air quality significance thresholds for O_3 precursors (VOC and NO_X) and particulate matter (PM_{10} and $PM_{2.5}$) to substantiate that they would not adversely contribute to the attainment of the air quality standards. The SCAQMD has published guidance that CEQA projects may emit air pollutants at quantities below the air quality significance thresholds without being considered significant at the project or cumulative level. Those projects that generate emissions in excess of the project-specific thresholds are also considered to be cumulatively significant. The emissions analysis for construction of the Proposed Project characterized the maximum daily emissions that would be generated based on the preliminary schedule and equipment and vehicle inventories compiled by the Metro engineering and design team.

The daily emission source activity would fluctuate over the duration of Proposed Project construction. In addition to maximum daily emissions that would be generated during construction of each individual phase, the emissions analysis considered the combination of daily activities that could be occurring simultaneously at each stage of the implementation schedule. Table 3.4-15 presents a summary of the maximum daily emissions that would occur during each of the individual component phases as well as the combined activity scenarios. As mentioned in Section 3.4-4.1, the analysis accounted for up to 120 construction crew workers commuting to the sites, up to 101 haul truck loads importing and exporting

bulk cut and fill, up to 60 vendor deliveries of concrete and building materials, and up to 40 pieces of heavy-duty off-road equipment being used on a daily basis. The emissions disclosed accounted for PF-AQ-1, compliance with the Metro *Green Construction Policy* (i.e., Tier 4 Final engines for all construction equipment greater than 50 horsepower) and PF-AQ-2, SCAQMD Rule 403 for fugitive dust control.

To estimate the potential worst-case scenario for emissions, the analysis assumed that maximum daily haul truck trips would occur simultaneously during each overlapping phase of construction, accounting for up to 212 trips (90% of trips being 70 miles round trip and 10% of trips being 140 miles round trip).

Table 3.4-15. Proposed Project Construction Emissions Analysis - Regional

Activity	Daily Emissions (lbs./day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
INDIVIDUAL PHASES						
Early Utility Relocation	2.5	18.2	62.2	0.1	9.8	4.6
Project Start-Up	2.1	51.5	47.4	0.3	9.0	2.3
Final Utility Relocations	2.7	18.9	62.6	0.1	3.5	1.6
Freight Track Bridges	2.2	16.2	48.8	0.1	1.1	0.5
Freight Retaining Walls	3.1	40.4	73.8	0.3	9.8	2.9
LRT Retaining Walls	2.6	17.9	70.2	0.2	9.9	3.0
Freight At-Grade Crossings	2.2	15.2	50.8	0.2	1.1	0.4
LRT Guideway Bridges	2.7	19.2	62.8	0.1	4.3	1.1
Freight Trackwork (BNSF)	1.8	17.2	41.0	0.2	4.8	1.1
Stations and Access	2.3	16.1	56.7	0.1	1.8	0.6
LRT Trackwork	2.2	20.8	55.1	0.2	5.3	1.2
Systems Construction	1.4	11.1	46.9	0.1	0.6	0.3
Testing/Commissioning	17.7	10.2	34.9	0.1	0.5	0.3
MAXIMUM OVERLAPPING EMISSIONS IN EACH YEAR						
2027	4.7	71.2	100.7	0.5	14.8	5.5
2028	5.0	59.9	105.1	0.4	20.8	7.1
2029	3.8	34.2	86.0	0.3	11.0	2.5
2030	3.2	29.3	80.3	0.3	7.5	1.8
2031	1.4	11.1	46.9	0.1	0.6	0.3
2032	17.7	10.2	34.9	0.1	0.5	0.3
2033	17.7	10.2	34.9	0.1	0.5	0.3
REGIONAL EMISSIONS ANALYSIS						
Maximum Daily Emissions	**17.7**	**71.2**	**105.1**	**0.5**	**20.8**	**7.1**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***

Source: TAHA, 2022

The results of the regional emissions analysis shown in Table 3.4-15 determined that construction of the Proposed Project would not generate emissions in excess of any applicable SCAQMD regional-scale mass daily threshold established for the purpose of screening projects with less than significant air quality impacts. In accordance with SCAQMD guidance, because the Proposed Project emissions would remain below the project-level CEQA thresholds, the emissions would also be considered less than significant at the cumulative level. Therefore, construction of the Proposed Project would result in a **less than significant impact** related to a cumulatively considerable net increase in emissions of O_3 precursors or particulate matter.

TRENCH OPTION

Significant and Unavoidable Impact. The analysis of potential impacts associated with construction of the Trench Option is like that which was presented for the Proposed Project, above. Table 3.4-16 presents the results of the regional emissions analysis for the Trench Option, including maximum daily emission that would occur during each individual phase as well as overlapping activities.

To estimate the potential worst-case scenario for emissions, the analysis assumed that maximum daily haul truck trips would occur simultaneously during each overlapping phase of construction, accounting for up to 486 truck trips (90% of trips being 70 miles round trip and 10% of trips being 140 miles round trip).

Table 3.4-16. Trench Option Construction Emissions Analysis - Regional

Activity/Year	Daily Emissions (lbs./day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
INDIVIDUAL PHASES						
Early Utility Relocation	2.2	17.0	64.2	0.1	9.3	4.5
Project Start-Up	1.5	23.8	34.4	0.1	2.0	0.7
Final Utility Relocations	2.2	16.8	66.2	0.1	3.4	1.6
Freight Track Bridges	1.8	12.9	52.4	0.1	1.9	0.6
Freight Retaining Walls	2.0	15.7	66.0	0.1	0.9	0.4
LRT Guideway Bridges	2.4	17.4	64.2	0.1	1.3	0.6
LRT Retaining Walls	3.3	58.6	91.9	0.4	6.2	2.7
Freight At-Grade Crossings	1.7	14.0	54.2	0.2	1.0	0.4
LRT Guideway Trench	5.0	94.5	148.5	0.7	9.2	3.8
Freight Trackwork (BNSF)	1.4	14.1	43.6	0.2	1.6	0.6
Stations and Access	2.0	14.5	59.1	0.1	1.4	0.5
LRT Trackwork	1.7	18.2	57.8	0.2	1.7	0.7
Systems Construction	1.4	11.1	46.8	0.1	0.6	0.3
Testing/Commissioning	17.7	10.2	34.9	0.1	0.5	0.3
MAXIMUM OVERLAPPING EMISSIONS IN EACH YEAR						
2027	3.9	49.0	98.7	0.4	12.0	5.0
2028	5.0	92.8	122.3	0.6	14.5	6.2
2029	5.8	109.7	149.9	0.8	12.8	4.9

Activity/Year	Daily Emissions (lbs./day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2030	5.8	107.3	149.1	0.8	12.8	4.9
2031	5.9	110.3	158.2	0.8	13.4	5.1
2032	2.5	24.7	81.1	0.3	2.3	0.9
2033	1.4	11.1	46.8	0.1	0.6	0.3
2034	17.7	10.2	34.9	0.1	0.5	0.3
2035	17.7	10.2	34.9	0.1	0.5	0.3
REGIONAL EMISSIONS ANALYSIS						
Maximum Daily Emissions	**17.7**	**110.3**	**158.2**	**0.8**	**14.5**	**5.1**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	***No***	***Yes***	***No***	***No***	***No***	***No***

Source: TAHA, 2022

Results of the regional emissions analysis for construction of the Trench Option determined that maximum daily emissions of NO_X could exceed the applicable SCAQMD threshold of 100 lbs./day during light rail guideway trench activities in the years 2029–2031. Mitigation measure MM-AQ-1, Zero or Near Zero Emissions Haul Trucks, would be implemented, which would require the contractor to use ZE or NZE to the extent feasible for trucking activities. While ZE and NZE trucks are becoming increasingly available, the availability of these trucks to the extent required to bring NO_x emissions below the SCAQMD regional emissions threshold cannot be guaranteed and could still be exceeded during construction.

As a result, the Trench Option would result in a **significant and unavoidable impact** related to cumulatively considerable increases in emissions of O_3 precursors. The results of the emissions analysis determined that maximum daily emissions of VOC and particulate matter would remain below the applicable SCAQMD regional thresholds and impacts for these nonattainment pollutants would not be cumulatively considerable.

HAWTHORNE OPTION

Less than Significant Impact. The analysis of potential impacts associated with construction of the Hawthorne Option is like that which was presented for the Proposed Project and Trench Option, above. Table 3.4-17 presents the results of the regional emissions analysis for the Hawthorne Option, including maximum daily emission that would occur during each individual phase as well as overlapping activities. As shown below, maximum daily regional emissions during construction of the Hawthorne Option would remain below the applicable SCAQMD mass daily screening thresholds for all activities, including those that would be ongoing simultaneously. To estimate the potential worst-case scenario for emissions, the analysis assumed that maximum daily haul truck trips would occur simultaneously during each overlapping phase of construction, accounting for up to 150 trips (90% of trips being 70 miles round trip and 10% of trips being 140 miles round trip). The maximum daily haul truck trips summarized in would not occur every day throughout each phase or component of construction.

By evaluating conservative estimates of projected emissions that are possible, but likely higher than those that will occur, the results of the Hawthorne Option construction analysis preclude the possibility of cumulatively considerable net increases in O_3 precursors and particulate matter.

Table 3.4-17. Hawthorne Option Construction Emissions Analysis - Regional

Activity	Daily Emissions (lbs./day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
INDIVIDUAL PHASES						
Early Utility Relocation	2.2	16.5	63.6	0.2	9.6	4.6
Project Start-Up	1.8	37.8	41.2	0.2	6.7	1.1
Final Utility Relocations	2.2	16.3	65.6	0.2	3.4	1.6
LRT Guideway Bridges	2.6	26.4	68.3	0.2	14.2	2.7
Freight Retaining Walls	2.4	27.6	72.2	0.2	7.2	2.3
LRT Retaining Walls	2.3	14.3	70.8	0.1	3.6	1.6
Freight Trackwork (BNSF)	1.2	14.5	42.0	0.2	2.1	0.6
Stations and Access	2.0	14.7	59.0	0.1	1.7	0.6
LRT Trackwork	1.7	18.2	57.8	0.2	5.3	1.2
Systems Construction	1.4	11.1	46.8	0.1	0.6	0.3
Testing/Commissioning	15.1	10.2	34.9	0.1	0.5	0.3
MAXIMUM OVERLAPPING EMISSIONS IN EACH YEAR						
2029	4.2	50.1	103.5	0.4	16.7	5.5
2030	3.7	43.3	96.3	0.4	14.1	4.5
2031	3.5	39.8	92.4	0.3	12.5	4.1
2032	3.5	40.1	91.1	0.3	13.0	4.2
2033	1.4	11.1	46.8	0.1	0.6	0.3
2034	15.1	10.2	34.9	0.1	0.5	0.3
2035	15.1	10.2	34.9	0.1	0.5	0.3
REGIONAL EMISSIONS ANALYSIS						
Maximum Daily Emissions	**15.1**	**50.1**	**103.5**	**0.4**	**16.7**	**5.5**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***

Source: TAHA, 2022

As shown above, maximum daily regional emissions of VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ would remain considerably below the corresponding SCAQMD mass daily thresholds. Construction of the Hawthorne Option would result in a **less than significant impact** related to a cumulatively considerable increase in emissions of O_3 precursors or particulate matter, for which the region is presently designated nonattainment.

3.4-4.2.2 Operational Impacts

Less than Significant Impact. The current nonattainment designations for O_3 and particulate matter within the SCAB represent ongoing cumulatively significant air quality impacts, and the AQMP outlines the necessary emissions reductions—predominately of VOCs, NO_X, and $PM_{2.5}$—to achieve the ambient air quality standards on the established timeline. The AQMP is developed as part of the SIP, and the SCAG RTP/SCS has been approved as conforming to the SIP. The Proposed Project is listed in the

financially constrained project list for the *Connect SoCal* 2020–2045 RTP/SCS, signifying that it is a regionally significant transportation project that is critical to ensuring that emissions within the SCAB and the SCAG region are reduced on the committed timelines of the regional planning documents. Operation of the Proposed Project would extend existing Metro C Line (Green) service to the proposed Torrance TC, and the light rail vehicles would be propelled electrically through TPSSs installed along the corridor that would connect to the SCE grid. Operation of the Proposed Project would not introduce a substantial permanent source of emissions to the RSA and would provide air quality benefits.

The primary air quality effect of long-term Proposed Project operations would be the reduction of air pollutant emissions associated with displaced vehicle trips on the regional roadway network. Implementation of the Proposed Project would expand accessibility to high quality transit within the RSA and provide enhanced multimodal connectivity to commercial districts for commuters. Transportation modeling conducted to support the environmental document determined that implementation of the Proposed Project would reduce daily on-road regional VMT by approximately 34,500 miles relative to the 2042 without Project condition. Table 3.4-18 summarizes the incremental change in criteria air pollutant emissions in the horizon year of 2042 resulting from the reduction in VMT estimated using the CARB EMFAC mobile source emissions inventory model. Proposed Project operations would provide environmental benefits through replacing passenger vehicle trips with transit ridership and would indirectly decrease regional emissions of O_3 precursors and particulate matter. Operation of the Proposed Project would not result in a cumulatively considerable increase in nonattainment pollutant or precursor emissions, and this impact would be **less than significant**.

Table 3.4-18. Proposed Project Operations Emissions Analysis – 2042

Project Operations	Daily Emissions (lbs./day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Daily On-Road VMT Reduction	**(0.5)**	**(1.7)**	**(43.0)**	**(0.2)**	**(4.6)**	**(1.0)**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***

Source: TAHA, 2022

TRENCH OPTION

Less than Significant Impact. The analysis of the potential for cumulatively considerable nonattainment pollutant emissions resulting from operation of the Trench Option is like the impacts assessment presented for the Proposed Project, above. This approach is primarily due to the Trench Option following the same alignment as the Proposed Project, and therefore having the same influence on regional transportation patterns based on increased ridership and transit accessibility. Operation of the Trench Option light rail corridor would extend existing Metro C Line (Green) service to the proposed Torrance TC, improving regional transit accessibility and enhanced multimodal connectivity throughout the RSA. The Trench Option would follow the same Metro ROW alignment as the Proposed Project and would also indirectly decrease regional daily on-road VMT by approximately 34,500 miles relative to the future 2042 condition without its implementation. The reduction in regional VMT would incrementally decrease criteria pollutant emission by the estimated quantities disclosed in Table 3.4-19. The RTP/SCS project listing accurately characterizes the Trench Option, and therefore it also represents a critical regionally significant transportation improvement project to achieve the emission reduction targets outlined in the AQMP and the SCAG RTP/SCS.

Table 3.4-19. Trench Option Operations Emissions Analysis – 2042

Project Operations	Daily Emissions (lbs./day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Daily On-Road VMT Reduction	**(0.5)**	**(1.7)**	**(43.0)**	**(0.2)**	**(4.6)**	**(1.0)**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***

Source: TAHA, 2022

Operation of the Trench Option would result in a **less than significant impact** related to cumulatively considerable increases in nonattainment pollutants, which include O_3 precursors and particulate emissions for the regional RSA.

HAWTHORNE OPTION

Less than Significant Impact. The analysis of Hawthorne Option operations regarding cumulatively considerable increases of nonattainment pollutants (O_3 precursors and particulate matter) was prepared similarly to the analyses for the Proposed Project and the Trench Option. Through consultation with the Metro design team and engineers, it was determined that the primary effect with regards to air quality resulting from Hawthorne Option operations would also be attributed to the displacement of on-road vehicle trips and correlated reduction in regional VMT, since its operation would not introduce a new stationary or mobile source of direct air pollutant emissions to the RSA. Transportation modeling for the Hawthorne Option determined that its operation would produce a decrease of approximately 34,922 daily VMT through increased ridership resulting from enhanced transit accessibility relative to the future without project conditions. Table 3.4-20 presents the daily change in emissions that would occur with implementation of the Hawthorne Option.

Table 3.4-20. Hawthorne Option Operations Emissions Analysis – 2042

Project Operations	Daily Emissions (lbs./day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Daily On-Road VMT Reduction	**(0.5)**	**(1.7)**	**(43.4)**	**(0.2)**	**(4.6)**	**(1.0)**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***

Source: TAHA, 2022

As shown above, operation of the Hawthorne Option would result in small decreases of air pollutant emissions associated with passenger vehicle trips displacement. Operation of the Hawthorne Option would result in a **less than significant impact** regarding cumulatively considerable increases in nonattainment pollutant emissions.

3.4-4.3 Would the Project expose sensitive receptors to substantial pollutant concentrations?

3.4-4.3.1 Construction Impacts

Less than Significant Impact. The following analysis includes criteria air pollutants and toxic air contaminants. The assessment of potential impacts related to substantial criteria pollutant concentrations at sensitive receptor locations during construction of the Proposed Project was conducted in accordance with the SCAQMD *Final LST Methodology* guidance. The SCAQMD developed mass daily emissions screening values applicable to emissions from on-site construction sources using

ambient monitoring data and air dispersion modeling with receptors at setback distances of 25, 50, 100, 200, and 500 meters from the site boundary. The LST values represent limits on daily pollutant emissions below which concentrations of NO_X, CO, PM_{10}, and $PM_{2.5}$ would be assured not to exceed the ambient air quality standards at downwind receptor locations. The mass daily LST values correspond to the 38 SRAs into which the SCAQMD jurisdiction is divided and are specific to the size of the daily construction disturbance area and proximity of sensitive receptors.

The Proposed Project corridor is located entirely within SRA 3 and, as depicted in Figure 3.4-3 through Figure 3.4-5, would be situated within 50 feet of sensitive receptors at certain locations. Using the Proposed Project construction equipment inventories and the SCAQMD LST guidance (SCAQMD, 2019b), the analysis determined that up to five acres of ground area would be disturbed on a daily basis throughout the construction schedule. Table 3.4-21 summarizes the maximum daily onsite emissions that would be generated during construction of individual phase activities as well as the maximum localized emissions that would occur in each year during Proposed Project construction and compares them to the applicable SCAQMD LST screening values for a five-acre site.

Table 3.4-21. Proposed Project Construction Emissions Analysis – Localized

Phase/Activities	Daily On-Site Emissions (lbs./day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
INDIVIDUAL PHASES				
Early Utility Relocation	15.3	58.7	8.8	4.3
Project Start-Up	9.0	25.5	5.6	0.9
Final Utility Relocations	16.1	59.1	2.5	1.3
Freight Track Bridges	11.9	45.2	0.3	0.2
Freight Retaining Walls	15.0	59.6	7.3	2.0
LRT Retaining Walls	14.0	66.4	8.8	2.6
Freight At-Grade Crossings	13.4	48.7	0.4	0.2
LRT Guideway Bridges	14.9	59.4	3.5	0.8
Freight Trackwork (BNSF)	7.6	34.5	3.4	0.6
Stations and Access	14.7	54.1	0.9	0.3
LRT Trackwork	10.7	48.3	3.7	0.7
Systems Construction	10.2	45.6	0.1	0.1
Testing/Commissioning	10.1	34.3	0.2	0.2
OVERLAPPING ACTIVITIES IN EACH YEAR				
2027	18.8	71.8	9.2	3.7
2028	18.7	74.6	13.6	4.7
2029	18.4	73.3	7.7	1.4
2030	16.9	69.6	4.5	0.9
2031	10.2	45.6	0.1	0.1
2032	10.2	34.3	0.2	0.2
2033	10.2	34.3	0.2	0.2
LOCALIZED EMISSIONS ANALYSIS				
Maximum Daily On-Site Emissions	**18.8**	**74.6**	**13.6**	**4.7**
SCAQMD Five-Acre LST Screening Value	197	1,796	15	8
Threshold Exceeded?	***No***	***No***	***No***	***No***

Source: TAHA, 2022

Each of the scenarios presented assessed localized emissions generated by assuming 40 pieces of equipment per acre with receptors within 50 feet of the construction site boundary. The SCAQMD LST guidance asserts that LST values corresponding to receptors at a 25-meter distance should be used for receptors closer to the site. Pursuant to PF-AQ-1, all heavy-duty off-road equipment would be required to comply with the provisions of the Metro *Green Construction Policy* outlined in Table 3.4-14, which include engines meeting Tier 4 emissions standards and the use of Level 3-equivalent diesel particulate filters, where feasible. As disclosed in Table 3.4-21, maximum daily emissions of NO_X, CO, PM_{10}, and $PM_{2.5}$ generated by sources located on the Proposed Project construction sites would remain below the applicable corresponding SCAQMD LST screening values for all individual and combined activities analyzed. Therefore, construction of the Proposed Project would result in a less than significant impact regarding elevated concentrations of criteria pollutants at nearby sensitive receptor locations.

Regarding toxic air contaminants, construction of the Proposed Project would utilize diesel-fueled off-road equipment and on-road trucks, all of which would generate emissions of toxic air contaminants,

predominately in the form of diesel particulate matter. All diesel-fueled off-road equipment would be required to have engines meeting Tier 4 emissions standards, which would substantially reduce emissions of diesel particulate matter and other toxic gases. Additionally, all off-road equipment would be required to limit idling to no more than five minutes to minimize excess emissions and would be maintained in accordance with the optimal manufacturer specifications. Construction BMPs to limit diesel particulate emissions from on-road trucks near construction sites would include diverting truck traffic away from congested streets and intersections and avoiding peak hour trips where feasible. Compliance with the regulatory control measures and adherence to the BMPs, as well as the temporary and intermittent nature of construction activities at any particular location, would prevent the occurrence of substantial toxic air contaminant concentrations at sensitive receptors during Proposed Project construction.

Based on the above analyses, construction of the Proposed Project would result in a **less than significant impact** related to criteria pollutant concentrations and toxic air contaminants at sensitive receptor locations.

TRENCH OPTION

Less than Significant Impact. The impact assessment for construction of the Trench Option is similar to the analysis presented for the Proposed Project, above, as localized emissions primarily consider equipment operated on the construction site. To note, the daily equipment inventories that would be employed to construct the Trench Option would be similar to the equipment inventories used in construction of the Proposed Project components, with slight variations during a few of the earlier construction phases (see Appendix 2-B, Construction Methods Memorandum for detail). Table 3.4-22 presents a summary of the maximum daily emissions that would be generated by on-site sources during construction of the Trench Option and addresses the same combinations of activities as those that were analyzed for the Proposed Project. The maximum daily equipment activities for each phase and combination of activities were presented in Table 3.4-7. As shown below, construction of the Trench Option would not generate emissions of NO_X, CO, PM_{10}, or $PM_{2.5}$ in excess of the corresponding LST screening values during any individual phase or combination of activities. Therefore, construction of the Trench Option would result in a **less than significant impact** related to pollutant concentrations at nearby sensitive receptor locations.

Table 3.4-22. Trench Option Construction Emissions Analysis – Localized

Phase/Activities	Maximum Daily On-Site Emissions (lbs./day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
INDIVIDUAL PHASES				
Early Utility Relocation	14.1	60.8	8.2	4.2
Project Start-Up	9.0	25.5	0.2	0.1
Final Utility Relocations	14.0	62.7	2.3	1.3
Freight Track Bridges	10.1	49.7	1.1	0.4
Freight Retaining Walls	12.9	63.2	0.2	0.2
LRT Guideway Bridges	13.9	61.2	0.5	0.4
LRT Retaining Walls	12.9	68.2	2.5	1.3
Freight At-Grade Crossings	11.5	51.8	0.3	0.2
LRT Guideway Trench	15.9	108.7	3.2	1.5
Freight Trackwork (BNSF)	5.7	37.6	0.2	0.1
Stations and Access	13.2	56.6	0.4	0.3
LRT Trackwork	8.8	51.4	0.2	0.2
Systems Construction	10.2	45.6	0.1	0.1
Testing/Commissioning	10.2	34.3	0.2	0.2
OVERLAPPING ACTIVITIES IN EACH YEAR				
2027	16.8	71.6	8.2	4.2
2028	16.9	78.9	6.6	3.4
2029	17.9	99.6	3.7	1.5
2030	17.9	98.7	3.7	1.5
2031	17.6	105.4	3.5	1.5
2032	14.5	73.5	0.3	0.2
2033	10.2	45.6	0.1	0.1
2034	10.2	34.3	0.2	0.2
2035	10.2	34.3	0.2	0.2
LOCALIZED EMISSIONS ANALYSES				
Maximum Daily On-Site Emissions	**17.9**	**105.4**	**8.2**	**4.2**
SCAQMD Five-Acre LST Screening Value	197	1,796	15	8
Threshold Exceeded?	***No***	***No***	***No***	***No***

Source: TAHA, 2022

Regarding toxic air contaminants, construction of the Trench Option would utilize diesel-fueled off-road equipment and on-road trucks, all of which would generate emissions of toxic air contaminants, predominately in the form of diesel particulate matter. All diesel-fueled off-road equipment would be required to have engines meeting Tier 4 emissions standards, which would substantially reduce emissions of diesel particulate matter and other toxic gases. Additionally, all off-road equipment would be required to limit idling to no more than five minutes to minimize excess emissions and would be maintained in accordance with the optimal manufacturer specifications. Construction BMPs to limit diesel particulate emissions from on-road trucks near construction sites would include diverting truck traffic away from congested streets and intersections and avoiding peak hour trips where feasible. Compliance with the regulatory control measures and adherence to the BMPs, as well as the temporary

and intermittent nature of construction activities at any particular location, would prevent the occurrence of substantial toxic air contaminant concentrations at sensitive receptors during Hawthorne Option construction.

Therefore, construction impacts related to exposures of sensitive receptors to substantial criteria pollutant and toxic air contaminant concentrations would be **less than significant**.

HAWTHORNE OPTION

Less than Significant Impact. The impact assessment for construction of the Hawthorne Option is similar to the analysis presented for the Proposed Project, above, and nearly identical to the Trench Option. To note, despite the different alignment of the light rail corridor, the daily equipment inventories that would be employed to construct the Trench Option would be nearly identical to the equipment inventories used in construction of the Proposed Project components, with slight variations during a few of the earlier construction phases.

Table 3.4-23 presents a summary of the maximum daily emissions that would be generated by on-site sources during construction of the Hawthorne Option and addresses the same combinations of activities as those that were analyzed for the Proposed Project. The maximum daily equipment activities for each phase and combination of activities were presented in Table 3.4-8. As shown below, construction of the Hawthorne Option would not generate emissions of NO_X, CO, PM_{10}, or $PM_{2.5}$ in excess of the corresponding LST screening values during any individual phase or combination of activities. Therefore, construction of the Hawthorne Option would result in a **less than significant impact** related to criteria pollutant concentrations at nearby sensitive receptor locations, and there would be no possibility of public health concerns arising during construction activities.

Table 3.4-23. Hawthorne Option Construction Emissions Analysis – Localized

Phase/Activities	Daily On-Site Emissions (lbs./day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
INDIVIDUAL PHASES				
Early Utility Relocation	14.3	60.7	8.6	4.3
Project Start-Up	9.0	25.5	4.1	0.7
Final Utility Relocations	14.0	62.7	2.4	1.3
LRT Guideway Bridges	13.9	61.2	12.8	2.2
Freight Retaining Walls	12.9	63.2	5.4	1.7
LRT Retaining Walls	12.9	68.2	2.6	1.3
Freight Trackwork (BNSF)	5.7	37.6	1.5	0.3
Stations and Access	13.4	56.5	0.7	0.3
LRT Trackwork	8.8	51.4	3.8	0.7
Systems Construction	10.2	45.6	0.1	0.1
Testing/Commissioning	10.2	34.3	0.2	0.2

Phase/Activities	Daily On-Site Emissions (lbs./day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
OVERLAPPING ACTIVITIES IN EACH YEAR				
2029	17.7	78.8	10.5	3.5
2030	17.5	78.7	10.1	3.2
2031	16.7	76.3	8.7	2.9
2032	16.2	73.8	8.6	2.8
2033	10.2	45.6	0.1	0.1
2034	10.2	34.3	0.2	0.2
FIVE-ACRE SITE ANALYSES				
Maximum Daily On-Site Emissions	**17.7**	**78.8**	**12.8**	**4.3**
SCAQMD Five-Acre LST Screening Value	197	1,796	15	8
Threshold Exceeded?	***No***	***No***	***No***	***No***

Source: TAHA, 2022

Regarding toxic air contaminants, construction of the Hawthorne Option would utilize diesel-fueled off-road equipment and on-road trucks, all of which would generate emissions of toxic air contaminants, predominately in the form of diesel particulate matter. All diesel-fueled off-road equipment would be required to have engines meeting Tier 4 emissions standards, which would substantially reduce emissions of diesel particulate matter and other toxic gases. Additionally, all off-road equipment would be required to limit idling to no more than five minutes to minimize excess emissions and would be maintained in accordance with the optimal manufacturer specifications. Construction BMPs to limit diesel particulate emissions from on-road trucks near construction sites would include diverting truck traffic away from congested streets and intersections and avoiding peak hour trips where feasible. Compliance with the regulatory control measures and adherence to the BMPs, as well as the temporary and intermittent nature of construction activities at any particular location, would prevent the occurrence of substantial toxic air contaminant concentrations at sensitive receptors during Hawthorne Option construction.

Therefore, construction impacts related to exposures of sensitive receptors to substantial criteria pollutant and toxic air contaminant concentrations would be **less than significant**.

3.4-4.3.2 Operational Impacts

Less than Significant Impact. The following analysis includes criteria air pollutants, mobile source air toxics, and CO hot-spots.

Regarding criteria air pollutants, operation of the Proposed Project would extend the existing Metro C (Green) Line light rail and would not introduce a new substantial permanent direct source of emissions to the RSA. No direct source of air pollutant emissions along the Proposed Project alignment would occur as the light rail cars, stations, and systems and signals would be electrically powered and connected to the SCE grid. Minor stationary sources would be associated with the use of landscaping equipment and sanitation service vehicle trips at station facilities. Proposed Project operations would not involve a facility where a significant number of vehicles would dwell and would not deteriorate congestion at nearby intersections. Operation of the Proposed Project would not have the potential to expose sensitive receptors to substantial pollutant concentrations; impacts would be less than significant.

Regrading mobile source air toxics, federal and state regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. An analysis of national trends with the USEPA MOVES model forecasts a combined reduction of over 80% in the total annual emission rate for the priority MSAT from 2010 to 2050 and VMT is projected to increase by over 100%. MSAT emissions are directly correlated to VMT; therefore, reductions in daily MSAT emissions would result through Proposed Project implementation. Operation of the Proposed Project would reduce daily regional VMT by approximately 34,500 miles relative to the 2042 without Project conditions, thereby decreasing daily MSAT emissions throughout the RSA. The Proposed Project would not result in adverse effects related to MSAT emissions.

Regarding CO hot-spots, although the SCAB is designated as a maintenance area for CO, it is no longer a pollutant of concern in the region. According to CARB, the NAAQS for CO was last exceeded in 2002. The SCAQMD last published data for 2020 included maximum 1- and 8-hour concentrations of 1.6 and 1.3 parts per million (ppm), respectively, in the Proposed Project area. These concentrations were substantially below the 1- and 8-hour NAAQS of 20 and 9 ppm. The Proposed Project is planned to open in 2030. As indicated in the CARB EMFAC model, CO emission rates would be substantially less in 2030 than in 2003 when CO attainment was demonstrated in the AQMP. Therefore, operation of the Proposed Project would not result in a significant impact related to a CO hot spot.

Based on the above analyses, operation of the Proposed Project would result in a **less than significant impact** related to criteria pollutant concentrations, toxic air contaminants, and CO hot-spots.

TRENCH OPTION

Less than Significant Impact. The impacts assessment for the Trench Option is like the analysis presented for the Proposed Project, as operations will occur along the same alignments and use the same operating pattern and equipment. Long-term operation of the Trench Option would not introduce any new direct source of criteria pollutant or TAC emissions to the regional or localized RSA. Metro employee vehicle trips would not be expected to increase with implementation of the Trench Option, and the light rail vehicles would be propelled by electricity with no internal combustion occurring that would produce hydrocarbon and other pollutant emissions. Furthermore, operation of the Trench Option would reduce daily regional VMT by approximately 34,500 miles relative to the 2042 without Project condition, thereby decreasing daily MSAT emissions throughout the RSA. Operation of the Trench Option would result in a **less than significant impact** related to substantial pollutant concentrations at receptor locations.

HAWTHORNE OPTION

Less than Significant Impact. The impacts assessment for the Hawthorne Option is like to the analysis presented for the Proposed Project, as operations would occur along a similar alignment and use the same operating pattern and equipment. Long-term operation of the Hawthorne Option would not introduce any new direct source of criteria pollutant or TAC emissions to the regional or localized RSA. Metro employee vehicle trips would not be expected to increase with implementation of the Hawthorne Option, and the light rail vehicles would be propelled by electricity with no internal combustion occurring that would produce hydrocarbon and other pollutant emissions. Furthermore, operation of the Hawthorne Option would reduce daily regional VMT by approximately 34,900 miles relative to the 2042 without Project condition, thereby decreasing daily MSAT emissions throughout the RSA. Operation of the Hawthorne Option would result in a **less than significant impact** related to substantial pollutant concentrations at nearby receptor locations.

3.4-4.4 Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

3.4-4.4.1 Construction Impacts

Less than Significant Impact. Construction activities to implement the Proposed Project would not generate a substantial source of construction odors or visible dust plumes. Construction of the Proposed Project would result in temporary exhaust fumes through gasoline or diesel-powered equipment and asphalt paving. Such emissions would occur intermittently, and associated odors would dissipate rapidly within the immediate vicinity of the work area. Regarding the possibility of fugitive dust plumes occurring, construction activities would incorporate PF-AQ-1 and adhere to the provisions of the Metro Green Construction Policy and employ BMPs to prevent the occurrence of a nuisance odor or dust plume in accordance with SCAQMD Rule 402 (Nuisance). Therefore, construction of the Proposed Project would result in a **less than significant impact** related to public nuisance for odors or visible dust plumes.

TRENCH OPTION

Less than Significant Impact. The analysis of Trench Option construction impacts related to public nuisances is identical to the analysis for the Proposed Project. Construction activities to implement the Trench Option would not generate a substantial source of construction odors or visible dust plumes. Construction of the Trench Option would result in temporary exhaust fumes through gasoline or diesel-powered equipment and asphalt paving. Such emissions would occur intermittently, and associated odors would dissipate rapidly within the immediate vicinity of the work area. Regarding the possibility of fugitive dust plumes occurring, construction activities would incorporate PF-AQ-1 adhere to the provisions of the Metro Green Construction Policy and employ BMPs to prevent the occurrence of a nuisance odor or dust plume in accordance with SCAQMD Rule 402 (Nuisance). Therefore, construction of the Trench Option would result in a **less than significant impact** related to public nuisance for odors or visible dust plumes.

HAWTHORNE OPTION

Less than Significant Impact. The analysis of Hawthorne Option construction impacts related to public nuisances is identical to the analysis for the Proposed Project. Construction activities to implement the Hawthorne Option would not generate a substantial source of construction odors or visible dust plumes. Construction of the Hawthorne Option would result in temporary exhaust fumes through gasoline or diesel-powered equipment and asphalt paving. Such emissions would occur intermittently, and associated odors would dissipate rapidly within the immediate vicinity of the work area. Regarding the possibility of fugitive dust plumes occurring, construction activities would incorporate PF-AQ-1 and adhere to the stringent provisions of the Metro Green Construction Policy and employ BMPs to prevent the occurrence of a nuisance odor or dust plume in accordance with SCAQMD Rule 402 (Nuisance). Therefore, construction of the Hawthorne Option would result in a **less than significant impact** related to public nuisance for odors or visible dust plumes.

3.4-4.4.2 Operational Impacts

Less than Significant Impact. Future operation of the Proposed Project would not involve a substantial source of odorous or particulate emissions that could cause public nuisances. Land uses and industrial operations commonly associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. Any unpleasant odors from transit operations would be subject to management under the

odor complaint tracking system mandated by SCAQMD Rule 402 (Nuisance), which prevents nuisance odor conditions. With regards to the experience of future transit riders, Metro's heavy and light rail cars use high-efficiency air filters rated at MERV-8 or higher that recirculate air in between every two to four minutes. The onboard filtration systems would prevent the occurrence of persistent odors affecting future transit riders. As a result, operation of the Proposed Project would have a minor, if any, impact with respect to odors. Therefore, the Proposed Project would result in a **less than significant impact** related to operational odors.

TRENCH OPTION

Less than Significant Impact. The assessment of potential nuisance conditions resulting from Trench Option operations is identical to the analysis for the Proposed Project. Future operation of the Trench Option would not involve a substantial source of odorous or particulate emissions that could cause public nuisances. Land uses and industrial operations commonly associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. Any unpleasant odors from transit operations would be subject to management under the odor complaint tracking system mandated by SCAQMD Rule 402 (Nuisance), which prevents nuisance odor conditions. With regards to the experience of future transit riders, Metro's heavy and light rail cars use high-efficiency air filters rated at MERV-8 or higher that recirculate air in between every two to four minutes. The onboard filtration systems would prevent the occurrence of persistent odors affecting future transit riders. As a result, operation of the Trench Option would have a minor, if any, impact with respect to odors. Therefore, the Trench Option would result in a **less than significant impact** related to operational odors.

HAWTHORNE OPTION

Less than Significant Impact. The assessment of potential nuisance conditions resulting from Hawthorne Option operations is similar to the analysis for the Proposed Project. Future operation of the Hawthorne Option would not involve a substantial source of odorous or particulate emissions that could cause public nuisances. Land uses and industrial operations commonly associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. Any unpleasant odors from transit operations would be subject to management under the odor complaint tracking system mandated by SCAQMD Rule 402 (Nuisance), which prevents nuisance odor conditions. With regards to the experience of future transit riders, Metro's heavy and light rail cars use high-efficiency air filters rated at MERV-8 or higher that recirculate air in between every two to four minutes. The onboard filtration systems would prevent the occurrence of persistent odors affecting future transit riders. As a result, operation of the Hawthorne Option would have a minor, if any, impact with respect to odors. Therefore, the Hawthorne Option would result in a **less than significant impact** related to operational odors.

3.4-5 Mitigation Measures

MM-AQ-1: Zero or Near Zero Emissions Haul Trucks

Metro shall require ZE or NZE on-road haul trucks such as heavy-duty trucks with natural gas engines that meet or exceed the CARB's adopted optional NOx emissions standard at 0.02 g/bhp-hr, if and when feasible. Operators shall maintain records of all trucks associated with project construction to document that each truck used meets these emission standards, and make the records available for inspection. Metro shall conduct regular inspections to the maximum extent feasible to ensure compliance.

3.4-6 Project Impacts Remaining After Mitigation

3.4-6.1 Proposed Project

No mitigations measures are required for the Proposed Project, therefore there would be no significant impacts after mitigation.

3.4-6.2 Trench Option

Although construction of the Trench Option would require implementation of mitigation measure MM-AQ-1, it is not technically feasible at the time of document preparation to verify the commercial availability of ZE and NZE trucks to the extent needed to reduce NOx impacts below SCAQMD's regional emissions threshold in the scenario years of 2029–2031. Without being able to confirm that sufficient ZE and NZE trucks would be available for use in construction of the Trench Option, this impact would remain **significant and unavoidable**.

3.4-6.3 Hawthorne Option

No mitigations measures are required for the Hawthorne Option, therefore there would be no significant impacts after mitigation.

3.4-7 Cumulative Impacts

The methodology for cumulative analysis and a description of relevant projects and projections are included in Section 3.0, Introduction. The geographic extent of the cumulative analysis for Air Quality is the same as the defined RSA; it includes the SCAB at the regional level and an area encompassing 500 meters (1,640 feet) from the project alignment along the corridor in all directions at the localized level. The regional and local RSAs are discussed in greater detail in Section 3.4-3. The analysis of cumulative impacts was prepared in accordance with guidance contained in the SCAQMD White Paper on cumulative impacts analyses under CEQA. Emissions that would be generated during construction and future operation were evaluated in the cumulative context for each alternative.

Despite substantial growth in population, air quality within the SCAB has been gradually improving over the past several decades as a result of robust regulatory control measures administered at the federal, state, and regional levels. The SCAB is currently in attainment or maintenance of the ambient air quality standards for CO, NO_2, and SO_2, and is designated as nonattainment for O_3 and $PM_{2.5}$ at the federal level and nonattainment for O_3, PM_{10}, and $PM_{2.5}$ at the state level. The final attainment demonstration for the federal CO standard was prepared in 2003. The nonattainment designations represent ongoing significant cumulative air quality impacts within the RSA; therefore, emissions of O_3 precursors and particulate matter associated with implementation of the project alternatives are of particular concern. The SCAQMD prepares the AQMP to evaluate contemporary SCAB air quality and the emissions inventory and forecast control strategies to ultimately bring the SCAB into attainment of the ambient air quality standards. The AQMP emissions budgets are partially developed based on the RTP/SCS, and the two planning documents are developed in conjunction with one another. The 2016 AQMP determined that total SCAB emissions of NO_X must be reduced by 45% from 2012 levels in 2023 and by a further 55% in 2031 to attain the O_3 standard on the timeline set forth.

Emissions of TACs within the SCAB have also declined over the past several decades. As discussed under Section 3.4-3.2, the SCAQMD 2018–2019 MATES V report concluded that emissions of carcinogens within the SCAB had decreased by 48% since the 2012–2013 MATES IV Study, and both the average SCAB monitored (40% decrease) and modeled (54% decrease) ambient carcinogenic risks had been substantially reduced over the six-year timeframe between MATES publications. Approximately 48% of

this risk was attributed to emissions associated with off-road mobile sources and approximately 40% was attributed to on-road mobile sources, with approximately 7% from area sources and 5% from point sources. Diesel PM comprised approximately 72% of the total ambient carcinogenic risk, and average diesel PM concentrations were 53% lower than those measured in MATES IV. Compliance with the CARB diesel program requirements for heavy-duty commercial diesel trucks beginning in January 2023 will further reduce diesel particulate emissions into the future.

3.4-1.1. Proposed Project

Construction of the Proposed Project would generate emissions of air pollutants through the use of heavy-duty off-road equipment and light- and heavy-duty on-road vehicles. In addition to diesel exhaust fumes, off-road equipment would produce fugitive emissions including dust during ground disturbance and material stockpiling and volatile asphalt off-gassing during paving activities. As shown in Table 3.4-15, construction activities associated with implementation of the Proposed Project would not generate mass daily emission in excess of any regional-scale SCAQMD threshold for individual projects under CEQA. The SCAQMD White Paper on cumulative impacts explicitly asserts that,

> *"projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."*

Attainment of the air quality standards is accomplished at the regional level, and the SCAQMD clearly adopted the rationale that projects with mass daily emissions below the regional screening thresholds would not generate sufficient air pollution to render cumulative impacts potentially significant. The discussions provided under impact criteria 3.4-4.1 and 3.4-4.2 determined that the Proposed Project would not contribute to an exacerbation of air quality violations or emit cumulatively considerable quantities of pollutants for which the SCAB is currently designated nonattainment, respectively. Although construction of other CEQA projects would occur within the SCAB during construction of the Proposed Project, emissions generated by sources involved in Proposed Project construction would not be cumulatively considerable for nonattainment pollutants and would also not be cumulatively significant based on the SCAQMD guidance.

Furthermore, the analysis presented under impact criterion 3.4-4.3 demonstrated that construction of the Proposed Project would not generate localized emissions of NO_X, CO, or particulate matter in excess of the applicable LST screening values. The SCAQMD LST screening values were designed to prevent the occurrence of unhealthy pollutant concentrations reaching sensitive receptors near construction sites. The same SCAQMD cumulative significance rationale can be applied to the localized emissions. Although it is possible that construction of other CEQA projects may occur within the localized RSA during construction of the Proposed Project, emissions from Proposed Project construction would be controlled to the maximum extent feasible through implementation of BMPs contained within the Metro Green Construction Policy and would not exceed the SRA 3 LST screening values. Therefore, construction of the Proposed Project would result in less than significant cumulative impacts at both the regional and localized geographic scales.

Following the completion of construction activities, long-term operation of the Proposed Project would not introduce a new substantial stationary, area, or mobile source of air pollutant emissions into the SCAB. The primary effect of Proposed Project operations on regional air quality would be the displacement of on-road VMT resulting from increased transit ridership. Operation of the Proposed

Project would reduce emissions of air pollutants within the SCAB overall through the elimination of passenger vehicle trips. The 2016 AQMP emissions budgets are partially developed based on the 2016–2040 RTP/SCS, and the two planning documents are developed in conjunction with one another. The Proposed Project is included in the 2016–2040 RTP/SCS and the *Connect SoCal* 2020–2045 RTP/SCS under RTP ID 1TR1001 and FTIP ID LA0G632, which demonstrates that the regional transportation and emissions modeling budget in the 2016 AQMP accounts for implementation of the Proposed Project in its conformity demonstration. Therefore, operation of the Proposed Project would not contribute in a significant way to cumulative effects related to air quality violations, timely attainment of the air quality standards, or emissions of nonattainment pollutants. Operation of the Proposed Project would not introduce a substantial new source of emissions that could result in sensitive receptor exposures to unhealthy localized pollutant concentrations or public nuisances related to odors.

The Proposed Project—combined with past, present, and reasonably foreseeable projects—would not be cumulatively considerable.

3.4-1.2. Trench Option

From a cumulative standpoint, the analysis of potential air quality impacts during construction of the Trench Option is similar to the assessment presented above for the Proposed Project. The discussions provided under impact criteria 3.4-4.1 and 3.4-4.2 determined that the Trench Option could potentially contribute to an exacerbation of air quality violations or emit cumulatively considerable quantities of pollutants for which the SCAB is currently designated nonattainment in the form of NO_X, an atmospheric precursor to O_3 formation. Construction of other CEQA projects would occur within the SCAB during construction of the Trench Option, and emissions generated by sources involved in construction activities to implement the Trench Option would be **cumulatively considerable** for nonattainment pollutants and would also be **cumulatively significant** at the regional level based on the SCAQMD guidance even with mitigation measure MM-AQ-1.

Similar to the assessment of construction emissions, the analysis of potential cumulative air quality impacts during operation of the Trench Option is congruent with the discussion presented above for the Proposed Project. The primary effect of Trench Option operations on regional air quality would be the displacement of on-road VMT resulting from increased transit ridership. Operation of the Trench Option would reduce emissions of air pollutants within the SCAB overall through the elimination of passenger vehicle trips. The 2016 AQMP emissions budgets are partially developed based on the 2016–2040 RTP/SCS, and the two planning documents are developed in conjunction with one another. The Trench Option is sufficiently characterized under the project description in the *Connect SoCal* 2020–2045 RTP/SCS under RTP ID 1TR1001 and FTIP ID LA0G632, which demonstrates that the regional transportation and emissions modeling budget in the 2022 AQMP accounts for implementation of the Proposed Project in its conformity demonstration. Therefore, operation of the Trench Option would not contribute in a significant way to cumulative effects related to air quality violations, timely attainment of the air quality standards, or emissions of nonattainment pollutants. Operation of the Trench Option would not introduce a substantial new source of emissions that could result in sensitive receptor exposures to unhealthy localized pollutant concentrations or public nuisances related to odors.

The Trench Option—combined with past, present, and reasonably foreseeable projects—could result in **cumulatively considerable impacts** during construction.

3.4-1.3. Hawthorne Option

From a cumulative standpoint, the analysis of potential air quality impacts during construction of the Hawthorne Option is similar to the assessment presented above for the Proposed Project and the Trench Option. The discussions provided under impact criteria 3.4-4.1and 3.4-4.2 determined that the Hawthorne Option would not contribute to an exacerbation of air quality violations or emit cumulatively considerable quantities of pollutants for which the SCAB is currently designated nonattainment, respectively. Although construction of other CEQA projects would occur within the SCAB during construction of the Hawthorne Option, emissions generated by sources involved in construction activities would not be cumulatively considerable for nonattainment pollutants and would also not be cumulatively significant based on the SCAQMD guidance.

Similar to the assessment of construction emissions, the analysis of potential cumulative air quality impacts during operation of the Hawthorne Option is congruent with the discussions presented above for the Proposed Project and the Trench Option. The primary effect of Hawthorne Option operations on regional air quality would be the displacement of on-road VMT resulting from increased transit ridership. Operation of the Hawthorne Option would reduce emissions of air pollutants within the SCAB overall through the elimination of passenger vehicle trips. The 2016 AQMP emissions budgets are partially developed based on the 2016–2040 RTP/SCS, and the two planning documents are developed in conjunction with one another. The Hawthorne Option is sufficiently characterized under the project description in the 2016–2040 RTP/SCS and the *Connect SoCal* 2020–2045 RTP/SCS under RTP ID 1TR1001 and FTIP ID LA0G632, which demonstrates that the regional transportation and emissions modeling budget in the 2016 AQMP accounts for implementation of the Hawthorne Option in its conformity demonstration. Therefore, operation of the Hawthorne Option would not contribute in a significant way to cumulative effects related to air quality violations, timely attainment of the air quality standards, or emissions of nonattainment pollutants. Furthermore, operation of the Hawthorne Option would not introduce a substantial new source of emissions that could result in sensitive receptor exposures to unhealthy localized pollutant concentrations or public nuisances related to odors.

The Hawthorne Option—combined with past, present, and reasonably foreseeable projects—would not be cumulatively considerable.

3.5 GREENHOUSE GAS EMISSIONS

This section of the Draft EIR provides an analysis of the potential impacts on greenhouse gas (GHG) emissions.

3.5-1 Regulatory Framework

Federal, state, regional and local regulations concerning GHG emissions are described in the following section.

3.5-1.1 Federal Regulations

Federal Clean Air Act

The Clean Air Act is the law that defines the United States Environmental Protection Agency (USEPA) responsibilities for protecting and improving the nation's air quality and the stratospheric ozone layer. In Massachusetts v. Environmental Protection Agency, 127 S.Ct. 1438 (2007), the Supreme Court found that carbon dioxide (CO_2) and other GHGs are pollutants under the Federal Clean Air Act, which the USEPA must regulate if it determines they pose an endangerment to public health or welfare. On December 7, 2009, the USEPA made two distinct findings: 1) that the current and projected concentrations of the six key GHGs [CO_2, methane (CH4), nitrous oxide (N2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride] in the atmosphere threaten the public health and welfare of current and future generations; and 2) that the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare.

Although these findings did not themselves impose any requirements, this action was a prerequisite to finalizing the USEPA's GHG emission standards for light-duty vehicles. In December 2021, the USEPA adopted revised national GHG emission standards for passenger cars and light trucks for Model Years 2023–2026.

Executive Order (EO) 14037, issued by President Biden on August 5, 2021, directs the USEPA and the National Highway Traffic Safety Administration (NHTSA) to develop standards for fuel economy and GHG emissions for medium- and heavy-duty vehicles by December 2022.

United States Department of Transportation Climate Action Plan

First published in 2012 and subsequently updated in 2014 and 2021, the latest iteration of the United States Department of Transportation (USDOT) Climate Action Plan (CAP) (2021) focuses on climate adaptation and resilience across agency programs and the management of Federal procurement, real property, public lands and water, and financial programs. The USDOT 2012 CAP focused on forecasted impacts of climate change on USDOT's facilities and critical mission activities (i.e., safety, state of good repair, and federally owned building environmental sustainability), and the 2014 CAP provided an update on USDOT climate adaptation accomplishments to date and outlined commitments in FY2013 and FY2014. The 2021 CAP contains the following actions and goals to address the resilience of the nation's transportation infrastructure to future effects of climate change and is presented in Table 3.5-1.

Table 3.5-1. United States Department of Transportation - Climate Action Plan 2021 Actions and Goals

Priority Action	Action Goal
Incorporate Resilience into USDOT Grant and Loan Programs	Ensure that projects supported by USDOT discretionary grant and loan programs incorporate effective climate change resiliency protective features, where possible.
Enhance Resilience Throughout Project Planning and Development	Ensure federally funded transportation projects are planned, designed, and constructed to be resilient to future climate change impacts.
Ensure Resiliency of USDOT Facilities and Operational Assets	Ensure that USDOT facilities and operational assets are resilient to the effects of climate, implementing priority adaptation actions at mission critical assets across the nation.
Ensure Climate-Ready Services and Supplies	USDOT will provide education and facilitation to support and encourage program management acquisition of innovative, novel services and supplies to advance the Department's ability to adapt to climate change.
Improve Climate Education and Research on Resilience	Increase climate change education among internal USDOT employees and ensure continued research in development to help fill gaps in climate change knowledge and use of new technologies.

Source: USDOT, 2021

Federal Transit Administration Climate Change Adaptation Initiative

The Federal Transit Administration (FTA) has implemented a Climate Change Adaptation Initiative program to investigate potential strategies for reducing climate impacts on transit infrastructure and enhancing climate resilience. The program conducted seven climate adaptation pilot studies to increase knowledge of how transit agencies can adapt to climate change, advance the state of the practice in adapting transit assets and operations to the impacts of climate change, and build strategic partnerships between transit agencies and climate adaptation experts. The approach of the pilot projects involved identification of climate hazards and potential climatic events, characterization of risks on transit projects and operations, development of initial adaptation strategies, and linking strategies to organizational structures. Metro was selected as one of the pilot study transit systems and a report was prepared to analyze climate adaptation opportunities, entitled *LACMTA Climate Change Adaptation Pilot Project Report*.

Federal Highway Administration Carbon Reduction Program

Established by the passage of the 2021 Bipartisan Infrastructure Law, the Federal Highway Administration's (FHWA) Carbon Reduction Program (CRP) provides funds for projects designed to reduce transportation emissions, defined as CO_2 emissions from on-road highway sources. The CRP requires each state to develop a carbon reduction strategy no later than two years after enactment and update the strategy at least every four years. The state-level carbon reduction strategy shall support efforts—and identify projects and strategies—to support the reduction of transportation-related GHG emissions and quantify the total carbon emissions from production, transport, and use of materials used in the construction of transportation facilities in the state. Under the CRP, the FHWA is tasked with reviewing the states' process for developing its carbon reduction strategy and certify that the strategy meets statutory requirements.

3.5-1.2 State Actions

Assembly Bill 32 (AB), Senate Bill (SB) 32, and the Climate Change Scoping Plan

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 California Air Resources Board (CARB) to develop a scoping plan that describes the approach California will take to reduce GHGs to achieve the goal of reducing emissions to 1990 levels by 2020. The Climate Change Scoping Plan was first approved by the CARB in 2008, recertified in 2011, and provided a mix of recommended strategies to reduce GHG emissions through direct regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs cumulatively designed to meet the 2020 statewide target.

The First Update to the Climate Change Scoping Plan was approved by CARB on May 22, 2014, and built upon the framework established in the initial iteration, and also presented considerations for achieving the state objective of reducing GHG emissions to 80% below 1990 levels by 2050, originally set forth by EO S-3-05 and also Governor Brown's EO B-16-12 (which is specific to the transportation sector).

In 2016, the Legislature passed SB 32, which codifies a 2030 GHG emissions reduction target of 40% below 1990 levels, as originally established in EO B-30-15. In response to the evolving legislation addressing statewide GHG emissions reductions, CARB published California's 2017 Climate Change Scoping Plan in November 2017 to incorporate the 2030 target. The 2017 Climate Change Scoping Plan approach is multi-faceted and includes elements such as doubling building efficiency; 50% renewable power; more clean, renewable fuels; cleaner zero or near-zero emission cars, trucks, and buses; multimodal communities with opportunities for active transportation and transit; cleaner freight and goods movement; capping emissions from transportation, industry, natural gas, and electricity; and investing in communities to reduce emissions.

In December 2022, CARB approved the 2022 Scoping Plan for Achieving Carbon Neutrality (CARB, 2022a). The 2022 Scoping Plan Update assesses progress toward the statutory 2030 target, while laying out a technologically feasible, cost-effective, and equity-focused path to achieving carbon neutrality no later than 2045. The Final 2022 Scoping Plan Update sets a target of reducing statewide GHG emissions by 85% by 2045 to achieve its ambitious goals. Additionally, CARB forecasts that effective implementation of the 2022 Scoping Plan will reduce statewide demand for petroleum by 94% and cut air pollution by 71%by the 2045 horizon year. The 2022 Scoping Plan includes a commitment to build no new fossil gas-fired power plants and increases support for mass transit.

Assembly Bill 1493

AB 1493 amended the Clean Car Standards (Chapter 200, Statutes of 2002), which required CARB to develop and adopt GHG emission standards for automobiles. These standards are also known as the "Pavley I", regulations and required reductions in GHG emissions in new passenger vehicles from 2009 through 2016. The Clean Car Standards required CARB to develop and adopt standards for vehicle manufacturers to reduce GHG emissions coming from passenger vehicles and light duty trucks at a "maximum feasible and cost-effective reduction" by January 1, 2005. Pavley I took effect for model years starting in 2009 to 2016; and Pavley II, which is now referred to as Low Emission Vehicle III GHG, covers 2017 to 2025. Fleet average emission standards would reach 22% reduction by 2012 and 30% by 2016.

In January 2012, CARB adopted the Advanced Clean Cars program to extend AB 1493 through model years 2017 to 2025. This program promotes all types of clean fuel technologies such as plug-in hybrids,

battery electric vehicles, compressed natural gas vehicles, and hydrogen powered vehicles while reducing smog and saving consumers' money in fuel costs. Fuel savings may rise to 25% by 2025.

Senate Bill 375

SB 375 was enacted in 2008 to reduce GHG emissions from automobiles and light trucks through integrated transportation, land use, housing, and environmental planning. SB 375 has three major components: 1) using the regional transportation planning process to achieve reductions in GHG emissions consistent with AB 32's goals; 2) offering CEQA incentives to encourage projects that are consistent with a regional plan that achieves GHG emission reductions; and 3) coordinating the regional housing needs allocation process with the regional transportation process while maintaining local authority over land use decisions. Under the law, Metropolitan Planning Organizations (MPOs) are tasked with incorporating Sustainable Communities Strategies (SCS) as an element in Regional Transportation Plans (RTP). The SCS documents are intended to:

- Identify the general location of uses, residential densities, and building intensities within the region;
- Identify areas within the region sufficient to house all the population of the region, including all economic segments of the population, over the course of the planning period of the RTP taking into account net migration into the region, population growth, household formation and employment growth;
- Identify areas within the region sufficient to house an eight-year projection of the regional housing need for the region;
- Identify a transportation network to service the transportation needs of the region;
- Gather and consider the best practically available scientific information regarding resource areas and farmland in the region;
- Consider the state housing goals;
- Set forth a forecasted development pattern for the region, which, when integrated with the transportation network, and other transportation measures and policies, will reduce the GHG emissions from automobiles and light trucks to achieve, if there is a feasible way to do so, the GHG emission reduction targets approved by the state board; and,
- Allow the RTP to comply with the Clean Air Act.

State Cap-and-Trade Program

This program creates a market-based system with an overall emissions limit for affected sectors, including electric utilities, large industrial facilities and distributors of transportation, natural gas, and other fuels. Landmark checkpoint targets of the state Cap-and-Trade Program include reducing GHG emissions to 1990 levels by 2020, and ultimately achieving an 80% reduction from 1990 levels by 2050. Under the Cap-and-Trade Program, an overall limit on GHG emissions from capped sectors are established and facilities subject to the cap will be able to trade permits (allowances) to emit GHGs.

California's Renewables Portfolio Standard (SBs 1078/107/X 1-2/100)

SB 1078 and 107, California's Renewables Portfolio Standard (RPS), obligated investor-owned energy service providers and Community Choice Aggregations to procure an additional one percent of retail sales per year from eligible renewable sources until 20% was reached (by 2010). The California Public

Utilities Commission and California Energy Commission are jointly responsible for implementing the program.

SB X 1-2, called the California Renewable Energy Resources Act, obligates all California electricity providers to obtain at least 33% of their energy from renewable resources by 2020.

The passage of SB 100—The 100% Clean Energy Act of 2018 (2018)—updated the state's RPS to ensure that by 2030 at least 60% of statewide electricity is renewably sourced, set a goal of powering all retail electricity sold in the state, and supporting state agency electricity needs with renewable and zero-carbon resources by 2045. SB 100 also requires annual Joint Agency Reports to be prepared to track progress on expanding the availability of renewable resources and to assess the potential of emerging technologies in aiding the State's efforts to reduce GHG emissions from the energy sector. The first Joint Agency Report was published in 2021 and determined that approximately 63% of California's electricity retail sales in 2019 came from non-fossil fuel sources thanks to a combination of renewables, hydroelectric, and nuclear generation.

California Green Building Standards Code (CALGreen)

In January 2010, the California Building Standards Commission adopted the statewide mandatory CALGreen, Part 11 of Title 24, California Code of Regulations. CALGreen applies to the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure. CALGreen contains a separate set of requirements for residential and non-residential buildings. The Code was updated in 2016 to require additional energy savings, and will subsequently be updated every three years. The most recently adopted iteration of CALGreen was in 2022, which went into effect January 1, 2023.

Senate Bill 743

SB 743 encourages land use and transportation planning decisions and investments that reduce vehicle miles traveled that contribute to GHG emissions, as required by AB 32. SB 743 requires the State Office of Planning and Research (OPR) to develop revisions to the CEQA Guidelines, establishing criteria for determining the significance of transportation impacts of projects within transit priority areas that promote the reduction of GHG emissions, the development of multimodal transportation networks, and a diversity of land uses. It also allows OPR to develop alternative metrics outside of transit priority areas.

California Climate Change Executive Orders

The California Governor's Office has issued a series of EO's related to addressing impacts of climate change, beginning in 2004. The following table, Table 3.5-2, summarizes the most relevant State EO's to GHG emissions in the transportation sector and transit infrastructure.

Table 3.5-2. California Climate Change Executive Orders Summary

Executive Order	Date	Summary
S-03-05	June 2005	Established state GHG emission targets of 1990 levels by 2020 (the same as AB 32, enacted later and discussed above) and 80% below 1990 levels by 2050. It calls for the Secretary of California Environmental Protection Agency (Cal/EPA) to be responsible for the coordination of state agencies and progress reporting.
S-01-07	January 2007	Established a Low Carbon Fuel Standard and directed the Secretary of the Cal/EPA to develop and propose protocols for measuring the lifecycle carbon intensity of transportation fuels.
S-13-08	November 2008	Directed state agencies to complete analysis of the effects of sea level rise in California, prepared in the California Sea Level Rise Assessment Report through coordination with the National Academy of Sciences.
S-14-08	November 2008	Established renewable energy generation share target for retail sellers of electricity of 33% renewably sourced by 2020.
B-16-12	March 2012	Directed state agencies to encourage the commercialization of zero emission vehicles (ZEVs), set goal of one million ZEVs in use statewide by 2020.
B-30-15	April 2015	Established a mid-term goal for 2030 of reducing GHG emissions by 40% below 1990 levels and required CARB to update its current AB 32 Scoping Plan to identify the measures to meet the 2030 target.
B-55-18	September 2018	Established a goal to achieve statewide carbon neutrality by 2045.
N-19-19	September 2019	Called for actions from multiple state agencies—including the California State Transportation Agency (CalSTA)—to pursue strategic endeavors to reduce GHG emissions and mitigate impacts of climate change; empowered CalSTA to leverage discretionary state transportation funds to help meet the stat's climate goals.
N-79-20	September 2020	Established a target to make all vehicles in the state emission free: cars and passenger trucks by 2035, medium and heavy-duty trucks by 2045.

California State Transportation Agency Climate Action Plan for Transportation Infrastructure

In response to EO's N-19-19 and N-79-20, CalSTA published the Climate Action Plan for Transportation Infrastructure (CAPTI) in 2021 to outline strategies and actions that will advance more sustainable, equitable, and healthy modes of transportation—such as walking, biking, transit, and rail—as well as accelerate the transition to ZEV technologies. The CAPTI is a product of an Interagency Working Group comprised of staff from the California Department of Transportation, the California Transportation Commission, the Cal/EPA, CARB, and several other state agencies collaborating to organize the guiding principles of the CAPTI Investment Framework; aimed at reducing GHG emissions from the transportation sector and mitigating the effects of climate change. The CAPTI framework is built on the following guiding principles to achieve its goals within the transportation sector by 2050:

- Building toward an integrated, statewide rail and transit network.
- Investing in networks of safe and accessible infrastructure supporting active transportation.

- Including investments in light, medium, and heavy-duty ZEV infrastructure as part of larger transportation projects.
- Strengthening CalSTA's commitment to social and racial equity by reducing public health and economic harms and maximizing community benefits to disproportionately impacted disadvantaged communities.
- Promoting projects that do not significantly increase passenger vehicle travel.
- Promoting compact infill development while protecting residents and businesses from displacement, by funding transportation projects that support housing for low-income residents near job centers, provide walkable communities, and address affordability to reduce the housing-transportation cost burden and passenger vehicle trips.
- Developing a zero-emission freight transportation system that avoids and mitigates environmental justice impacts, reduces criteria and toxic air pollutants, improves freight's economic competitiveness and efficiency, and integrates multimodal design and planning into infrastructure development on freight corridors.

3.5-1.3 Regional Regulations

Southern California Association of Governments (SCAG)

SCAG is the MPO for the six-county region that includes Los Angeles, Orange, Riverside, Ventura, San Bernardino, and Imperial counties. Connect SoCal, the 2020-2045 RTP/SCS, includes a strong commitment to reduce emissions from transportation sources to comply with SB 375. SB 375 requires CARB to develop regional CO_2 emission reduction targets (exclusive of Pavley emissions that are counted separately), compared to 2005 emissions, for cars and light trucks for each MPO. The 2020–2045 RTP/SCS charts a course for closely integrating land use and transportation planning including in areas labeled as High Quality Transit Areas. High Quality Transit Areas reflect areas with rail transit service or bus service where lines have peak headways of less than 15 minutes. The 2020-2045 RTP/SCS was prepared through a collaborative, continuous, and comprehensive process by SCAG and it serves as an update to the 2016–2040 RTP/SCS. Major themes in the 2020–2045 RTP/SCS that are relevant to the Proposed Project include integrating strategies for land use and transportation, striving for sustainability, protecting and preserving the existing transportation infrastructure, increasing capacity through improved system management, and giving people more transportation choice.

South Coast Air Quality Management District (SCAQMD)

SCAQMD adopted a Policy on Global Warming and Stratospheric Ozone Depletion on April 6, 1990. The policy commits the SCAQMD to consider global impacts in rulemaking and in drafting revisions to the Air Quality Management Plan (AQMP). In March 1992, the SCAQMD Governing Board reaffirmed this policy and adopted amendments to the policy.

SCAQMD released a draft guidance regarding interim CEQA GHG significance thresholds. In its October 2008 document, the SCAQMD proposed the use of a percent emission reduction target (e.g., 30%) to determine significance for commercial/residential projects that emit greater than 3,000 metric ton (MT) per year. On December 5, 2008, the SCAQMD Governing Board adopted the staff proposal for an interim GHG significance threshold for stationary source/industrial projects where the SCAQMD is the lead agency. However, SCAQMD has not officially adopted a GHG significance threshold for land use development or transportation projects; a GHG CEQA Significance Threshold Working Group was

formed in 2008 to further evaluate potential GHG significance thresholds, but has not convened since 2010.

Metro

Since 2007, Metro has implemented a robust sustainability program. In June 2008, the Metro Board approved the first Metro Sustainability Implementation Plan, which defined how sustainability would be operationalized throughout Metro. In 2012, the Metro Board adopted the Metro Countywide Sustainability Planning Policy, which provided leadership for the implementation of a regional transit system that increased mobility, fostered walkable and livable communities, and minimized GHG emissions and environmental impacts.

In 2019, the Metro Board adopted a new Climate Action and Adaptation Plan (CAAP), which establishes the target of reducing systemwide GHG emissions—relative to 2017 levels—by 79% by 2030 and 100% by 2050. Metro's CAAP categorizes operational emissions sources into three sectors or scopes.

- Scope 1: Sources of direct GHG emissions from equipment and facilities owned and/or operated by Metro.
- Scope 2: Indirect GHG emissions from electricity purchases.
- Scope 3: Includes all other Metro activities from sources owned or controlled by another company or entity, including: business travel, embodied emission in material goods purchased and service contracted by Metro, emissions from landfilled solid waste, and emissions from Metro employee commute patterns.

The CAAP includes 13 mitigation measures to reduce GHG emissions, most of which are aimed at reducing Scope 1 and Scope 2 emissions. These include electrifying the vehicle fleet and implementing additional zero-emission vehicle technologies, increasing renewable energy sourcing and storage, and improving utility consumption efficiency and other facility enhancements.

Metro's Countywide Sustainability Planning Policy anticipated periodic updates. In 2020, rather than simply update the policy, the Metro Board adopted a new 10-year sustainability strategic plan, the Moving Beyond Sustainability Strategic Plan (MBSSP). The MBSSP updates and consolidates the principles established in Metro's prior sustainability planning documents, including Vision 2028, Long Range Transportation Plan, Equity Platform Framework, and the 2019 CAAP. The MBSSP includes objectives related to energy resource management, water quality and conservation, emissions and pollution control, materials and construction/operations, climate adaptation and resiliency, and equity in economic and workforce development. Specific quantitative targets related to GHG emissions include the 2019 CAAP goals of reducing total agency-wide emissions to 79% below the 2017 baseline level and displacing a total of 903,000 $MTCO_2e$ annually, through the expansion of zero-emissions transit modes, investment in renewable energy technologies, and prudent transit-oriented land use planning initiatives. In the absence of the Metro network, GHG emissions within Los Angeles County would have been approximately 3.7% higher in 2017.

Metro has also adopted a Green Construction Policy committing to less polluting construction equipment and vehicles and implementing best practices to reduce harmful diesel emissions on all Metro construction projects performed on Metro properties and Metro ROW. Best practices include Tier 4 emission standards for off-road diesel-powered- construction equipment greater than 50 horsepower and restricting idling to a maximum of five minutes. The Green Construction Policy was updated in 2018 to require that contractors use renewable diesel for all engines (Metro, 2020).

3.5-1.4 Local Climate Adaptation Planning

At the local level, the project alignments being analyzed would transect portions of the cities of Lawndale, Redondo Beach, and Torrance. All three of these cities are included within the South Bay Cities Council of Governments (SBCCOG), which developed a Sustainable South Bay Strategy (SBSS) (2009), to guide land use and transportation planning decisions within the South Bay Cities subregion. The Transportation Vision component of the SBSS identified several strategies toward advancing local GHG emissions reductions: encouraging the use of electric vehicles for local trips; evaluating opportunities to implement "complete" mixed-mode streets with Class 2 combination lanes for neighborhood electric vehicles and bicycles as well as dedicated bus lanes; community education about car-sharing services; and—most critically—the expansion of rapid transit services to the South Bay Cities. The SBSS did not establish any specific targets or objectives for the subregion and focused on more general concepts.

More recently, SBCCOG published the Sub-Regional CAP (2018) and the Sub-Regional Climate Adaptation Plan (2019) as part of its continued efforts towards reducing GHG emissions and managing land use and transportation decision-making in the context of mitigating the effects of climate change. The Sub-Regional CAP (2018) evaluated the effectiveness of SBSS strategies throughout the South Bay region using conceptual neighborhoods, involving the expansion of electric vehicle use and shared mobility, land use and parking orientation, and encouraging active transportation through implementation of complete streets and bike lanes in the 15 South Bay Cities. The Sub-Regional Climate Adaptation Plan included a vulnerability assessment and examined how future effects of climate change could affect water management, energy management, biodiversity, coastal resource management, transportation, and climate mitigation. Neither the Sub-Regional CAP nor the Sub-Regional Climate Adaptation Plan outline any specific goals or targets related to GHG emissions reductions.

City of Lawndale

The City of Lawndale General Plan (1996) contains goals, policies, and programs that focus on the reduction of GHG emissions described in the following section. The AQMP, a subsection of the Resource Management chapter of the General Plan, was developed to comply with the requirements of the AQMP for the South Coast Air Basin (SCAB), to support emissions reductions and coordinate local efforts that impact air quality both locally and in the region. More recently, the City of Lawndale adopted its own City of Lawndale CAP (2017), as part of an endeavor by the SBCCOG to develop CAPs for all 15 municipalities within the South Bay Cities region in collaboration with Metro, SCAG, and other planning agencies. The goals, policies, and programs contained within the AQMP and the City of Lawndale CAP that are relevant to GHG emissions from the transportation and transit sector are shown in Table 3.5-3.

Table 3.5-3. City of Lawndale – Relevant GHG Emissions Goals, Policies, and Programs

Goal/Policy/Program	Description
City of Lawndale Air Quality Management Plan	
Goal 1	The City shall promote good air quality and mobility in an environment of continued population growth, while providing for a healthy economic base. The City will work towards reducing vehicle miles traveled (VMT) through an improved job/housing balance and a more efficient urban land use plan.
Policy 1b	Attain growth management performance goals and/or VMT reduction consistent with the SCAG's Growth Management Plan.
Goal 2	Reduce reliance on single-occupant vehicles and reduce the number of non-work and commuting trips.
Goal 4	Increase energy efficiency through land use and transportation planning, the use of renewable resources and less-polluting fuel, and the implementation of conservation measures.
Policy 4d	Ensure that new facilities use appliances that comply with current South Coast Air Quality Management District emission standards.
Implementation Program 1 – Efficient Land Use	
Program 1.2	The City shall incorporate procedures to attain VMT reduction targets through jobs/housing balance at the subregional level.
Program 1.3	Implement a growth management plan to reduce vehicle miles travelled through jobs/housing balance and mixed development land uses. The City will implement the growth management plan to attain subregional performance goals (defined by SCAG) through development of the General Plan, adoption of measures and ordinances by January 1992, and through issuance of development permits.
City of Lawndale Climate Action Plan	
Goal LUT: A	Accelerate the market for electric vehicles by installing charging stations in city-owned parking lots, at on-street parking locations, and at city-owned facilities.
Goal LUT: B	Encourage ridesharing by facilitating private and public mobility services through the removal of barriers to private sector bike and car-sharing.
Goal LUT: C	Encourage transit usage through the implementation of a Bus Rapid Transit System and expand the sub-regional public transit network and enhance transit frequency through collaboration with SBCCOG and neighboring cities, as well as the prioritization of funding around transit stations to promote active transportation.
Measure LUT: F3	Increase transit accessibility through general plan updates, zoning code modifications, and ordinances.

Source: City of Lawndale, 1996; 2017

City of Redondo Beach

The City of Redondo Beach CAP (2017) and General Plan's Transportation and Circulation Element (Revised in 2021) are the documents designed to address GHG emissions control strategies within Redondo Beach. Goals designed to regulate GHG emissions that are most relevant to the Proposed Project are shown in Table 3.5-4.

Table 3.5-4. City of Redondo Beach – Relevant GHG Emissions Goals

Goal/Measure	Description
City of Redondo Beach Climate Action Plan	
Goal LUT: A	Accelerate the market for electric vehicles by installing charging stations in city-owned parking lots, at on-street parking locations, and at city-owned facilities.
Goal LUT: B	Encourage ridesharing by facilitating private and public mobility services through the removal of barriers to private sector bike and car-sharing.
Goal LUT: C	Encourage transit usage through the implementation of a Bus Rapid Transit System and expand the sub-regional public transit network and enhance transit frequency through collaboration with SBCCOG and neighboring cities.
Measure LUT: C2	Expand transit network through collaboration with Metro to expand bus or rail transit network, improve transit connectivity, improve transit amenities, and promoting active transportation.
Measure LUT: G3	Increase transit accessibility through general plan updates, zoning code modifications, and travel demand ordinance augmentation; Conduct a public transit gap study; Establish commuter shuttles linking business districts with transit.
City of Redondo Beach General Plan, Transportation and Circulation Element	
Goal G2	Reduce Year 2030 trip generation by 25% compared to 2007 levels.
Goal G4	Residents and visitors should be able to safely and conveniently walk, bike, or take transit in Redondo Beach as they prefer.
Goal G7	To comply with State legislation, Redondo Beach will implement plans and programs to reduce greenhouse gas emissions.
Goal G16	Pursue Transit Priorities by: extending Metro's C (Green) Line; creating multimodal transit hubs; enhancing transit wayfinding and signage at transit stops; providing transit information to Redondo Beach residents directly.

Source: City of Redondo Beach, 2017; 2021

City of Torrance

The City of Torrance General Plan (2010) contains objectives and policies that focus on the reduction of GHG emissions described in the following section. The City of Torrance General Plan Community Resources Element and the City of Torrance CAP (2017) are the two documents designed to regulate GHG emissions within Torrance. The CAP also references the Cool City Program and the United States Mayor's Climate Protection Agreement, which the City of Torrance has adopted. Objectives, policies, and programs designed to regulate GHG emissions are shown in Table 3.5-5.

Table 3.5-5. City of Torrance – Relevant GHG Emissions Objectives, Policies, and Programs

Objective/Policy	Description
City of Torrance General Plan, Community Resources Element	
Objective CR.13	To contribute to the improvement of local and regional ambient air quality to benefit the health of all.
Policy CR 13.2	Work with neighboring cities to implement local and regional projects that improve mobility on freeways and railways, reduce emissions, and improve air quality.
Policy CR 13.8	Promote energy-efficient building construction and operation practices that reduce emissions and improve air quality.
Objective CR. 14	To reduce the City's overall carbon footprint and counteract the effects of global warming through a reduction in the emissions of greenhouse gases within Torrance.
Policy CR 14.1	Support the California Air Resources Board in its ongoing plans to implement AB32, and fully follow any new AB32-related regulations.
Policy CR 14.2	Develop and implement greenhouse gas emissions reduction measures, including discrete, early-action greenhouse gas-reducing measures that are technologically feasible and cost-effective.
City of Torrance Climate Action Plan	
LUT: C1.3	Collaborate with neighboring cities/SBCCOG for a regional transit system.
LUT: C2.1	Work with Transit Agency to expand bus or rail transit network.
LUT: C2.2	Work with Transit Agency to improve transit connectivity
LUT: C2.4	Work with Transit Agency to improve transit amenities.
LUT: C2.5	Work with Transit Agency to better accommodate bicycles.
LUT: C2.6	Prioritize funding around transit to encourage walking and biking
LUT: C2.7	Implement first/last mile improvements at stations/destinations
LUT: C2.8	Introduce a fixed-route transit service in the jurisdiction.
LUT: D2.11	Construct or improve pedestrian infrastructure around transit.
Cool Cities Program	
The City of Torrance adopted the Sierra Club's Cool Cities Program in 2007, committing the City to reduce their carbon footprint. In doing so, the City Council adopted the US Mayor's Climate Protection Agreement, which is the first step in becoming a Cool City. The Mayor's Agreement focuses on local action to meet the goal of reducing carbon dioxide pollution to a level at least 7% below 1990 levels by 2012.	

Source: City of Torrance, 2010; 2017

3.5-2 Methodology

The term GHG refers to a group of chemical compounds that are generally believed to affect global climate conditions. The greenhouse effect is a concept in atmospheric science that describes the process by which certain atmospheric gases, referred to as GHGs, absorb energy from sunlight within the Earth's atmosphere and prevent it from being released back into space. This mechanism is responsible for maintaining a warm, habitable environment on the planet's surface based on the equilibrium concentrations of the gases. GHGs such as CO_2, CH_4 and N_2O keep the average surface temperature of the Earth close to 60 degrees Fahrenheit.

For each regulated GHG, a global warming potential (GWP) has been calculated to reflect the atmospheric residence time and how strongly it absorbs radiative infrared energy relative to CO_2 on a per-kilogram basis. GWP is a metric that indicates the relative climate forcing of a kilogram of emissions when averaged over the period of interest. The 20- and 100-year horizons are used for the GWPs in Table 3.5-6. To account for this higher potential, emissions of other GHGs are frequently expressed in the equivalent mass of CO_2, denoted as CO_2e. The GHG emissions inventory in California and GHG emissions analyses for CEQA purposes utilize GWP values developed in the International Panel on Climate Change Fourth Assessment Report.

Table 3.5-6. Global Warming Potential for Selected Greenhouse Gases

Pollutant	Lifetime (Years)	AR4 Global Warming Potential (20-Year)	AR4 Global Warming Potential (100-Year)
Carbon Dioxide (CO_2)	variable	1	1
Nitrous Oxide (N_2O)	114	289	298
Methane (CH_4)	12	72	25

Source: Intergovernmental Panel on Climate Change, 2007

Longterm and irrevocable shifts in weather—including changes in temperature, precipitation, and seasonal patterns—are referred to as climate change. According to the Intergovernmental Panel on Climate Change, anticipated effects of climate change caused by GHG emissions include sea-level rise, climate related hazards, extinction of species, species migration, reduced food production, exacerbated health problems, slower economic growth, and displacement of people. Possible effects of climate change along the California Coast include:

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

Implementation of the Proposed Project or its Options would affect the regional GHG emissions inventory temporarily during construction activities and continually during future operation following completion of the light rail transit line. Emissions were estimated separately for the temporary construction activities and the long-term operational conditions associated with the Proposed Project. The GHG emissions assessment addressed both direct and indirect sources that would be involved in construction and operation of the Proposed Project. A combination of air quality modeling tools was utilized to characterize emissions from construction of the Proposed Project and Options, as well as

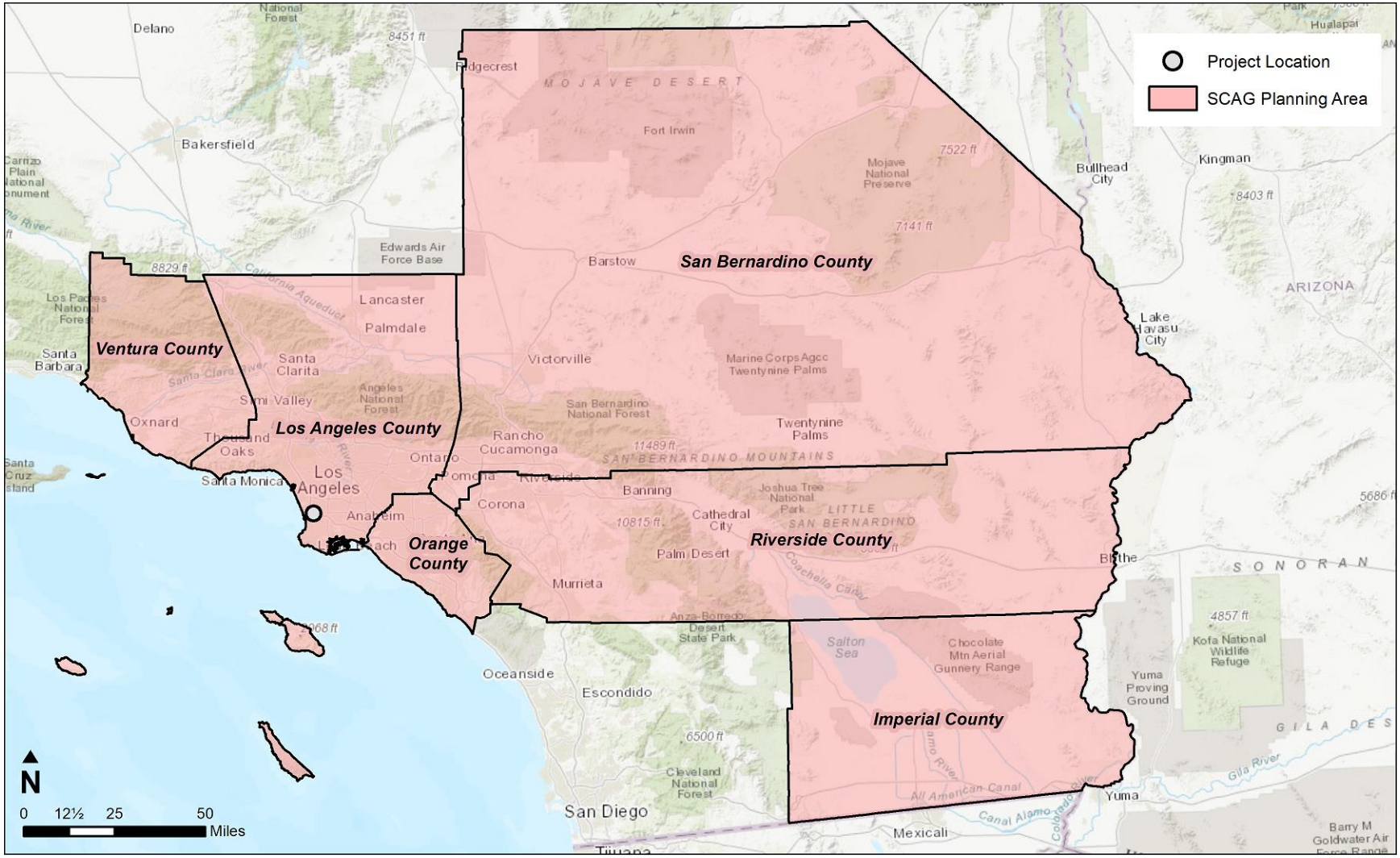
future operations with and without implementation of the Proposed Project. GHG emissions are assessed on annual timescales.

The methodology considered guidance published by the American Public Transportation Association (APTA) in a report titled, R*ecommended Practice for Quantifying Greenhouse Gas Emissions from Transit* (Revised 2018). The report provides guidance and recommendations to transit agencies for quantifying GHG emissions, including both emissions generated by transit and the potential reduction of emissions through displaced vehicle travel. It lays out a standard methodology for transit agencies to report their GHG emissions in a transparent, consistent, and cost-effective manner. The document was designed to ensure that agencies can provide an accurate public record of emissions, was intended to help agencies comply with future state and federal legal requirements, and potentially gain credit for their early actions to reduce emissions. Guidance from the report was adapted to suit the analysis of the Proposed Project and Options using the emissions quantification tools developed by the CARB and the SCAQMD.

3.5-2.1 Resource Study Area

The RSA for the analysis of potential environmental impacts related to GHG emissions is the six-county geographic region under the SCAG jurisdiction, as depicted on Figure 3.5-1, which include Los Angeles, Imperial, Orange, Riverside, San Bernardino, and Ventura Counties. The CARB sets SB 375 GHG emissions reduction targets at the MPO level for the SCAG region that are addressed through the preparation of the SCS portion of the RTP/SCS documentation. Thus, the effects of the Proposed Project and Options on regional GHG emissions are evaluated primarily at the MPO level.

Figure 3.5-1. Resource Study Area



Source: TAHA, 2022

3.5-2.2 Construction GHG Emissions

Construction activities for the Proposed Project and Options will generally involve structure demolition and clearing of the Metro-owned railroad right-of-way (Metro ROW), utility relocations, grading and embankments earthwork, trenching and retaining wall installation, bridges and elevated structure construction, stations construction, trackwork installation, and systems construction and testing. Construction will also require the relocation of existing freight tracks along segments of the corridor and new at-grade light rail crossings.

During each phase of construction, GHG emissions would be temporarily generated through off-road construction equipment exhaust and on-road vehicle exhaust associated with heavy-duty haul trucks, material delivery trucks, and construction crew vehicles. GHG emissions for off-road equipment were quantified using emission factors from CARB's OFFROAD2017-ORION emissions inventory, and GHG emissions for on-road vehicle activities were quantified using emission factors from the CARB EMission FACtor (EMFAC) mobile source emissions inventory model. Consistent with SCAQMD methodology guidance, construction activity GHG emissions are amortized over a 30-year operational lifetime.

Proposed Project Construction

Table 3.5-7 summarizes the Proposed Project construction schedule, including the amount of material hauling that would occur during each phase in cubic yards (CY) and the daily construction crew size. Metro plans for contractors to use trucks with trailers (30-CY capacity total) to minimize heavy-duty truck trips involved in material hauling. Comprehensive off-road equipment lists were developed by Metro for each phase to estimate total GHG emissions that would be generated by Proposed Project construction. Construction would be anticipated to take approximately five.

Table 3.5-7. **Proposed Project Construction Schedule**

Construction Phase	Approx. Duration (Months)	Estimated Daily Crew (Vehicles)	Material Hauling (Cubic Yards)
Early Utility Relocation	18	40	12,400
Project Start-Up	6	40	121,000
Final Utility Relocations	15	40	3,100
Freight Track Bridges	10	25	1,000
Freight Retaining Walls	12	40	112,100
LRT Retaining Walls	8	40	72,400
Freight At-Grade Crossings	4	25	4,200
LRT Guideway Bridges	26	25	66,500
Freight Trackwork (BNSF)	4	40	72,400
Stations and Access	18	40	11,000
LRT Trackwork	15	40	80,000
Systems Construction	12	20	-
Testing/Commissioning	9	15	-

Source: STV, 2022

Trench Option Construction

Trench Option construction will require additional activities and last longer than the Proposed Project—as summarized below in Table 3.5-8—with completion expected approximately seven years. The Trench

Option terminates at 190th Steet and would be congruent with the Proposed Project from 190th Street to the future Torrance Transit Center (TC) Station (approximately 1.7 miles).

Table 3.5-8. Trench Option Construction Schedule

Construction Phase	Approx. Duration (Months)	Estimated Daily Crew (Vehicles)	Material Hauling (Cubic Yards)
Early Utility Relocation	18	40	13,600
Project Start-Up	6	40	49,800
Final Utility Relocations	15	40	3,400
Freight Track Bridges	8	40	14,000
Freight Retaining Walls	18	40	105,500
LRT Retaining Walls	8	40	155,800
LRT Guideway Bridges	32	30	22,900
Freight At-Grade Crossings	4	40	4,200
LRT Guideway Trench	36	60	277,700
Freight Trackwork (BNSF)	25	40	71,100
Stations and Access	20	40	15,100
LRT Trackwork	15	20	80,000
Systems Construction	12	20	-
Testing/Commissioning	9	15	-

Source: STV, 2022

Relative to the Proposed Project, construction of the Trench Option would not involve the two at-grade light rail crossings for the light rail transit alignment, but would require additional trenching activities and material export to accommodate the subterranean segment of the light rail transit corridor, as well as additional fill import for embankments at locations of grade separation. Additionally, the overall duration of Trench Option construction is expected to be approximately two years longer than the Proposed Project. Metro plans for contractors to use trucks with 30-CY capacity to minimize heavy-duty truck trips involved in material hauling. Comprehensive off-road equipment lists were developed by Metro for each construction phase and used to produce estimates of total GHG emissions that would be generated by construction of the Trench Option.

Hawthorne Option Construction

Construction of the Hawthorne Option is anticipated to completed in approximately five years. The southern portion of the Hawthorne Option alignment would be congruent with the Proposed Project from 190th Street to the future Torrance TC Station (approximately 1.7 miles). Table 3.5-9 summarizes the Hawthorne Option construction schedule, including the amount of material hauling that would occur during each phase in CY and the daily construction crew size.

Table 3.5-9. Hawthorne Option Construction Schedule

Construction Phase	Approx. Duration (Weeks)	Estimated Daily Crew (Vehicles)	Material Hauling (Cubic Yards)
Early Utility Relocation	18	40	8,000
Project Start-Up	6	40	87,100
Final Utility Relocations	15	40	2,000
LRT Guideway Bridges	35	60	278,700
Freight Retaining Walls	6	40	68,400
LRT Retaining Walls	8	40	2,000
Freight Trackwork (BNSF)	8	25	29,700
Stations and Access	22	40	7,800
LRT Trackwork	14	20	81,000
Systems Construction	12	20	-
Testing/Commissioning	9	15	-

Source: STV, 2022

Relative to the Proposed Project, construction of the Hawthorne Option would not involve any at-grade light rail crossings and would require additional material export to accommodate the foundations of the bridges and elevated track alignment, as well as additional fill import for embankments at locations of grade separation. However, the overall duration of Hawthorne Option construction is expected to be similar to the Proposed Project. Metro plans for contractors to use trucks with 30-CY capacity to minimize heavy-duty truck trips involved in material hauling. Comprehensive off-road equipment inventories were developed by Metro for each construction phase to produce estimates of total GHG emissions that would be generated by construction of the Hawthorne Option.

3.5-2.3 Operational GHG Emissions

Implementation of the Proposed Project would extend an existing electrically propelled Metro light rail transit line and would not require additional maintenance facilities that would introduce new direct sources of GHG emissions into the RSAs. Operations would predominantly involve changes to indirect sources of regional GHG emissions, including electricity generation to power the light rail transit corridor and stations, as well as transportation fuel savings associated with passenger vehicle trip displacement corresponding to increased transit ridership. Table 3.5-10 presents a summary of the annual projected vehicle revenue miles (VRM) for the Proposed Project and Options as well as the forecasted on-road vehicle miles traveled (VMT) displacement.

Table 3.5-10. Summary of Operational Parameters Relevant to GHG Emissions (2042)

Parameter	Proposed Project	Trench Option	Hawthorne Option
Annual Vehicle Revenue Miles	757,841	757,841	757,841
Annual On-Road VMT Displacement	17,083,851	17,083,851	17,207,383

Source: Metro, 2022

Indirect Power Supply Emissions

While the light rail transit propulsion would not represent a direct source of GHG emissions, the delivery of electricity to Proposed Project facilities would indirectly produce GHG emissions at the power source.

According to energy data collected between 2015–2019, Metro estimated that rail propulsion requires approximately 9.2 kilowatt-hours (kWh) per VRM (kWh/VRM), accounting for both the heavy and light rail lines. The annual electricity demand for Proposed Project light rail transit propulsion operations was estimated by multiplying the Metro per-mile rail electricity consumption factor by the annual operating miles of the light rail transit corridor extension for the Proposed Project and Options, which would be 757,841 light rail transit vehicle miles for all three scenarios. Light rail transit facilities would be connected to the electrical grid, with power in the Cities of Lawndale, Redondo Beach, and Torrance delivered by Southern California Edison (SCE).

As of 2020, SCE's delivered power mix was comprised approximately 31% renewable energy and was characterized by a GHG intensity factor of approximately 598 pounds of CO_2e emitted per megawatt-hour of electricity delivered (598 $lbCO_2e$/MWh). By 2030, all utility service providers in California are required to generate 60%of their electric retail sales from renewable (zero-emission) sources, and that contribution is required to be 100% by 2045. SCE has prepared forecasts of the projected carbon intensity of their delivered power to customers into the future and estimated that in 2042 the GHG intensity factor would be approximately 263 $lbCO_2e$/MWh (California Air Pollution Control Officers Association [CAPCOA], 2022). Annual GHG emissions associated with electricity consumption for the Proposed Project and Options were estimated by multiplying the total annual electricity demand in MWh by the forecasted 2042 SCE delivered power mix carbon intensity factor.

Indirect Regional Travel Emissions

In addition to indirect GHG emissions associated with electricity provision to light rail transit facilities, implementation of the Proposed Project would indirectly affect regional GHG emissions through the displacement of on-road vehicle trips and VMT. The extension of the light rail transit corridor would expand public transit accessibility in the Proposed Project area and would provide an alternative transportation mode to passenger vehicle use for various types of trips throughout the community. Displacing on-road vehicle trips is one of the primary tenets of GHG emissions reduction strategies for the SCAG region. Regional transportation modeling was prepared to estimate daily VMT on the roadway network under existing conditions and with and without project implementation in 2042.

The operational GHG emissions assessment utilized CARB mobile source emissions inventory factors produced by EMFAC2021 for Los Angeles County (in units of grams of CO_2, CH_4, and N_2O emitted per on-road vehicle mile) to estimate the annual GHG emissions from on-road vehicle travel in each of the analytical scenarios. Annual GHG emissions from vehicle travel on the regional roadway network were estimated by multiplying the daily VMT by a factor of 347 (CARB, 2008b), then by the EMFAC2021 emissions factors, and summed in units of metric tons of CO2e ($MTCO_2e$) using the corresponding 100-year GWP values presented in Table 3.5-6.

3.5-2.4 Significance Thresholds

As discussed in the following subsections, the thresholds of significance used to assess the GHG emissions impacts of the Proposed Project, Trench Option, and Hawthorne Option are based on Appendix G of the CEQA Guidelines and are informed by guidance provided by the OPR and the SCAQMD. There would be a significant impact if the Proposed Project would:

a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The CEQA Guidelines Section 15064.4 states that, when making a determination with respect to the significance of a project's GHG emissions, a lead agency shall have discretion to determine whether to: 1) Use a model or methodology to quantify GHG emissions resulting from a project, and which model or methodology to use; and/or 2) Rely on a qualitative analysis or performance-based standards. Section 15064.4 also states that a lead agency should consider the following factors when assessing the significance of the impact of GHG emissions on the environment: 1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting; 2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and 3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

Neither CARB, OPR, SCAQMD, nor Metro have officially promulgated specific thresholds for analyzing GHG emissions under CEQA for transit projects. CARB and OPR acknowledge that transforming public transit systems and reducing VMT is an effective climate adaptation strategy due to the intersectionality of transportation and climate adaptation planning (OPR, 2008; OPR, 2018; CARB, 2019; CARB, 2022a). The ratification of SB 375 and the subsequent regional GHG emissions targets established in the SCS process are consistent with CARB's position that VMT is a proxy for transportation-related GHG emissions, and the 2017 and 2022 Scoping Plan Updates identified that slower growth in VMT from more efficient land use and development patterns would promote achievement of the state's climate goals (CARB 2019; CARB 2022a).

3.5-2.5 CEQA Streamlining Guidance for Transit and Active Transportation Projects

In response to SB 743, OPR endeavored to evaluate opportunities to streamline CEQA impacts assessments related to transportation and GHG emissions. As a transit project, the Proposed Project and Options would contribute to statewide efforts to reduce on-road VMT and the associated GHG emissions in pursuit of achieving the AB 32 emission reduction targets. OPR has developed technical guidance on issues that broadly affect CEQA practice and land use planning. These advisories provide general advice and recommendations, which agencies, the public, and other entities may use at their discretion in developing assessments of potential environmental impacts under CEQA. Spurred by the passage and adoption of SB 743—adopted in 2013—the CEQA Guidelines were updated in 2018 to incorporate VMT as the preferred metric for analyzing transportation impacts under CEQA. OPR has published two draft *Technical Advisories* (*Evaluating Transportation Impact in CEQA* and *CEQA Review of Sustainable Transportation Projects*) that discuss the parallels of benefits associated with expanding transit infrastructure and reducing VMT and GHG emissions (OPR, 2018; OPR, 2021).

Generally, rail transit projects are understood to improve regional connectivity and air quality through induced changes to mobility patterns spurred by the provision of an alternative mode of transportation that replaces and reduces vehicle trips. The OPR guidance recommends streamlining CEQA analyses of potential impacts to transportation and transportation-related emissions for transit and active transportation projects that are widely recognized to reduce on-road VMT and associated vehicle emissions. The guidance acknowledged the intersectionality of enhancing accessibility to transit through the implementation of multimodal transportation hubs and the resulting reduction in VMT attributed to the passenger vehicle trips displaced by increased transit ridership with environmental benefits related to GHG emissions, and air pollutant emissions more generally. OPR recommends the streamlining of GHG emissions impacts analyses for transit and active transportation projects because these projects reduce GHG emissions, increase multimodal transportation networks, and facilitate mixed-use development, which are crucial land use planning initiatives for climate adaptation (OPR, 2018b). As

such, project GHG emissions are assessed in the context of the existing GHG emissions inventory, the Metro systemwide GHG emissions displacement, and climate adaptation plans and policies."

> *"Transit and active transportation projects generally reduce VMT and therefore are presumed to cause a less-than-significant impact on transportation. This presumption may apply to all passenger rail projects, and bicycle and pedestrian infrastructure projects. Streamlining transit and active transportation projects aligns with each of the three statutory goals contained in SB 743 by reducing GHG emissions, increasing multimodal transportation networks, and facilitating mixed use development."*

The OPR guidance was based on programmatic review of public transit and active transportation projects that consistently demonstrate reductions in emissions from on-road vehicles through implementation of transit systems. The OPR advises that the streamlining of impact analyses under CEQA is reasonable for transit and active transportation projects that displace vehicle trips and reduce on-road VMT. Consistent with the OPR recommendations discussed above, State CEQA Guidelines Section 15064.3(b)(2) likewise provides that transportation projects that reduce, or have no impact on, VMT should be presumed to have a less than significant impact. However, to satisfy the recommendations provided in Section 15064.4 of the CEQA Guidelines, the impacts assessment for the Proposed Project quantified the GHG emissions associated with construction and future operations and evaluated them in the context of the relevant regulatory framework.

3.5-2.6 Project Features

As described in Chapter 2, Project Description, a number of features have been incorporated into the project to ensure compliance with the laws, guidelines, and best practices of regulatory agencies. While project features were not developed specifically for GHG emissions, PF-AQ-1, Metro Green Construction Policy, PF-AQ-3, Metro 2020 Moving Beyond Sustainability Strategic Plan, and PF-AQ-4 Metro Design Standards, as described in Section 3.4, Air Quality, are relevant to GHG emissions in the RSAs.

3.5-3 Affected Environment / Existing Conditions

3.5-3.1 California GHG Emissions

CARB maintains a statewide GHG emissions inventory that currently documents the period from 2000 to 2020. The statewide annual emissions are shown in Table 3.5-11. In 2020, total statewide GHG emissions from sectors as categorized in the Scoping Plan were approximately 369.1 million metric tons of CO_2e ($MMTCO_2e$) and made up 80% of California's GHG emissions (CARB, 2022b), which was approximately 112 $MMTCO_2e$ lower than 2007 levels, representing a reduction of 23%. Between 2011 and 2020, annual emissions decreased by approximately 68.3 $MMTCO_2e$. Of note, between October 23, 2015, and February 18, 2016, an exceptional natural gas leak event occurred at the Aliso Canyon natural gas storage facility that resulted in unexpected GHG emissions of considerable magnitude. The exceptional incident released approximately 109,000 metric tons of CH_4, which equated to approximately 1.96 $MMTCO_2e$ of unanticipated emissions in 2015 and an additional 0.52 $MMTCO_2e$ in 2016. According to CARB, these emissions will be mitigated in the future through projects funded by the Southern California Gas Company based on legal settlement and are presented alongside but tracked separately from routine inventory emissions. Furthermore, the substantial decrease in 2020

transportation sector emissions is predominately attributed to changes in behavioral patterns spurred by the COVID-19 pandemic (i.e., people driving less in general).

Table 3.5-11. California GHG Emissions Inventory

Sector	CO_2e Emissions (Million Metric Tons)									
	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Transportation	159.5	156.9	157.0	157.7	161.5	165.2	166.6	165.3	162.4	135.8
Electricity Gen. (In-State)	42.6	54.5	53.5	53.0	52.0	44.1	40.2	40.4	38.5	40.9
Electricity Gen. (Imports)	46.6	44.4	40.0	36.8	33.9	26.4	23.9	24.6	21.7	18.6
Industrial	85.8	80.7	83.0	85.2	83.2	81.6	81.7	81.9	80.4	73.3
Commercial	15.6	14.0	13.7	13.3	13.4	13.7	13.6	14.0	14.6	13.5
Residential	30.5	25.2	25.4	22.3	22.9	23.4	24.0	23.4	25.9	25.3
Agriculture and Forestry	34.2	35.2	33.9	33.9	32.6	32.2	31.7	32.2	31.4	31.6
Emissions Total	**437.4**	**434.6**	**431.5**	**428.2**	**426.6**	**414.5**	**410.5**	**411.0**	**404.4**	**369.1**

Source: CARB, 2022b

According to the 2020-2045 RTP/SCS, the most recent GHG emissions data by sector for the SCAG region is from 2012. Similar to the 2013 United States and California GHG emission profiles, transportation, industrial, and electricity are the three largest contributors to GHG emissions. Total SCAG emissions in 2020 were estimated to be 216 $MMTCO_2e$. Transportation emissions are most prevalent to all other sectors in California and specifically in the SCAG region. Transportation emissions accounted for approximately 38% of total emissions in the SCAG region, compared to 26% of total emissions in the United States in 2008. Fossil fuel CO_2 emissions for 2011 were calculated across the Los Angeles megacity, which include Los Angeles, Orange, Riverside, Santa Barbara, and Ventura Counties. The total fossil fuel CO_2 emissions were calculated to be approximately 48 megatons of CO_2 per year, with transportation emissions accounting for approximately 50% of these emissions. Los Angeles County contributed approximately 55% of the total fossil fuel CO_2 emissions.

3.5-3.2 GHG Emissions from the Metro Transit System

Metro has prepared detailed emissions inventories covering 2012 through 2019 that were compiled to support its Moving Beyond Sustainability (2020f) strategic plan. The largest source of emissions for the agency is vehicle fuel. Accordingly, Metro's bus service is the largest source of emissions by mode. New fleet technologies powered by renewable energy can dramatically reduce Metro's emissions over the long term, but the agency is further reducing emissions in other areas. Since 2012, emissions resulting from building energy use have decreased by 23% while emissions from water consumption have been cut in half. Currently, the best sustainability indicator of an effective public transit system is GHG displacement that occurs primarily through mode shift and/or taking cars off the road.

As shown below in Table 3.5-12, the Metro transit system displaced 918,076 $MTCO_2e$ in 2019 through mode shift to transit and land use orientation, which resulted in a net reduction of 591,123 $MTCO_2e$ throughout Los Angeles County when accounting for Metro emissions. Total GHG emission generation across Metro operations was approximately 326,953 $MTCO_2e$ in 2019, which represented a reduction of approximately 16% from 2015. Of the total emissions in 2019, rail propulsion comprised approximately 20%, estimated to be 64,529 $MTCO_2e$. Metro rail operations in 2019 involved a total of over 23 million VRM and averaged approximately 6.17 $lbCO_2e$ per mile. As the electric service utility companies within Los Angeles County—SCE and the Los Angeles Department of Water and Power—expand the proportion

of energy supplied by renewable resources in the future to meet regulatory requirements established by Senate Bill 100, the average per-mile GHG emission rate of Metro Rail operations will decrease.

Furthermore, as a founding member of the APTA Sustainability Commitment, Metro reports annually on a framework of performance metrics that enable transit agencies to measure and report sustainability performance over time. Metro uses systemwide VRM as its primary normalization factor to facilitate easier tracking of progress and changes during years of service growth and to account for the influence of external factors that affect system operations, such as the COVID-19 pandemic. APTA is currently in the process of reviewing and revising the APTA Sustainability Commitment and associated methodology; however, data for total emissions and displacement from Metro operations in 2020–2021 is available in its 2022 APTA Sustainability Performance Report (2022a) that was prepared using the current methodological guidance. Despite reduced Metro operations resulting from the COVID-19 pandemic, the net systemwide effect on regional GHG emissions was a displacement—or reduction—of approximately 510,950 $MTCO_2e$ in 2020 and 214,429 $MTCO_2e$ in 2021 using the APTA methodology.

As the APTA methodology for estimating GHG displacement is based on transit ridership, Metro's GHG displacement for 2021 declined by 51.5% compared to 2020. This approach resulted in an overall 57.8% reduction in the net GHG emissions for 2021 compared to the prior year. However, Metro continues to displace more GHG emissions than it releases into the atmosphere, with 2021 emissions generation being approximately 40% of the emissions displacement using the APTA methodology.

Metro is making strides in electrifying its bus fleet through the Zero Emissions Bus Master Plan (2020) and the Electric Vehicle Implementation Plan (2021), reaching a key milestone in July 2020 by rolling out the first batch of electric buses on the Metro G (Orange) Line and achieving a 100% electric fleet on the line by the start of 2021. Metro has committed to electrifying the entire bus fleet by 2030, which will substantially reduce GHG emissions associated with its bus operations that currently represent the largest source of emissions, accounting for approximately 50% of systemwide emissions in 2019.

Table 3.5-12. Metro GHG Emissions Inventory and Displacement

Source/Sector	Annual CO_2e Emissions (Metric Tons)						
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Operational & Non-Modal Emissions							
Rail Propulsion	51,736	54,177	69,399	71,848	64,529	-	-
Bus (Operated)	251,439	245,360	234,662	207,925	160,804	-	-
CNG Compression	7,950	7,802	12,066	10,781	10,583	-	-
Bus (Contracted)	16,158	16,274	13,381	9,895	5,965	-	-
Vanpool	18,254	17,655	15,703	14,967	14,884	-	-
Non-Revenue Vehicles	9,915	9,969	9,730	9,102	10,272	-	-
Facility Electricity	22,110	22,941	30,965	24,051	21,955	-	-
Facility Natural Gas	4,906	5,881	5,519	5,255	6,849	-	-
Water Consumption	895	717	757	750	665	-	-
Refrigerants	7,911	10,065	9,844	2,261	8,771	-	-
Employee Commuting[1]	-	-	13,846	15,076	21,675	-	-
Emissions Total	**391,275**	**390,840**	**415,872**	**371,911**	**326,953**	**231,279**	**144,244**
Emissions Displacement							
Mode Shift to Transit	(465,101)	(448,301)	(207,374)	(200,669)	(186,515)	-	-
Land Use Orientation[1]	-	-	(813,110)	(786,820)	(731,561)	-	-
Displacement Total	**(465,101)**	**(448,301)**	**(1,020,485)**	**(987,490)**	**(918,076)**	**(742,229)**	**(359,673)**
Net Annual Emissions							
Net Metro System	(73,827)	(57,461)	(604,613)	(615,579)	(591,123)	(510,950)	(215,429)

Source: Metro, 2020e; Metro, 2022a

[1]Employee commuting and land use orientation emissions were not tracked and quantified prior to 2017.

3.5-3.3 Effects of the COVID 19-Pandemic

Since 2020, the COVID-19 pandemic has impacted society through modifications in activity organization, changes to employment and travel, and the use of information and communication technologies. The most material effects of the pandemic on GHG emissions are related to patterns of regional mobility. According to a study by the University of California, Davis (UC Davis, 2022), in Fall of 2019, approximately 87% of workers within the SCAG region physically commuted to work at least one time each month, while approximately 13% exclusively worked remotely. During 2020 and 2021, the proportion of exclusively remote workers increased to 36% (Fall 2020) and 22.5% (Summer 2021), respectively. By the Summer of 2022, the percent of workers that physically commuted at least once per month rebounded to 88%, similar to pre-pandemic levels. However, the average monthly frequency of physical commutes among all workers in 2022 (12.8 days per month) remained considerably below the pre-pandemic level of 15.6 days per month. By Summer of 2021, the average number of monthly commuting trips was still 29% lower compared to the months before the pandemic.

Transit ridership also decreased substantially during the years 2020 and 2021 in tandem with a decrease in on-road vehicle trips. Commuting trips by rail within the SCAG region were 21% lower in the Summer of 2021 than during pre-pandemic conditions, and non-commuting trips decreased by 18%. As time goes on, further investigations into the long-term repercussions of the COVID-19 pandemic will be better

understood. Eventually, it is anticipated that regional growth projections and regional transportation activities will recover to levels predicted prior to the COVID-19 pandemic. However, studies on the effects of the pandemic on regional transportation patterns and forecasted growth between existing conditions and the opening year of the Proposed Project and Options in the mid-2030s, or the horizon year of 2042 are not presently available. This impact analysis uses the best available data, including those described in preceding sections.

3.5-4 Environmental Impacts

3.5-4.1 Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

3.5-4.1.1 *Construction Impacts*

Less Than Significant Impact. Construction of the Proposed Project would take place over approximately five years between 2027–2033 and would generate GHG emissions through off-road equipment exhaust and on-road haul truck trips, concrete and material delivery trips, and construction crew vehicle trips that would persist only as long as construction activities are ongoing. As mentioned previously, all construction activities would be required to comply with PF-AQ-1 Metro Green Construction Policy, PF-AQ-3 Moving Beyond Sustainability Strategic Plan, and PF-AQ-4 Metro Rail Design Guidelines, which would minimize emissions through ensuring that equipment and vehicles are operated at optimal manufacturer specifications and are not allowed to idle for more than five minutes when not in use. Emission factors from CARB's OFFROAD2017-ORION emissions inventory model and the EMFAC on-road mobile source emissions model were used to estimate GHG emissions that would be produced during each phase of Proposed Project construction, as summarized below in Table 3.5-13.

Table 3.5-13. Proposed Project Construction GHG Emissions (2027–2033)

Construction Phase	Off-Road Equipment	On-Road Vehicles	Phase Total
Short-Term Construction GHG Emissions ($MTCO_2e$)			
Early Utility Relocation	1,430.5	436.2	1,866.7
Project Start-Up	68.8	801.5	870.2
Final Utility Relocations	636.1	320.4	956.5
Freight Track Bridges	185.6	313.3	498.9
Freight Retaining Walls	534.5	845.9	1,380.4
LRT Retaining Walls	792.7	562.2	1,354.9
Freight At-Grade Crossings	146.1	73.1	219.2
LRT Guideway Bridges	1,997.1	831.8	2,828.8
Freight Trackwork (BNSF)	85.9	499.1	584.9
Stations and Access	483.6	305.7	789.3
LRT Trackwork	359.4	877.0	1,236.4
Systems Construction	271.7	108.5	380.2
Testing/Commissioning	108.2	22.7	130.8
Total Construction			**13,097.4**
Annual Average (Five-Year Construction)			*2,182.9*
Amortized Emissions (30-Year Lifetime)			***436.6***

Source: STV, 2022; TAHA, 2022

Construction of the Proposed Project would generate approximately 13,097.4 $MTCO_2e$ over the approximately five-year duration, which equates to an average of approximately 2,182.9 $MTCO_2e$ annually during that timeframe. SCAQMD staff guidance states that for CEQA assessments, construction-related GHG emissions that occur over a relatively short-term period should be amortized over a 30-year operational project lifetime due to the inherently cumulative nature of GHG emissions and the persistence of GHGs in the atmosphere (SCAQMD, 2008). The amortized GHG emissions rate during construction of the Proposed Project would be approximately 437 $MTCO_2e$ annually throughout the operational lifetime, and these emissions are considered in conjunction with future permanent environmental effects related to GHG emissions. Impacts resulting from GHG emissions during construction of the Proposed Project would be **less than significant**.

TRENCH OPTION

Less Than Significant Impact. Construction of the Trench Option would take place over approximately seven years, two years longer than the Proposed Project, between 2027–2035 and would generate temporary GHG emissions through off-road equipment exhaust and on-road haul truck trips, concrete and material delivery trips, and construction crew vehicle trips. As mentioned previously, all construction activities would incorporate PF-AQ-1, PF-AQ-3 and PF-AQ-4, which would control emissions through ensuring that equipment and vehicles are operated at optimal manufacturer specifications and are not allowed to idle for more than five minutes when not in use. Emission factors from CARB's OFFROAD2017-ORION emissions inventory model and the EMFAC on-road mobile source emissions model were used to estimate GHG emissions that would be produced during each phase of Trench Option construction, as summarized below in Table 3.5-14.

Table 3.5-14. Trench Option Construction GHG Emissions (2027–2035)

Construction Phase	Off-Road Equipment	On-Road Vehicles	Phase Total
Short-Term Construction GHG Emissions ($MTCO_2e$)			
Early Utility Relocation	1,430.5	443.4	1,873.9
Project Start-Up	68.8	349.4	418.2
Final Utility Relocations	636.1	318.5	954.6
Freight Track Bridges	202.5	328.5	531.0
Freight Retaining Walls	801.7	864.4	1,666.1
LRT Retaining Walls	792.7	1,034.6	1,827.3
LRT Guideway Bridges	2,611.5	655.1	3,266.6
Freight At-Grade Crossings	146.1	69.3	215.4
LRT Guideway Trench	2,587.0	1,836.5	4,423.4
Freight Trackwork (BNSF)	557.6	736.1	1,293.7
Stations and Access	591.0	375.6	966.6
LRT Trackwork	359.4	847.9	1,207.3
Systems Construction	271.7	109.8	381.6
Testing/Commissioning	108.2	21.6	129.8
Total Construction			**19,155.5**
Annual Average (Seven-Year Construction)			*2,736.5*
Amortized Emissions (30-Year Lifetime)			***638.5***

Source: STV 2022; TAHA, 2022

Construction of the Trench Option would generate approximately 19,156 $MTCO_2e$ over the seven-year duration, which equates to an average of approximately 2,736.5 $MTCO_2e$ annually during that timeframe. Relative to the Proposed Project, construction of the Trench Option would generate an additional 6,058 $MTCO_2e$ of GHG emissions due to increased haul truck activities and the extended schedule. SCAQMD guidance states that for CEQA assessments, construction-related GHG emissions should be amortized over a 30-year operational project lifetime due to the inherently cumulative nature of GHG emissions and the persistence of GHGs in the atmosphere. The amortized GHG emissions rate during construction of the Trench Option would be approximately 639 $MTCO_2e$ annually throughout the operational lifetime, and these emissions are considered in conjunction with future operational emissions. Impacts resulting from GHG emissions during construction of the Trench Option would be **less than significant**.

HAWTHORNE OPTION

Less Than Significant Impact. Similar to the Proposed Project, construction of the Hawthorne Option would take place over approximately five years between 2029[1]–2035 and would generate temporary GHG emissions through off-road equipment exhaust and on-road haul truck trips, concrete and material delivery trips, and construction crew vehicle trips. As mentioned previously, all construction activities would incorporate PF-AQ-1, PF-AQ-3 and PF-AQ-4, which would minimize emissions through ensuring that equipment and vehicles are operated at optimal manufacturer specifications and are not allowed to idle for more than five minutes when not in use. CARB's OFFROAD2017-ORION emissions inventory model and the EMFAC on-road mobile source emissions model was used to estimate GHG emissions that would be produced during each phase of Hawthorne Option construction, as summarized below in Table 3.5-15.

Table 3.5-15. Hawthorne Option Construction GHG Emissions

Construction Phase	Off-Road Equipment	On-Road Vehicles	Phase Total
Short-Term Construction GHG Emissions ($MTCO_2e$)			
Early Utility Relocation	1,430.5	404.1	1,834.7
Project Start-Up	68.8	605.1	673.9
Final Utility Relocations	636.2	304.4	940.5
LRT Guideway Bridges	2,919.5	2,161.0	5,080.5
Freight Retaining Walls	267.3	966.3	1,233.6
LRT Retaining Walls	792.9	122.3	915.3
Freight Trackwork (BNSF)	171.5	284.1	455.6
Stations and Access	617.9	335.3	953.1
LRT Trackwork	359.4	838.3	1,197.7
Systems Construction	271.7	109.7	381.4
Testing/Commissioning	108.2	21.1	129.3
Total Construction			**13,795.6**
Annual Average (Five-Year Construction)			*2,299.3*
Amortized Emissions (30-Year Lifetime)			***459.9***

Source: STV 2022; TAHA, 2022

Construction of the Hawthorne Option would generate approximately 13,796 $MTCO_2e$ over the six-year duration, which equates to an average of approximately 2,300 $MTCO_2e$ annually during that timeframe. Relative to the Proposed Project, construction of the Hawthorne Option would generate approximately 700 $MTCO_2e$ more of GHG emissions due to reduced haul truck activities. SCAQMD guidance states that for CEQA assessments, construction-related GHG emissions should be amortized over a 30-year operational project lifetime due to the inherently cumulative nature of GHG emissions and the

[1] Coordination with Caltrans would need to take place prior to the initiation of construction as part of the Hawthorne Option, resulting in a later start date than the Proposed Project or Trench Option

persistence of GHGs in the atmosphere (SCAQMD, 2008). The amortized GHG emissions rate during construction of the Hawthorne Option would be approximately 460 $MTCO_2e$ annually throughout the operational lifetime, and these emissions are considered in conjunction with future operational emissions. Impacts resulting from GHG emissions during construction of the Hawthorne Option would **be less than significant**.

3.5-4.1.2 *Operational Impacts*

Less Than Significant Impact. As discussed, implementation of the Proposed Project would generate direct GHG emissions during temporary construction activities from off-road equipment and on-road vehicle exhaust and long-term indirect GHG emissions would be generated through energy use (i.e., light rail transit propulsion, lighting, and accessory equipment at station platforms). GHG emissions from on-road motor vehicles would also be substantially affected through induced mode shift emissions displacement. The 2022 Climate Change Scoping Plan Update identifies that the transportation sector has three major means of reducing GHG emissions: transportation electrification, building decarbonization, and reducing VMT. CARB acknowledges that employing VMT as the metric of CEQA transportation impacts statewide will help GHG reductions planned under SB 375 be achieved. Furthermore, CARB determined it would not be possible to achieve the state's 2030 and 2045 emissions goals without reducing VMT growth, and that the state was not on track to achieve 2017 VMT reduction goals (CARB, 2019a; CABR 2022a). Table 3.5-16 summarizes annual average GHG emissions that would be generated in the operational year of 2042. After accounting for amortized construction emissions, Proposed Project operations would result in a net reduction of approximately 2,369.4 $MTCO_2e$ annually in 2042 primarily due to displaced on-road vehicle trips.

Table 3.5-16. Proposed Project and Options GHG Emissions (2042)

Operational Source	Proposed Project	Trench Option	Hawthorne Option
Amortized Construction ($MTCO_2e$/year)	**436.6**	**638.5**	**459.9**
Light Rail Corridor Electricity (MWh/year)	6,946.5	6,946.5	6,946.5
Stations & Parking Lot Electricity (MWh/year)	882.0	882.0	882.0
Indirect Electricity Emissions ($MTCO_2e$/year)	**915.5**	**915.5**	**915.5**
Vehicle Trip Displacement (VMT/day)	49,233	49,233	49,589
Emissions Displacement ($MTCO_2e$/year)	**(3,721.4)**	**(3,721.4)**	**(3,748.4)**
Total Annual Emissions ($MTCO_2e$/year)	**(2,369.4)**	**(2,167.4)**	**(2,373.0)**

Source: TAHA, 2022

As presented in Table 3.5-16, implementation of the Proposed Project would decrease regional on-road VMT by 49,233 daily miles through transportation mode shift, and net GHG emissions in 2042 would be a reduction of 2,369.4 $MTCO_2e$ annually. Long-term operation of the Proposed Project would advance state, regional, and local initiatives to reduce GHG emissions by providing alternative modes of transportation and creating an efficient, well-connected public transit network to serve surrounding communities. Implementation of the Proposed Project would enhance the Metro network GHG emissions displacement through mode shift by 3,721.4 $MTCO_2e$, which represents an additional two percent reduction relative to 2019 Metro operations summarized in

Table 3.5-12 (186,515 $MTCO_2e$ displaced). The Proposed Project is consistent with CARB plans and policies to reduce GHG emissions from passenger vehicles by providing alternative transportation modes for both local and regional trips. Implementation of the Proposed Project and other planned transportation and transit improvements in the region are critical to achieving the SB 375 regional per capita targets for light duty vehicles. Therefore, implementation of the Proposed Project would result in a **less than significant impact** related to the generation of GHG emissions, and mitigation would not be required.

TRENCH OPTION

Less Than Significant Impact. The analysis of GHG emissions associated with the Trench Option is similar to the discussion presented above for the Proposed Project. Implementation of the Trench Option would generate direct GHG emissions during temporary construction activities from off-road equipment and on-road vehicle exhaust and long-term indirect GHG emissions would be generated through energy use (i.e., light rail transit propulsion, lighting, and accessory equipment at station platforms). GHG emissions from on-road motor vehicles would also be substantially affected through induced mode shift emissions displacement. The 2022 Scoping Plan identifies that the transportation sector has three major means of reducing GHG emissions: transportation electrification, building decarbonization, and reducing VMT. CARB acknowledges that employing VMT as the metric of CEQA transportation impacts statewide will help GHG reductions planned under SB 375 be achieved. Furthermore, CARB determined it would not be possible to achieve the state's 2045 emissions goals without reducing VMT growth. Table 3.5-16 summarizes annual average GHG emissions that would be generated during long-term Trench Option operations in the design year of 2042. After accounting for amortized construction emissions, Trench Option operations would result in a net reduction of approximately 2,167.4 $MTCO_2e$ annually in 2042 due to displaced on-road vehicle trips.

As presented in Table 3.5-16, implementation of the Trench Option would decrease regional on-road VMT by 49,233 daily miles through transportation mode shift, and net GHG emissions would be a reduction of 2,167.4 $MTCO_2e$ annually. Long-term operation of the Trench Option would advance State, regional, and local initiatives to reduce GHG emissions by providing alternative modes of transportation and creating an efficient, well-connected public transit network to serve communities. Implementation of the Trench Option would enhance the GHG emissions displacement through mode shift by 3,721.4 $MTCO_2e$, which represents an additional two percent reduction relative to 2019 Metro operations summarized in

Table 3.5-12 (186,515 $MTCO_2e$ displaced). The Trench Option would be consistent with CARB plans and policies to reduce GHG emissions from passenger vehicles by providing alternative transportation modes for both local and regional trips. Therefore, implementation of the Trench Option would result in a **less than significant impact** related to the generation of GHG emissions, and mitigation would not be required.

HAWTHORNE OPTION

Less Than Significant Impact. The analysis of GHG emissions associated with the Hawthorne Option is similar to the discussion presented above for the Proposed Project. Implementation of the Hawthorne Option would generate direct GHG emissions during temporary construction activities from off-road equipment and on-road vehicle exhaust and long-term indirect GHG emissions would be generated through energy use (i.e., light rail transit propulsion, lighting, and accessory equipment at station platforms). GHG emissions from on-road motor vehicles would also be substantially affected through induced mode shift emissions displacement. The 2022 Climate Change Scoping Plan Update identifies

that the transportation sector has three major means of reducing GHG emissions: transportation electrification, building decarbonization, and reducing VMT. CARB acknowledges that employing VMT as the metric of CEQA transportation impacts statewide will help GHG reductions planned under SB 375 be achieved. Furthermore, CARB determined it would not be possible to achieve the state's 2045 emissions goals without reducing VMT growth. Table 3.5-16 summarizes annual average GHG emissions that would be generated during long-term Hawthorne Option operations in the design year of 2042. After accounting for amortized construction emissions, Hawthorne Option operations would result in a net reduction of approximately 2,373 $MTCO_2e$ annually in 2042 due to displaced on-road vehicle trips.

As presented in Table 3.5-16, above, implementation of the Hawthorne Option would decrease regional on-road VMT by 49,589 daily miles through transportation mode shift, and net GHG emissions would be a reduction of 2,373 $MTCO_2e$ annually. Long-term operation of the Hawthorne Option would contribute to advancing state, regional, and local initiatives to reduce GHG emissions by providing alternative modes of transportation and creating an efficient, well-connected public transit network to serve communities. Implementation of the Hawthorne Option would enhance the GHG emissions displacement through mode shift by 3,748.4 $MTCO_2e$, which represents an additional two percent reduction relative to 2019 Metro operations summarized in

Table 3.5-12 (186,515 $MTCO_2e$ displaced). The Hawthorne Option would be consistent with CARB plans and policies to reduce GHG emissions from passenger vehicles by providing alternative transportation modes for both local and regional trips. Therefore, implementation of the Hawthorne Option would result in a **less than significant impact** related to the generation of GHG emissions, and mitigation would not be required.

3.5-4.2 Would the Project Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

3.5-4.2.1 *Construction Impacts*

Less Than Significant Impact. At the state level, the primary transportation-related plans and regulations that address GHG emissions include SB 375, SB 32, and the 2022 Scoping Plan Update, which is the latest iteration of the Climate Change Scoping Plan to implement AB 32. The primary regional GHG emissions reduction plan is contained within the SCS portion of the SCAG Connect SoCal 2020–2045 RTP/SCS. Metro will prioritize and ensure consistency with its own 2019 CAAP and 2020 MBSSP for all projects being implemented. At the local level, the Proposed Project alignment would traverse portions of the Cities of Lawndale, Redondo Beach, and Torrance and would also comply with each city's GHG reduction plan to the extent feasible.

Construction of the Proposed Project would temporarily generate GHG emissions associated with off-road equipment and on-road vehicle activities, and following completion of the light rail transit corridor sources involved in construction activities would no longer produce emissions associated with the Proposed Project. The cumulative nature of GHG emissions implicitly precludes the potential for short-term emissions generated during construction to interfere with long-term GHG emission reduction targets established by state, regional, and local planning documentation. In accordance with SCAQMD guidance, the GHG emissions that would be generated during construction were amortized over a 30-year operational lifetime and considered in conjunction with the long-term operational effects of the Proposed Project. The discussion of operational impacts below addresses GHG emissions that would be produced during Proposed Project construction. Therefore, the Proposed Project is consistent with the SCAG SCS, and would result in **less than significant impacts** related to regional GHG reductions.

TRENCH OPTION

Less Than Significant Impact. Similar to the Proposed Project, GHG emissions that would be generated during construction of the Trench Option are evaluated in conjunction with the long-term operational effects. Although construction of the Trench Option would temporarily generate approximately 19,156 $MTCO_2e$ of GHG emissions from off-road equipment and on-road vehicle trips, the permanent effect of Trench Option operations would be a net GHG emissions reduction, as summarized in Table 3.5-16. Therefore, construction of the Trench Option would result in **less than significant impacts** related to GHG plan consistency and would produce environmental benefits related to vehicle emissions.

HAWTHORNE OPTION

Less Than Significant Impact. Similar to the Proposed Project, GHG emissions that would be generated during construction of the Hawthorne Option are evaluated in conjunction with the long-term operational effects. Although construction of the Hawthorne Option would temporarily generate approximately 13,796 $MTCO_2e$ of GHG emissions from off-road equipment and on-road vehicle trips, the permanent effect of Hawthorne Option operations would be a net GHG emissions reduction, as summarized in Table 3.5-16. Therefore, construction of the Hawthorne Option would result in **less than significant impacts** related to GHG plan consistency and would produce environmental benefits related to vehicle emissions.

3.5-4.2.2 *Operational Impacts*

Less Than Significant Impact. A significant GHG impact may occur if implementation of the Proposed Project could conflict with applicable GHG reductions plans, policies or regulations. At the state level, the primary transportation-related plans and regulations that address GHG emissions include SB 375, SB 32, and the 2022 Scoping Plan Update, which is the latest iteration of the Climate Change Scoping Plan to implement AB 32. The primary regional GHG emissions reduction plan is contained within the SCS portion of the SCAG Connect SoCal 2020–2045 RTP/SCS. By default, Metro will prioritize and ensure consistency with its own 2019 CAAP and 2020 MBSSP for all projects being implemented. At the local level, the Proposed Project alignment would traverse portions of the Cities of Lawndale, Redondo Beach, and Torrance and would also comply with each city's GHG reduction plan to the extent feasible.

CARB's 2022 Scoping Plan Update (CARB, 2022a) provides a blueprint for the state to reduce GHG emissions in order to meet the goals set under SB 32 of achieving a 40% reduction in GHG emissions from 1990 levels by 2030 and achieving carbon neutrality by 2045. Implementing the 2022 Scoping Plan also puts California on a trajectory to exceed the 80% reduction from 1990 levels by 2050 in accordance with EO S-3-05. CARB acknowledges that while most of the GHG reductions from the transportation sector will come from technologies and low carbon fuels, VMT reductions are necessary to achieve the 2030 emissions target and must be party of any transportation strategy considered, and the state is currently not on track to reduce VMT by the metrics outlined in the previous 2017 plan. The 2022 Scoping Plan Update identifies that slower growth in VMT from more efficient land use development and passenger vehicle trip displacement would promote achievement of the State's climate goals. The CARB 2020 Mobile Source Strategy (2021) and the 2022 Scoping Plan Update) identified that a 15% reduction in statewide light-duty automobile VMT relative to business-as-usual is required to achieve the 2050 GHG emissions goals.

Implementation of the Proposed Project would directly contribute to the statewide efforts to reduce light-duty automobile VMT, inducing a daily displacement of approximately 49,223 light-duty vehicle miles. Furthermore, the enhanced transit connectivity provided by the Proposed Project would result in

intersectional benefits related to promoting active transportation, which CARB has identified as a key element of the 2022 Scoping Plan Update strategy. Based on this analysis, the Proposed Project would not conflict with CARB's Scoping Plan and would result in environmental benefits related to advancing statewide VMT and GHG emissions reduction efforts.

The primary regional-level planning document addressing GHG emissions reductions is SCAG's Connect SoCal 2020–2045 RTP/SCS, which presents strategies and tools that are consistent with local jurisdictions' land use policies and incorporate BMPs for achieving the state-mandated reductions in GHG emissions. Connect SoCal identifies improved accessibility and mobility as one of its goals, with light-duty VMT reductions being the crux of the SCS document's purpose. The Proposed Project would provide an expansion of light rail transit service that would directly increase transit capacity, which would support the SCS' goal of improved accessibility and mobility relative to the future (2042) baseline condition. Implementation of the Proposed Project would not conflict with the goals of SB 375 and the SCAG RTP/SCS in that it would provide extended transit service along the Metro C (Green) Line corridor, promoting active transportation and inducing mode shift to displace light-duty passenger vehicle trips.

Overall, SCAG analysis determined that effectively implementing Connect SoCal would achieve a 10.8-percent reduction in daily per-capita VMT, and implementation of the Proposed Project would contribute to that forecasted decrease. The Proposed Project would also introduce two new light rail transit stations within Los Angeles County, which would provide increased opportunities for transit-oriented development and High-Quality Transit Areas. These are key land use orientation strategies identified within Connect SoCal that are imperative to ensuring that regional GHG emissions reductions are met. By enhancing connectivity to the regional transit network, the Proposed Project would result in environmental benefits and would accommodate further strategies to reduce emissions at the community level. Therefore, the Proposed Project is consistent with the SCAG SCS, and would result in **less than significant impacts** related to regional GHG reductions.

TRENCH OPTION

Less Than Significant Impact. The analysis of Trench Option consistency with GHG emissions reduction plans is congruent with the discussion presented for the Proposed Project at the state, regional, and local levels. As summarized in Table 3.5-16 implementation of the Trench Option would result in a daily light-duty VMT displacement of 49,233 vehicle miles and would reduce annual GHG emissions within Los Angeles County by approximately 2,167.4 $MTCO_2e$ in the operational year of 2042. The Trench Option would enhance regional transit connectivity, promote active transportation and transit-oriented development, and would induce decreases in per-capita VMT consistent with CARB Climate Change Scoping Plan and SCAG SCS policies. Therefore, the Trench Option would result in **less than significant impacts** related to GHG plan consistency and would produce environmental benefits related to vehicle emissions.

HAWTHORNE OPTION

Less Than Significant Impact. The analysis of Hawthorne Option consistency with GHG emissions reduction plans is congruent with the discussion presented for the Proposed Project at the state, regional, and local levels. As summarized in Table 3.5-16, implementation of the Hawthorne Option would result in a daily light-duty VMT displacement of 49,589 vehicle miles and would reduce annual GHG emissions within Los Angeles County by approximately 2,373 $MTCO_2e$ in the operational year of 2042. The Hawthorne Option would enhance regional transit connectivity, promote active transportation and transit-oriented development, and would induce decreases in per-capita VMT consistent with CARB Climate Change Scoping Plan and SCAG SCS policies. Therefore, the Hawthorne

Option would result in **less than significant impacts** related to GHG plan consistency and would produce environmental benefits related to vehicle emissions.

3.5-5 Mitigation Measures

No mitigation measures are required, as there are no significant impacts related to GHG emissions.

3.5-6 Project Impacts Remaining After Mitigation

As described in Section 3.5-5, no mitigation measures are required to reduce construction and operation impacts to a level below significance.

3.5-7 Cumulative Impacts

The methodology for cumulative analysis and a description of relevant projects and projections are included in Section 3.0, Introduction. The geographic scope of the cumulative analysis for greenhouse gas emissions are the RSAs described in Section 3.5-2.1, defined as the six-county geographic region under the SCAG jurisdiction, as shown on Figure 3.5-1.

3.5-7.1 Proposed Project

From a cumulative standpoint, reasonably foreseeable actions within the RSA include all transportation projects that are programmed in the Connect SoCal 2020–2045 RTP/SCS. CARB issued a determination that the Connect SoCal SCS successfully demonstrated that the region would attain its established SB 375 per capita GHG emissions targets in the 2035 horizon year of the analysis on October 30, 2020. This determination relies on projects that are programmed into the RTP/SCS being implemented, one of which is the Proposed Project as identified under Federal Transportation Improvement Program (FTIP) ID LA0G632. Additionally, as discussed in Sections 3.5.4-1, although implementation of the Proposed Project would generate direct GHG emissions during temporary construction activities from off-road equipment and on-road vehicle exhaust and long-term indirect GHG emissions would be generated through energy use (i.e., light rail transit propulsion, lighting and accessory equipment at station platforms), GHG emissions from on-road motor vehicles would be substantially affected through induced mode shift emissions displacement. The Proposed Project is anticipated to reduce GHG emissions when compared to future 2042 baseline conditions. Further, as discussed in Section 3.5.4-2, the Proposed Project would not conflict with GHG emissions reductions plans and policies. Therefore, the incremental contribution of the Proposed Project to cumulatively significant GHG emission impacts would not be cumulatively considerable. The Proposed Project would ultimately provide environmental and community benefits related to GHG emissions reductions and active transportation.

3.5-7.2 Trench Option

The analysis of cumulative impacts associated with implementation of the Trench Option is similar to the discussion presented above for the Proposed Project. The Trench Option is included in the 2020–2045 Connect SoCal RTP/SCS under FTIP ID LA0G632, and would contribute to statewide, regional, and local efforts to reduce light-duty VMT in accordance with SB 375 and the Climate Change Scoping Plan. As discussed in Section 3.5.4-1, although implementation of the Trench Option Project would generate direct GHG emissions during temporary construction activities from off-road equipment and on-road vehicle exhaust and long-term indirect GHG emissions would be generated through energy use (i.e., light rail transit propulsion, lighting and accessory equipment at station platforms), GHG emissions from on-road motor vehicles would be substantially affected through induced mode shift emissions displacement. The Trench Option is anticipated to reduce GHG emissions when compared to future 2042 baseline conditions. Further, as discussed in Section 3.5.4-2, the Proposed Project would not

conflict with GHG emissions reductions plans and policies. The incremental contribution of the Trench Option to cumulatively significant GHG emissions impacts would not be cumulatively considerable. Ultimately, the Trench Option would provide environmental and community benefits related to GHG emissions reductions and active transportation.

3.5-7.3 Hawthorne Option

The analysis of cumulative impacts associated with implementation of the Hawthorne Option is similar to the discussion presented above for the Proposed Project. The Hawthorne Option is included in the 2020–2045 Connect SoCal RTP/SCS under FTIP ID LA0G632, and would contribute to statewide, regional, and local efforts to reduce light-duty VMT in accordance with SB 375 and the Climate Change Scoping Plan. As discussed in Section 3.5.4-1, although implementation of the Hawthorne Option would generate direct GHG emissions during temporary construction activities from off-road equipment and on-road vehicle exhaust and long-term indirect GHG emissions would be generated through energy use (i.e., light rail transit propulsion, lighting and accessory equipment at station platforms), GHG emissions from on-road motor vehicles would be substantially affected through induced mode shift emissions displacement. The Hawthorne Option is anticipated to reduce GHG emissions when compared to future 2042 baseline conditions. Further, as discussed in Section 3.5.4-2, the Proposed Project would not conflict with GHG emissions reductions plans and policies. The incremental contribution of the Hawthorne Option to cumulatively significant GHG impacts would not be cumulatively considerable. Ultimately the Hawthorne Option would provide environmental and community benefits related to GHG emissions reductions and active transportation.

3.6 NOISE AND VIBRATION

This section of the Draft EIR provides an analysis of potential impacts on noise and vibration levels.

3.6-1 Regulatory Framework / Methodology

Federal, state, regional, and local regulations and guidance concerning noise and vibration are described in the following section. As discussed below, the noise and vibration analysis follows guidance issued by the Federal Transit Administration (FTA). The FTA noise and vibration guidance was specifically developed to assess potential impacts from transit projects. Therefore, the following section includes relevant guidance provided by FTA. Additional information regarding the noise and vibration methodology and significance thresholds used for this assessment is provided in Section 3.6.2.

3.6-1.1 Noise and Vibration Definitions and Background

Noise

The following background information is summarized from the 2018 FTA Transit Noise and Vibration Assessment Manual (FTA Manual). Sound is technically described in terms of the amplitude (loudness) and pitch (frequency). Sound is transmitted as acoustic energy, which is vibration (sound waves) that travel through various media (materials). The standard unit of measurement for sound is the decibel (dB). The human ear is not equally sensitive to sound at all frequencies. The A-weighted scale (dBA) reflects the normal hearing sensitivity range of the human ear. Example A-weighted decibel noise levels for common outdoor and indoor noise sources are shown in Figure 3.6-1. Noise is generally defined as unwanted sound. The noise analysis discusses sound levels in terms of equivalent noise level (L_{eq}), day-night noise level (L_{dn}), sound exposure level (SEL), and maximum sound level (L_{max}). L_{eq} is the average noise level of the total sound energy for any specific time period.

For the purposes of the operational noise impact analysis, the L_{eq} for one hour is the energy average noise level during the hour. An 8-hour L_{eq} is the energy average noise level during a time period of eight hours. The average noise level is based on the energy content (acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise that has the same energy content as the fluctuating noise level. The L_{eq} is expressed in units of dBA.

L_{dn} is a 24-hour L_{eq} with an adjustment to reflect the greater sensitivity of most people to nighttime noise. The adjustment is a 10-dBA penalty for all sound that occurs in the nighttime hours of 10:00 p.m. to 7:00 a.m. The effect of the penalty is that in the calculation of L_{dn}, any event that occurs during the nighttime hours is equivalent to 10 of the same events during the daytime hours. L_{max} is the maximum A-weighted sound level reached during a single noise event (a train passing, for example). However, L_{max} is not used as the descriptor for transit environmental noise impact assessment for several reasons. L_{max} ignores the number and duration of transit events, which are important to people's reaction to noise and cannot be totaled into a one-hour or a 24-hour cumulative measure of impact. For the purposes of this analysis, L_{max} was used to obtain SEL.

SEL is the cumulative noise exposure from a single noise event. The fact that SEL is a cumulative measure means that (1) louder events have greater SELs than do quieter ones, and (2) events that last longer in time have greater SELs than do shorter ones.

Figure 3.6-1. A-Weighted Decibel Scale and Common Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	— 110 —	Rock band
Jet fly-over at 1000 feet		
	— 100 —	
Gas lawn mower at 3 feet		
	— 90 —	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	— 80 —	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	— 70 —	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	— 60 —	
		Large business office
Quiet urban daytime	— 50 —	Dishwasher next room
Quiet urban nighttime	— 40 —	Theater, large conference room (background)
Quiet suburban nighttime		
	— 30 —	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	— 20 —	
		Broadcast/recording studio
	— 10 —	
Lowest threshold of human hearing	— 0 —	Lowest threshold of human hearing

Source: Caltrans, 2013a

The degree to which noise can impact the human environment ranges from levels that interfere with speech and sleep (annoyance and nuisance) to levels that cause adverse health effects (hearing loss and psychological effects). Human response to noise is subjective and can vary greatly from person to person. Factors that influence individual response include the intensity, frequency, and pattern of noise as well as the amount of background noise present before the intruding noise and the nature of work or human activity that is exposed to the noise source.

Vibration

Characteristics Of Vibration

Vibration is an oscillatory motion through a solid medium, such as soil or concrete, in which the motion's amplitude (range) can be described in terms of displacement, velocity, or acceleration. Vibration is also acoustic energy transmitted as waves through the solid medium. The rate at which pressure changes occur is called the frequency of the vibration, measured by the number of oscillations per second or Hertz (Hz). Vibration may be in the form of a single pulse of acoustical energy, a series of pulses, or a continuous oscillating motion.

Ground-borne vibration is generated by a vibration source that can be propagated through the ground or on the surface. Ground-borne noise is an audible noise caused by the vibration of elements of a structure for which the vibration propagation path from the source is partially or wholly through the ground (not airborne propagation). The way that vibration is transmitted through the ground depends on the soil type, the presence of rock formations or man-made features, and the topography between the vibration source and the receptor location. Generally, vibration waves tend to dissipate and reduce in magnitude with distance from the source. Also, the high frequency vibrations are generally

attenuated rapidly as they travel through the ground, so that the vibration received at locations distant from the source tends to be dominated by low-frequency vibration. The frequencies of ground-borne vibration most perceptible to humans are in the range from less than 1 Hz to 100 Hz.

Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as blasting, pile driving, and heavy earth-moving equipment.

High levels of vibration may cause damage to buildings. However, ground-borne vibration levels rarely affect human health. Instead, most people consider ground-borne vibration to be an annoyance that can affect concentration or disturb sleep. In addition, high levels of ground-borne vibration can damage fragile buildings or interfere with equipment that is highly sensitive to ground-borne vibration (e.g., electron microscopes).

Vibration Descriptors

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to assess potential vibration damage impacts to buildings and is usually measured in inches per second. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the velocity signal. Decibel notation for vibration level (VdB) is commonly used to measure RMS. The VdB metric acts to compress the range of numbers required to describe vibration. Vibration Level (Lv) is expressed in Velocity Level Decibels (Lv, VdB).

Effects of Vibration

When ground-borne vibration arrives at a building, a portion of the energy will be reflected or refracted away from the building, and a portion of the energy will typically continue to penetrate through the ground-building interface. However, once the vibration energy is in the building structure, it can be amplified by the resonance of the walls and floors. Occupants can perceive vibration as motion of the building elements (particularly floors) and rattling of lightweight components, such as windows, shutters, or items on shelves. At very high amplitudes (energy levels), low-frequency vibration can cause damage to buildings.

Unlike noise, ground-borne vibration is not a phenomenon that most people experience every day. Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people or slamming of doors. Typical outdoor sources of perceptible ground-borne vibration are construction equipment and traffic on rough roads. If the roadway is smooth and well-maintained, the vibration from traffic is rarely perceptible.

Level of Vibration Analysis

FTA guidance includes three separate levels of analysis for assessing vibration impacts and required mitigation: Screening, General, and Detailed. The General Assessment method is typically appropriate when evaluating multiple project alternatives or options, and therefore this EIR utilized the FTA General Assessment method. The Detailed Assessment is the most appropriate method once a final alternative and option is selected, and per the FTA Manual, it is also required if the General Assessment identifies impacts that cannot be mitigated. During final design, an FTA Detailed Vibration Assessment would be conducted, including transfer mobility testing, to confirm the vibration impacts and mitigation recommendations presented in this EIR.

3.6-1.2 Federal Regulations

Federal Railroad Administration (FRA)

Under the Train Horn Rule (49 CFR Part 222), locomotive engineers must begin to sound train horns at least 15 seconds, and no more than 20 seconds, in advance of all public grade crossings. Horns should begin to sound within one quarter mile of crossings. The maximum volume level for the train horn is 110 dB and the minimum sound level is 96 dB.

The final rule also provides an opportunity for localities nationwide to mitigate the effects of train horn noise by establishing "new quiet zones." "No horn" restriction which may have existed prior to the establishment of the rule may be qualified to be "pre-rule quiet zones." In a quiet zone, railroads have been directed to cease the routine sounding of their horns when approaching public street-rail grade crossings. Train horns may still be used in emergency situations or to comply with other Federal regulations or railroad operating rules. Localities desiring to establish a quiet zone are first required to mitigate the increased risk caused by the absence of a horn by installing supplemental safety measures. The requirements for creating a quiet zone are as follows:

- A New Quiet Zone must be at least one-half mile in length along the railroad tracks
- A New Quiet Zone must have, at a minimum, flashing lights and gates in place at each public crossing. These must be equipped with constant warning time devices where reasonably practical, and power out indicators.
- Installed required signage noting the quiet zone in effect.
- Approved supplemental safety measures typically including one or more of the following:
    - Temporary closure of public rail grade crossing(s) during designated quiet periods.
    - Four-Quadrant Gate System that would fully block street traffic from entering the crossing when the gates are lowered.
    - Gates with medians or channelization devices which deny traffic the option of circumventing the approach lane gates and switching into oncoming traffic lane.
    - One-way street with gates that would completely block all approaching lanes to the public street-rail grade crossing.
    - Permanent closure of public street-rail grade crossing which would prohibit crossing of street traffic.

Federal Transit Administration

The Proposed Project's noise and vibration analysis follows the FTA Manual, 2018. The guidelines for noise and vibration are summarized below.

Noise

FTA standards and criteria for assessing noise impacts related to transit projects are based on community reactions to noise. The criteria reflect changes in noise exposure using a sliding scale where the higher the level of existing noise, the smaller increase in total noise exposure is allowed. Some land use activities are more sensitive to noise than others, such as parks, churches, and residences as compared to industrial and commercial uses. FTA Noise Impact Criteria groups sensitive land uses into the three categories described in Table 3.6-1. Most commercial or industrial uses are not considered

noise-sensitive because activities within these buildings are generally compatible with higher noise levels. Businesses can be considered noise-sensitive if low noise levels are an important part of operations, such as sound and motion picture recording studios.

Table 3.6-1. Land Use Categories and Metrics for Transit Noise Impact Criteria

Land Use Category	Land Use Type	Noise Metric, dBA	Description of Land Use Category
1	High Sensitivity	Outdoor L_{eq} (1 hour)[1]	Land where quiet is an essential element of its intended purpose. Example land uses include preserved land for serenity and quiet, outdoor amphitheaters and concert pavilions, and national historic landmarks with considerable outdoor use. Recording studios and concert halls are also included in this category.
2	Residential	Outdoor L_{dn} (24 hour)	This category is applicable to all residential land use and buildings where people normally sleep, such as homes, hotels and hospitals.
3	Institutional	Outdoor L_{eq} (1 hour)[1]	This category is applicable to institutional land uses with primarily daytime and evening use. Example land uses include schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities are also included in this category.

Source: FTA, 2018

[1] L_{eq} (1 hour) for the loudest hour of project related activity during hours of noise sensitivity.

dBA = A-weighted decibels; L_{eq} = hourly equivalent noise level; L_{dn} = day-night noise level

Category 1 and 3 uses are assessed against the 1-hour L_{eq} noise metric because the primary concern for these uses is daytime, and nighttime sensitivity is not a factor. Category 2 uses are assessed using the 24-hour L_{dn} noise metric to account for nighttime sensitivity of residential uses that fall within this category. Most parks used primarily for active recreation such as sports complexes and bike or running paths are not considered sensitive to increased noise levels. However, some parks (even some in dense urban areas) are primarily used for passive recreation such as reading, conversation, or meditation. These places, which may be valued as havens from the noise and rapid pace of everyday city life, are treated as noise-sensitive, and are included in land use Category 3.

The FTA has defined three levels of noise impacts for sensitive uses affected by transit projects: no impact, moderate impact, or severe impact. A description of each impact level is shown in Table 3.6-2. The following three impact levels are also illustrated in Figure 3.6-2. For this project, Metro considers both moderate and severe levels of impact to be significant impacts under CEQA, which would require mitigation.

Table 3.6-2. FTA Levels of Noise Impacts

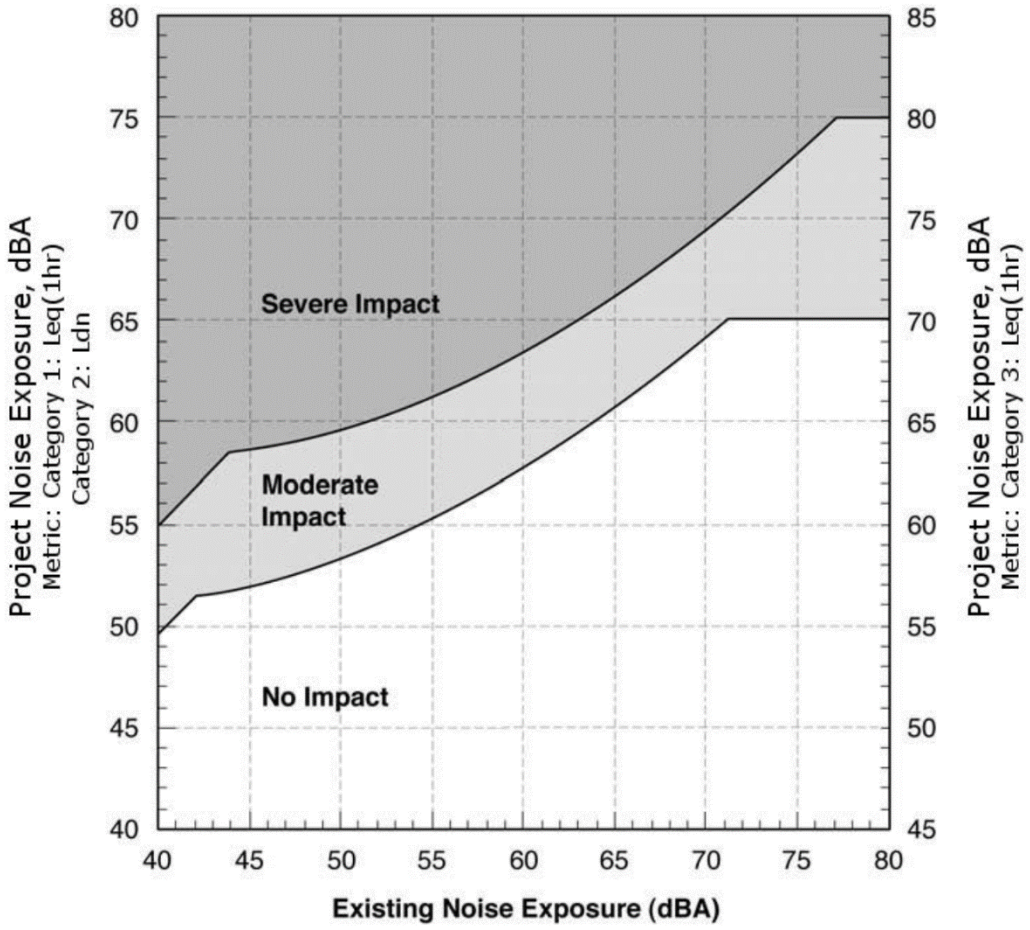
Level of Impact	Description
No Impact	Project-generated noise is not likely to cause community annoyance. Noise projections in this range are considered acceptable by FTA and mitigation is not required.
Moderate Impact	Project-generated noise in this range is considered to cause impact at the threshold of measurable annoyance. Moderate impacts serve as an alert to project planners for potential adverse impacts and complaints from the community. Mitigation should be considered at this level of impact based on project specifics and details concerning the affected properties.
Severe Impact	Project-generated noise in this range is likely to cause a high level of community annoyance. The project sponsor should first evaluate alternative locations/alignments to determine whether it is feasible to avoid severe impacts altogether. In densely populated urban areas, evaluation of alternative locations may reveal a trade-off of affected groups, particularly for surface rail alignments. Projects that are characterized as point sources rather than line sources often present greater opportunity for selecting alternative sites. This guidance manual and FTA's environmental impact regulations both encourage project sites which are compatible with surrounding development when possible. If it is not practical to avoid severe impacts by changing the location of the project, mitigation measures must be considered.

Source: FTA, 2018

The noise impact criteria for transit operations are summarized in Table 3.6-3. The first column shows the existing noise exposure, and the remaining columns show the additional noise exposure caused by a transit project that would result in the two impact levels. To read Table 3.6-3 or chart (Figure 3.6-2), start with the existing noise level at the sensitive receptor then use the table to find the corresponding impact criteria. For example, if the existing noise level for a residence (a Category 2 sensitive receptor) was 50 dBA, L_{dn}, the corresponding moderate impact criteria range would be 54 to 59 dBA, L_{dn}, and the corresponding severe impact criteria range would be noise levels greater than 59 dBA, L_{dn}. If the residence was in an area with a higher existing noise level of 60 dBA, $L_{dn,}$, then the corresponding moderate impact criteria range would be 58 to 63 dBA, $L_{dn,}$ and the corresponding severe impact criteria range would be noise levels greater than 63 dBA, L_{dn}. For the purposes of this analysis, the FTA impact criteria was calculated for each cluster[1] of properties based upon existing noise exposure using equations found within Table C-1 of FTA Transit Noise and Vibration Impact Assessment guidance. The permanent total noise exposure resulting from the project would be the combination of the existing noise exposure and the additional noise exposure caused by a transit project.

[1] As discussed in detail in Section 3.6-2.2 below, for the purposes of the noise impact analysis, similar noise-sensitive properties along the Proposed Project, Trench Option, and Hawthorne Option were grouped into clusters, with each cluster assigned to one representative sensitive land use (e.g., residential).

Figure 3.6-2. Noise Impact Criteria for Transit Projects



Source: FTA, 2018

Table 3.6-3. Noise Impact Criteria for Transit Operations

Existing Noise Exposure L_{eq} or L_{dn} (dBA)	Project Noise Impact Exposure, L_{eq} (h) or L_{dn} (dBA)					
	Category 1 or 2 Sites			Category 3 Sites		
	No Impact	Moderate Impact	Severe Impact	No Impact	Moderate Impact	Severe Impact
<43	< Ambient + 10	Ambient + 10 to 15	>Ambient + 15	< Ambient + 15	Ambient + 15 to 20	>Ambient + 20
43	<52	52-58	>58	<57	57-63	63
44	<52	52-58	>58	<57	57-63	63
45	<52	52-58	>58	<57	57-63	63
46	<53	53-59	>59	<58	58-64	64
47	<53	53-59	>59	<58	58-64	64
48	<53	53-59	>59	<58	58-64	64
49	<54	54-59	>59	<59	59-64	64
50	<54	54-59	>59	<59	59-64	64
51	<54	55-60	>60	<59	59-65	65
52	<55	55-60	>60	<60	60-65	6
53	<55	55-60	>60	<60	60-65	65
54	<55	55-61	>61	<60	60-66	66
55	<56	55-61	>61	<61	61-66	66
56	<56	56-62	>62	<61	61-67	67
57	<57	57-62	>62	<62	62-67	67
58	<57	57-62	>62	<62	62-67	67
59	<58	58-63	>63	<63	63-68	68
60	<58	58-63	>63	<63	63-68	68
61	<59	59-64	>64	<64	64-69	69
62	<59	59-64	>64	<64	64-69	69
63	<60	60-65	>65	<65	65-70	70
64	<61	61-65	>65	<66	66-70	70
65	<61	61-66	>66	<66	66-71	71
66	<62	62-67	>67	<67	67-72	72
67	<63	63-67	>67	<68	68-72	72
68	<63	63-68	>68	<68	68-73	73
69	<64	64-69	>69	<69	69-74	74
70	<65	65-69	>69	<70	70-74	74
71	<66	66-70	>70	<71	71-75	75
72	<66	66-71	>71	<71	71-76	76
73	<66	66-71	>71	<71	71-76	76
74	<66	66-72	>72	<71	71-77	77
75	<66	66-73	>73	<71	71-78	78
76	<66	66-74	>74	<71	71-79	79
77	<66	66-74	>74	<71	71-79	79
>77	<66	66-75	>75	<71	71-80	80

Source: FTA, 2018

dBA = A-weighted decibels; L_{eq}(h) = hourly equivalent noise level; L_{dn} = day-night noise level

In addition to permanent noise impacts resulting from the project, construction noise is also assessed using the general assessment criteria guidance provided in the FTA Manual. FTA construction noise criteria are shown in Table 3.6-4. The 1-hour L_{eq}, dBA construction noise impact criteria represent the

average noise level over a 1-hour period of construction at which an impact would occur, and construction noise mitigation measures would be necessary.

Table 3.6-4. FTA Construction Noise Impact Criteria

Land Use	1-hour L_{eq} (dBA)	
	Day	Night
Residential	90	80
Commercial	100	100
Industrial	100	100

Source: FTA, 2018

Vibration

The FTA Manual provides general procedures for the prediction and impact assessment of vibration resulting from project construction and operation.

For construction vibration, FTA guidance provides impact criteria for two different impact types, potential building damage and potential human annoyance. Table 3.6-5 presents building damage impact criteria by building type. Table 3.6-6 provides annoyance vibration impact criteria for three different land use categories. The threshold of each category depends on the number of daily events, with an "event" defined by FTA guidance as a pass-by of a vehicle (train, bus or car). FTA establishes the following three categories of events:

- **Infrequent Events**: Fewer than 30 events per day (Most commuter rail branch lines and some freight lines)
- **Occasional Events**: 30 – 70 events per day (Most commuter rail main lines)
- **Frequent Events**: More than 70 events per day (Most rapid transit, such as the Proposed Project)

Table 3.6-5. Construction Vibration Damage Criteria

Building/ Structural Category	PPV, in/sec	Approximate L_v[1]
I. Reinforced-concrete, steel, or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90

Source FTA 2018, Table 7-5

[1] L_v values expressed in velocity in decibels, VdB re 1 micro-in/sec

PPV = peak particle velocity; L_v = vibration level

Table 3.6-6. Indoor Ground-Borne Vibration and Ground-Borne Noise Impact Criteria for General Vibration Assessment (Vibration Annoyance)

Land Use Category	GBV Impact Levels (VdB re 1 micro-inch /sec)			GBN Impact Levels (dBA re 20 microPascals)		
	Frequent Events	Occasional Events	Infrequent Events	Frequent Events	Occasional Events	Infrequent Events
Category 1: Buildings where vibration would interfere with interior operations.	65 VdB[1]	65 VdB[1]	65 VdB[1]	N/A[2]	N/A[2]	N/A[2]
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB	35 dBA	38 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB	40 dBA	43 dBA	48 dBA

Source FTA 2018, Table 6-3

[1]This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. For equipment that is more sensitive, a Detailed Vibration Analysis must be performed.

[2] Vibration-sensitive equipment is generally not sensitive to ground-borne noise; however, the manufacturer's specifications should be reviewed for acoustic and vibration sensitivity.

GBV = ground-borne vibration; GBN = ground-borne noise; VdB = decibel notation; dBA = A-weighted decibels

The vibration impact thresholds shown in Table 3.6-6 are used for both operational vibration and construction vibration activity. Construction activity is usually assessed against the "frequent events" threshold. Ground-borne vibration may be perceptible by many humans at a level as low as 65 VdB. Ground-borne noise is the sound generated by vibrations that are propagated through the ground into a vibration-sensitive structure, such as a residence. Ground-borne noise analysis is generally only conducted for underground transit systems (such as subways or tunnel sections) where there is no air-borne noise path between the source and receiver. As the Proposed Project and Options would not be located underground in a tunnel, ground-borne noise was not assessed in this analysis.

3.6-1.3 State and Regional Regulations

California Department of Transportation (Caltrans) Transportation and Construction Vibration Guidance Manual

There are no State regulations for ground vibration, but the California Department of Transportation (Caltrans) has published the Transportation and Vibration Guidance Manual, 2020, and this manual is largely consistent with the standards and techniques presented in the FTA Manual, as discussed above. Caltrans vibration damage thresholds are similar to FTA thresholds, with FTA building categories based more closely on building/construction type.

California Public Utilities Commission (CPUC)

The CPUC has jurisdiction over the operational safety measures at at-grade rail crossings. CPUC regulations require the use of audible warning devices, including on-vehicle audible warnings and crossing bells, at all grade crossings that are protected by crossing gates. CPUC Code Section 7604 states that a bell, siren, horn, whistle or similar audible warning device should be sounded at any public rail crossing. CPUC General Order 75-D specifies that: "Bells or other audible warning devices shall be included in all automatic warning device assemblies and shall be operated in conjunction with the

flashing light signals." The General Order does not specify a sound level for the bells and other audible warning devices.

The CPUC has the final decision in designing rail grade crossings and implementing warning systems. Intersections with rail grade crossings must be designed to meet CPUC regulations and the FRA warning standards. The CPUC considers each intersection during the final design process and works with the lead agency to install warning devices where necessary.

California Government Code Section 65302(f)

California State Government Code Section 65302(f) mandates that noise elements be included as a part of county and city general plans and that counties and cities adopt comprehensive noise ordinances. At a minimum the noise element should consider the following sources of noise: highways and freeways; primary arterials and major local streets; passenger and freight on-line railroad operations and ground rapid transit systems; commercial, general aviation, heliport, helistop and military airport operations, aircraft overflights, jet engine test stands, and other ground facilities and maintenance functions related to airport operation; local industrial plants, including, but not limited to, railroad classification yards; and other ground stationary noise sources identified by local agencies as contributing to the community noise environment. The noise element must assess current and future noise levels, establish standards for acceptable noise levels, and provide policies and regulations to control and reduce noise at noise sensitive uses.

3.6-1.4 Local Regulations

City of Lawndale

The City of Lawndale has established policies and regulations concerning the generation and control of noise that could adversely affect its citizens and noise sensitive land uses. The City of Lawndale Municipal Code and the City of Lawndale General Plan Noise Element are the two documents designed to regulate noise within the city. Codes, goals, and policies designed to regulate noise are shown in Table 3.6-7. The City of Lawndale does not regulate ground vibration.

Table 3.6-7. City of Lawndale – Relevant Noise Codes, Goals, and Policies

Code/Goal/Policy	Description
City of Lawndale Municipal Code	
Section 8.20.070	Construction activity may be conducted between the hours of seven a.m. and seven p.m., Monday through Friday (except national holidays), and eight a.m. and five p.m. Saturdays. Construction activity is prohibited at all other hours and on Sundays and national holidays. For purposes of this section, "construction" or "construction activity" shall include site preparation, demolition, grading, excavation, and the erection, improvement, remodeling or repair of structures, including operation of equipment or machinery and the delivery of materials associated with those activities.
City of Lawndale General Plan Noise Element	
Goal 1	To achieve and maintain an environment which is free from excessive or harmful noise through identification, control, and abatement.
Policy 1a	Control and abate undesirable sounds through the development of land use compatibility guidelines and a noise ordinance.
Policy 1d	Ensure that sensitive land uses are not subjected to inappropriate noise levels resulting from transportation systems.

Source: City of Lawndale, 1992d; 2020a

City of Redondo Beach

The City of Redondo Beach has established policies and regulations concerning the generation and control of noise that could adversely affect its citizens and noise-sensitive land uses and vibration-sensitive receptors, which could include buildings exposed to potential damage or annoyance of people in buildings. The City of Redondo Beach Municipal Code and the City of Redondo Beach General Plan Noise Element are the two documents designed to regulate noise within the city. Codes, goals, objectives, and policies designed to regulate noise are shown in Table 3.6-8.

Table 3.6-8. City of Redondo Beach – Relevant Noise and Vibration Codes, Goals, Objectives, and Policies

Code/Goal/ Objective/Policy	Description
City of Redondo Beach Municipal Code	
Section 4-24.503	All construction activity shall be prohibited, except between hours of 7:00 a.m. and 6:00 p.m. on Monday, Tuesday, Wednesday, Thursday, and Friday and between the hours of 9:00 a.m. and 5:00 p.m. on Saturday. No construction activity shall be permitted on Sunday, or the days on which the holidays designated as Memorial Day, the Fourth of July, Labor Day, Thanksgiving Day, Christmas Day, and New Year's Day are observed.
Section 4-24.504	The operation or permitting the operation of any device which creates vibration which is above the vibration perception threshold of an individual at or beyond the property boundary of the source if on private property, or at 150 feet (forty-six (46) meters) from the source if on a public space or public right-of-way, shall be prohibited. For the purposes of this section, "vibration perception threshold" shall mean the minimum ground or structure-borne vibrational motion necessary to cause a normal person to be aware of the vibration by such direct means as, but not limited to, sensation by touch or the visual observation of moving objects. The perception threshold shall be presumed to be .001 "g's" in the frequency range from zero to thirty (30) Hz and .003 "g's" in the frequency range between thirty (30) and 100 Hz.
City of Redondo Beach General Plan Environmental Hazards/Natural Hazards (Noise)	
Goal 10A	Ensure that residents, employees, and visitors in the City of Redondo Beach are protected from the adverse human health and environmental impacts of excessive noise levels created by stationary and overall (ambient) noise sources and conditions, and take all necessary and appropriate actions to avoid or mitigate the detrimental effects of such excessive noise level exposure impacts on the community.
Policy 10.4.3	Encourage local and regional public transit providers to ensure that the equipment they use and operate does not generate excessive noise impacts on the community.
Policy 10.4.4	Provide for and encourage the development of alternate transportation modes such as bicycle paths and pedestrian walkways to minimize the number of noise generating automobile trips.
Objective 10.7	Minimize the impacts of construction noise on adjacent uses.
Policy 10.7.1	Ensure that prohibitions relative to the legal hours of operation for construction activities contained within the existing city of Redondo Noise Ordinance and/or any future/revised Noise Ordinance be adhered to and enforced.
Policy 10.7.2	Require that construction activities adjacent to residential land uses and dwelling units be regulated, as necessary, to prevent the generation of adverse and/or excessive noise impacts.
Policy 10.7.3	Require that construction activities employ feasible and practical technique and practices which minimize the generation of adverse and/or excessive noise impacts on adjacent land uses.

Objective 10.10	Minimize the noise effects of railroad transit (freight and passenger) on residential uses and other sensitive land uses.
Policy 10.10.1	Work with railroad operators using facilities that cross through the City of Redondo Beach to properly maintain lines and establish operational restrictions during the early morning and late evening hours to reduce adverse noise impacts in residential areas and other noise sensitive areas.
Policy 10.10.2	Work with railroad operators using facilities that cross through the City of Redondo Beach to install noise mitigation features where operations impact existing adjacent residential or other noise-sensitive uses.

Source: City of Redondo Beach, 1993b; 2020b

City of Torrance

The City of Torrance has established policies and regulations concerning the generation and control of noise and vibration that could adversely affect its citizens and noise-sensitive land uses and vibration-sensitive receptors. The City of Torrance Municipal Code and the City of Torrance General Plan Noise Element are the two documents designed to regulate noise and vibration within the city. Codes, objectives, and policies designed to regulate noise and vibration are shown in Table 3.6-9.

Table 3.6-9. City of Torrance – Relevant Noise and Vibration Codes, Objectives, and Policies

Code/Goal/ Objective/Policy	Description
City of Torrance Municipal Code	
Section 46.2.6	It shall be unlawful for any person to operate any machinery, equipment, pump, fan, air conditioning apparatus or similar mechanical device in any manner so as to create any noise which would cause the noise level at the property line of any residential land to exceed the ambient noise level by more than five (5) decibels.
Section 46.2.8	It shall be unlawful for any person to operate or sound or cause to be operated or sounded, between the hours of 10:00 p.m. of one day and 7:00 a.m. of the next day, a train horn or train whistle which creates noise in excess of ninety-six (96) dB at any place or point three hundred (300) feet or more distant from along a line normal to the direction of travel of the source of such sound.
Section 46.3.1 (a)	It shall be unlawful for any person within the City of Torrance to operate power construction tools, equipment, or engage in the performance of any outside construction or repair work on buildings, structures, or projects in or adjacent to a residential area involving the creation of noise beyond 50 db as measured at property lines, except between the hours of 7:30 A.M. to 6:00 P.M. Monday through Friday and 9:00 A.M. to 5:00 P.M. on Saturdays. Construction shall be prohibited on Sundays and Holidays observed by City Hall. An exception exists between the hours of 10:00 A.M. to 4:00 P.M. for homeowners that reside at the property.
Section 46.3.1 (e)	Heavy construction equipment such as pile drivers, mechanical shovels, derricks, hoists, pneumatic hammers, compressors or similar devices shall not be operated at any time, within or adjacent to a residential area, without first obtaining from the Community Development Director permission to do so. Such request for permission shall include a list and type of equipment to be used, the requested hours and locations of its use, and the applicant shall be required to show that the selection of equipment and construction techniques has been based on minimization of noise within the limitations of such equipment as is commercially available or combinations of such equipment and auxiliary sound barriers. Such permission to operate heavy construction equipment will be revoked if operation of such equipment is not in accordance to approval. No permission shall be required to perform emergency work as defined in Article 1 of this Chapter.

Code/Goal/ Objective/Policy	Description
Section 91.32.4 (e)	No equipment, machinery or facility shall be operated so as to generate vibration, which is perceptible at or beyond the property line, without the aid of instruments to a person of normal sensibilities.
City of Torrance General Plan Environmental Hazards/Natural Hazards (Noise)	
Policy N.1.1	Continue to strictly enforce the provisions of the City's Noise Ordinance to ensure that stationary noise, traffic-related noise, railroad noise, airport-related noise, and noise emanating from construction activities and special events are minimized.
Policy N.1.4	Minimize unnecessary outdoor noise through enforcement of the noise ordinance and through permit processes that regulate noise-producing activities.
Objective N.2	Minimize transportation-related noise impacts
Policy N.2.2	Prioritize locations for implementing noise reduction, such as residential areas near major roads or areas near railroads.
Policy N.4.2	Maintain open lines of communication between the City and all federal, State, and County agencies involved in noise abatement.

Source: City of Torrance, 2010e; 2022a

3.6-2 Methodology

3.6-2.1 Resource Study Area

The resource study area (RSA) for the noise analysis is 500 feet for construction and 350 feet for operations from the centerline of each alignment, shown in Figure 3.6-3. For construction noise, 500 feet is the distance at which noise levels are reduced to a level that is typically not disruptive. The Caltrans Technical Noise Supplement notes that sensitive receptors beyond 500 feet from project areas do not need to be considered for analysis. The 350-foot screening distances for operations is the light rail transit assessment distance for the FTA Manual. A more detailed description of distances from noise sources that were assessed is included in Section 3.6-2.2.

The RSA for assessing potential vibration impacts was determined by applying the vibration impact screening procedure described in Section 6.3 of the FTA Manual. The most conservative screening distance of 450 feet from the alignment was used for both construction and operation, which is defined for Light Rail Transit projects for Land Use Category 1 "High Sensitivity" buildings (including buildings with vibration-sensitive equipment and recording studios). Figure 3.6-4 shows the vibration RSA. Temporary vibration impacts from construction activities would also be expected to remain within the 450-foot RSA.

Figure 3.6-3. Resource Study Area – Noise

Source: STV, 2022

Figure 3.6-4. Resource Study Area – Vibration

Source: STV, 2022

3.6-2.2 Noise Modeling Methodology

3.6-2.2.1 Existing Noise Conditions

Noise-sensitive land uses were identified using Geographic Information Systems (GIS), assessor's parcel maps, field observations and aerial photos. Noise monitoring locations were carefully selected to best represent existing conditions at representative receptors along the transit corridor. The purpose of noise measurements is to establish a baseline noise level upon which the FTA noise impact criteria can be established (See Table 3.6-3 for noise impact criteria listed by existing noise level). This forms the basis of what constitutes an impact by the Proposed Project on sensitive receptors by taking into account the existing ambient noise environment. It is not practical, or common practice, to monitor noise levels at each and every receiver along the alignment due to time and cost constraints. Therefore, field monitoring locations were selected to represent existing noise conditions that could be applied to multiple sensitive receptors. Typical situations where representative measurement sites can be used to estimate noise levels at other sites occur when both share proximity to the same major transportation noise sources and have a similar type of land use density and housing. Short-term measurements at the selected field locations were conducted for a period of 30-minutes to establish the 1-hour dBA, L_{eq} noise level[2] for Category 3 sensitive receptors and long-term measurements were conducted for a period of 24-hours to establish the 24-hour dBA, L_{dn} noise level for Category 2 receptors. The microphone was placed at a height of five feet above the ground to reflect the average ear height of an average height person. Appendix 3.6-A, Noise Monitoring Detail describes the locations and measurements taken during noise monitoring.

Existing ambient noise levels were measured at a total of 27 locations utilizing a TSI Quest Soundpro Type 2 Sound Level Meter. The noise meter records ambient noise levels in dB and logs noise levels for each minute of the specified time period. Noise monitoring occurred over a period of two weeks in January 2022 and two weeks in June 2022. Daytime 30-minute noise measurements were taken during the off-peak traffic period (9:00 a.m. to 4:00 p.m.) to capture quieter ambient noise levels outside of rush hours. Category 1 (e.g., recording studios) and Category 3 uses (e.g., parks) require the 1-hour L_{eq} noise measurements because the primary concern for these uses is daytime, and nighttime sensitivity is not a factor. Category 2 uses (e.g., residences) require using the 24-hour L_{dn} noise metric to account for nighttime sensitivity of residential uses that fall within this category.

3.6-2.2.2 Construction Noise Modeling

Construction noise was modeled using noise levels from the FTA Manual and the Federal Highway Administration Roadway Construction Noise Model (RCNM) version 1.1. The FTA Manual includes noise levels for common pieces of construction equipment. The RCNM was used for equipment noise levels not listed in FTA Manual. Construction noise levels were assessed as they would typically occur on the alignment. The two loudest pieces of construction equipment anticipated to be used for each type of construction activity (e.g., elevated guideway construction) were combined, and this noise level was then used to assess construction noise against the FTA construction 1-hour L_{eq} noise criteria.

[2] A noise measurement representing an hourly L_{eq} does not need to last the entire hour. Once noise levels have stabilized, a shorter time period is sufficient to represent the entire hour of interest.

3.6-2.2.3 Operational Noise Modeling

The analysis utilized FTA Transit Noise and Vibration Impact Assessment guidance for assessing operational noise associated with transit projects. Impacts were determined from the FTA noise impact criteria. Sensitive receptors were considered impacted if they exceeded either the moderate or severe FTA noise impact criteria. FTA screening distances were used to identify the receivers to be included in the detailed assessment:

- **Operational Transit Noise**: 350 feet for unobstructed receivers and 175 feet for obstructed, measured from the centerline of the guideway
- **Traction Power Substation (TPSS) Noise**: 250 feet for unobstructed receivers and 125 feet for obstructed, measured from the center of the TPSS site
- **Parking Facility**: 125 feet for unobstructed receivers and 75 feet for obstructed, measured from the center of the parking facility (located at the Torrance TC).

Sensitive land uses, such as residences and parks within 350 feet of the light rail were divided into clusters, depending on the similarity of existing noise conditions, distance to the alignment, light rail system operating parameters, trackwork, and light rail speed along the alignment. Distances were conservatively measured from the nearest representative sensitive land use within the cluster. Clusters represent a modeling unit which have similar existing noise levels and would experience similar noise levels generated by the project. All sensitive land uses identified within the FTA screening distances were assigned to a cluster for consideration in the analysis. An example of how sensitive land uses were clustered is as follows: one cluster may consist of residences located approximately 50 feet away from the light rail, located at a similar elevation, and exposed to light rail operating at speeds of 45 mph. These uses would be clustered together for analysis purposes because they have similar existing conditions and would experience similar operating conditions. Sensitive land uses were assigned to clusters following guidance outlined by the FTA Transit Noise and Vibration Impact Assessment Guidance. Each cluster was categorized as FTA Land Use Categories 1, 2, or 3.

An analysis of operational noise levels at sensitive land uses was completed using the FTA Detailed Noise Analysis procedure. A general outline of the procedures follows below.

1. Receivers of Interest: Cluster sensitive land uses and select receivers of interest.
2. Project Noise: Identify the project noise sources that are in the vicinity of receivers of interest. For these sources, determine the source reference noise in terms of SEL. Convert each source SEL to noise exposure (L_{dn} or $L_{eq}(h)$) at 50 feet, for the appropriate project operating parameters.
3. Noise exposure over distance and Summation of Project Noise at Receivers of Interest: Draw a noise exposure-vs. distance curve for each relevant source. This curve will show source noise as a function of distance, accounting for shielding along the path, as well as any propagation-path mitigation that will be included in the Project. From these curves, determine the total project noise exposure at all receivers of interest by combining the levels from all relevant sources.
4. Existing Noise in the Study Area: Estimate the existing noise exposure at each receiver of interest.
5. Noise Impact Assessment: Assess noise impact at each receiver of interest using the impact criteria defined in Table 3.6-3

6. Mitigation of Noise Impact: Where the assessment shows an impact, evaluate alternative mitigation measures. Then loop back to modify the Project-noise computations, thereby accounting for the adopted mitigation, and reassess the remaining noise impact.

Light rail system noise that was analyzed included light rail pass-by noise and the effects of grade changes (at-grade or on an elevated structure), audible warnings noise at crossing gates, special trackwork, and TPSS noise. Parameters that were input into the model for light rail pass-by noise include speed, distance to receptor, topography, and adjustments for intervening rows of buildings.

Freight tracks would be required to be relocated in some areas of the Metro ROW to accommodate the light rail tracks for the Proposed Project and Trench Option. Relocated freight tracks were assessed as part of the Proposed Project and Trench Option. Freight noise was calculated by calculating the freight noise at the new proposed location of the freight tracks based on the distance to receptors. Existing freight train volumes and speeds were used to calculate future noise levels associated with movement of the freight tracks. Due to the infrequency and timing of freight trains within the corridor, it is unlikely that all 24-hour noise measurements captured existing freight train noise. Therefore, freight noise was calculated using the existing location of freight tracks added to the measured 24-hour noise levels to establish the existing noise conditions. As noted, an average of two freight trains per day traverse the corridor. Relocated freight crossings and associated audible warnings were also assessed. Freight noise associated with the relocated freight tracks and crossings was then logarithmically added to light rail noise to generate a total combined noise level. This combined noise level was then compared to the FTA noise impact criteria.

3.6-2.3 Vibration Methodology

3.6-2.3.1 Construction Vibration Prediction

Construction-related vibration is assessed using two different metrics: PPV in inches per second (in/sec) is used to assess potential structural damage from vibration, and L_v in VdB is used to assess human annoyance from vibration. These values are calculated using the equations and adjustment factors provided in Section 7.2 of the FTA Manual.

Not all construction equipment produces significant ground-borne vibration. Of the equipment listed to potentially be used for the Proposed Project as shown in Table 3.6-10, the equipment with the highest reference vibration level would be “Impact Pile Driver” which has typical reference values of PPV_{ref} equal to 0.644 in/sec at 25 feet, and Lv-(ref) equal to 104 VdB at 25 feet. Other construction equipment types that could be used during the Proposed Project’s construction that cause ground-borne vibration are listed in Table 3.6-10 (from FTA 2018, Table 7-4). Potential vibration impacts for both damage and human annoyance are typically assessed using the closest distance to the potentially impacted structure.

Table 3.6-10. Reference Vibration Properties of Construction Equipment

Equipment Type		PPV at 25 ft, in/sec	L_v, VdB at 25 ft.
Pile Driver (impact)	Upper Range	1.518	112
	Typical	0.644	104
Pile Driver (sonic)	Upper Range	0.734	105
	Typical	0.17	93
Vibratory Roller		0.21	94
Hoe-Ram		0.089	87
Large Bulldozer		0.089	87
Caisson/Auger Drilling (drill rigs)		0.089	87
Loaded Trucks		0.076	86
Jackhammer		0.035	79
Small Bulldozer		0.003	58

Source FTA, 2018 (Table 7-4)
PPV = peak particle velocity; L_v = velocity level; VdB = decibel notation

3.6-2.3.2 Operational Vibration Prediction

The equations used for the General Vibration Assessment prediction methodology for operational vibration levels for transit activity is provided in the FTA Manual Section 6.4.

Additional adjustments to the predicted vibration level are provided for special trackwork (switches/crossovers) suspension type, wheel and track conditions, and some vibration-reducing treatments such as ballast mats and floating slabs (see Table 6-11 in the FTA Manual for more details).

3.6-2.3.3 Review of Detailed Vibration Analysis for Other Projects

To help ensure the accuracy of this EIR's vibration analysis, a review of vibration propagation tests that have been conducted in other locations in the Los Angeles area was conducted. One such applicable project analysis was the final Noise and Vibration Report for the Metro Exposition Corridor Transit Project, December 2009. That analysis included the results and analysis of 14 Transfer Mobility ground vibration propagation tests along the length of the proposed transit line between 4th Street terminal station location in Santa Monica to the west, and the Robertson Boulevard terminus to the east. Each measurement location included simultaneous vibration measurements at six different distances from the impact line representing the future rail line.

The analyzed results for the five locations on the western portion of the proposed alignment, west of Cloverfield Boulevard, were presumably similar in nature to the geological conditions for the Proposed Project study area. The Velocity Level versus distance relationship between the measured data and the FTA predicted values were very similar, typically within 1 VdB difference for distances of 50 to 200 feet from the track centerline. This demonstrates a high level of agreement between the measured levels and the FTA prediction methodology in the Expo Line project area and validates the FTA technical approach for predicting operational vibration levels for the Proposed Project (except in areas with raised fill).

3.6-2.4 Significance Thresholds

Based upon the sample initial study questions contained in Appendix G of the CEQA Guidelines, implementation of the Proposed Project would result in a significant impact if any of the following occurred:

a) Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established by the FTA, in the local general plan or noise ordinance, or applicable standards of other agencies;

b) for a project located within the vicinity of a private airstrip or 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, expose people residing or working in the project area to excessive noise levels;

c) Generate excessive ground-borne vibration.

While the CEQA guidelines also include ground-borne noise as a potential impact to be considered, as previously noted, it was not included in this analysis, because it is typically only considered for vibration sources that do not have an air-borne noise path (meaning the vibration source is underground, like a subway line).

3.6-2.5 Project Features

As described in Chapter 2, Project Description, a number of features have been incorporated into the project in order to ensure compliance with the laws, guidelines, and best practices of regulatory agencies.

Project Features Subject to Future Agency Approval

Metro has developed the following project features for noise; the implementation of these features would be contingent upon future CPUC authorization.

PF-NV-1. Quiet Zone Equipment Installation (Proposed Project and Trench Option)

The eight at-grade freight crossings between Inglewood Ave and 182nd Street have been designed and would be constructed to include all FRA-required Supplemental Safety Measures and associated improvements and equipment that are needed to qualify for Automatic FRA Approval to establish a quiet zone. In order to establish a quiet zone, local jurisdictions will need to submit a Notice of Intent to the operating railroads (e.g., BNSF), CPUC, Metro, and FRA, followed by a Notice of Establishment which would ultimately eliminate the sounding of freight horns within the project limits. Crossing signal bells would continue to generate a minimum of noise level of 75 dBA at 10 feet per American Railway Engineering and Maintenance of Way requirements.

Chapter 2, Project Description describes the types of “quiet zone ready” equipment proposed for the Proposed Project and Trench Option.

PF-NV-2. Crossing Signal Bell Shrouds (Proposed Project)

Crossing signal bells at the two at-grade light rail crossings (170th Street and 182nd Street) would be equipped with shrouds to direct bell noise away from sensitive receivers and towards the crossings. The arrow in Figure 3.6-20 shows an example of a bell shroud implemented for the Metro E Line (Expo) at the Westwood Boulevard at-grade crossing. Crossing signal bell noise would not exceed 104 dBA SEL at 50 feet. This measure is subject to CPUC authorization.

PF-NV-3. Gate-Down-Bell-Stop Variance (Proposed Project)

Metro would apply for a gate-down-bell-stop variance at the two at-grade light-rail crossings (170th Street and 182nd Street) to reduce the duration of bell ringing and therefore reduce impacts at sensitive receivers. Crossing signal noise would not exceed 30 seconds in duration. This measure is subject to CPUC authorization.

3.6-3 Affected Environment / Existing Conditions

3.6-3.1 Noise

The noise environment in urban areas is dominated by traffic noise. There are several industrial areas along the Proposed Project that generate noise from the operation of machinery and truck trips associated with the uses. Occasional aircraft flyovers and movement of freight trains along the existing Metro ROW are also contributors to the existing noise environment. Land uses found along the Proposed Project and Options include public facilities, public and commercial office buildings, various types of commercial uses, institutional uses, residential uses, hotel uses, industrial uses, surface parking facilities, and parking structures. Sensitive land uses were categorized by each FTA land use category as described in Table 3.6-1. Examples of sensitive land uses are residences and places where people sleep, parks, and cemeteries. Industrial uses and office buildings are not considered noise sensitive because they do not require quiet for their functions.

Table 3.6-11 identifies noise monitoring locations. Noise monitoring locations are shown in Figure 3.6-6 through Figure 3.6-8. Further information of the noise monitoring methodology can be found in Section 3.6-2.2.

Existing 1-hour L_{eq} noise levels ranged from 49.8 dBA, L_{eq} to 74.9 dBA, L_{eq}. Existing 24-hour L_{dn} noise levels ranged from 55.1 dBA, L_{dn} to 75.1 dBA, L_{dn}. Existing 24-hour L_{dn} noise levels along the Metro ROW ranged from 65.0 dBA, L_{dn} to 70.0 dBA, L_{dn} closer to the I-405 Freeway and 55.1, dBA L_{dn} to 61.3 dBA, L_{dn} in the interior of neighborhoods along the Metro ROW. Existing 24-hour L_{dn} noise levels for neighborhoods along Hawthorne Boulevard ranged from 56.6 dBA, L_{dn} to 63.2 dBA, L_{dn}. Residences were typically located in the second row of buildings along Hawthorne Boulevard. A 24-hour L_{dn} measurement adjacent to Hawthorne Boulevard indicated the existing noise level is 75.1 dBA, L_{dn}.

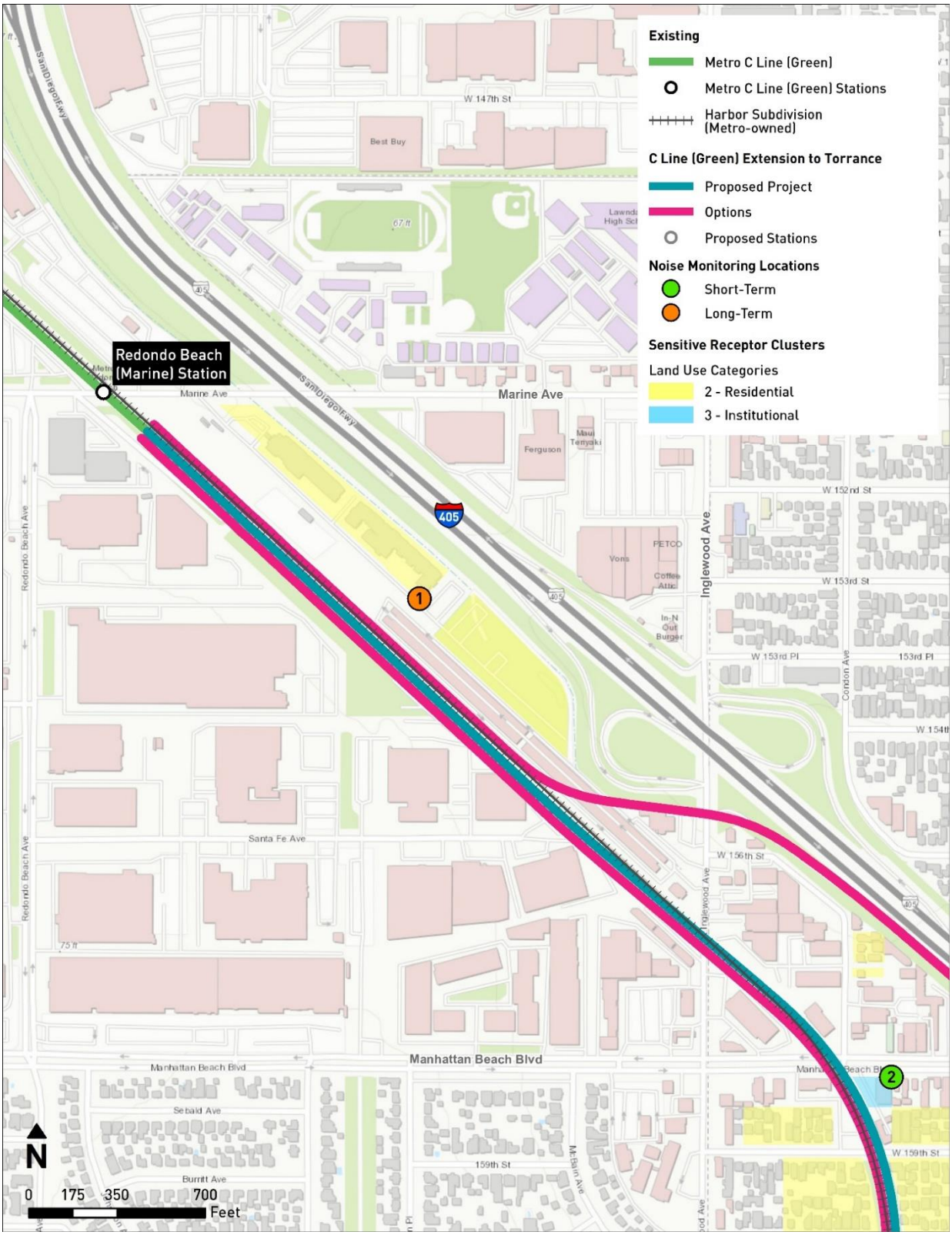
Table 3.6-11. Noise Monitoring Locations and Measured Ambient Noise Levels

Noise Site	Monitoring Type	Location	Ambient Noise Level (dBA)	
			Hourly (L_{eq})	24-hour (L_{dn})
1	Long-Term	Hilton Garden Inn (2410 Marine Ave., Redondo Beach)	-	67.1
2	Short-Term	Iglesia Cristiana Lluvia de Gracia (464 Manhattan Beach Blvd., Lawndale)	71.2	-
3	Long-Term	Residence (4721 159th St., Lawndale)	-	65.0
4	Long-Term	Residence (4529 160th St., Lawndale)	-	62.2
5	Long-Term	Right-of-Way near Residence (4640 161st St., Lawndale)	-	70.0
6	Short-Term	Charles Hopper Park (4418 162nd St., Lawndale)	65.1	-
7	Short-Term	Residence (16320 Hawthorne Blvd., Lawndale)	73.4	-
8	Long-Term	Residence (4341 166th St., Lawndale)	-	60.0
9	Short-Term	Children First Child Development (4415 165th St., Lawndale)	69.5	-
10	Long-Term	Residence (4623 167th St., Lawndale)	-	55.1
11	Long-Term	Residence (4419 167th St., Lawndale)	-	63.2
12	Short-Term	Residence (16829 Firmona Ave., Lawndale)	53.3	-
13	Long-Term	Residence (4627 173rd St., Lawndale)	-	60.8
14	Long-Term	Residence (4415 172nd St., Lawndale)	-	61.1
15	Short-Term	Residence (4323 Redondo Beach Blvd., Lawndale)	73.3	-
16	Short-Term	Residence (4323 Artesia Blvd., Torrance)	74.8	-
17	Long-Term	Residences (2570 Artesia Blvd., Torrance)	-	57.1
18	Short-Term	Residence (1927 Condon Ave., Redondo Beach)	49.8	-
19	Long-Term	Residence (4343 178th St., Torrance)	-	58.4
20	Short-Term	El Nido Park (18301 Kingsdale Ave., Redondo Beach)	52.6	-
21	Short-Term	Residence (18322 Hawthorne Blvd., Torrance)	71.4	-
22	Long-Term	Residence (18321 Ashley Ave., Torrance)	-	56.6
23	Long-Term	Residence (2728 Ralston Ln., Redondo Beach)	-	55.8
24	Long-Term	Residence (4549 186th St., Redondo Beach)	-	61.3
25	Long-Term	South Bay Estates on Hawthorne Blvd. (18801 Hawthorne Blvd., Torrance)	-	75.1
26	Short-Term	Residences (4237 to 4345 190th St., Torrance)	74.9	
27	Long-Term	Residence (607 Pine Dr., Torrance)	-	69.6

Source: TAHA, 2022

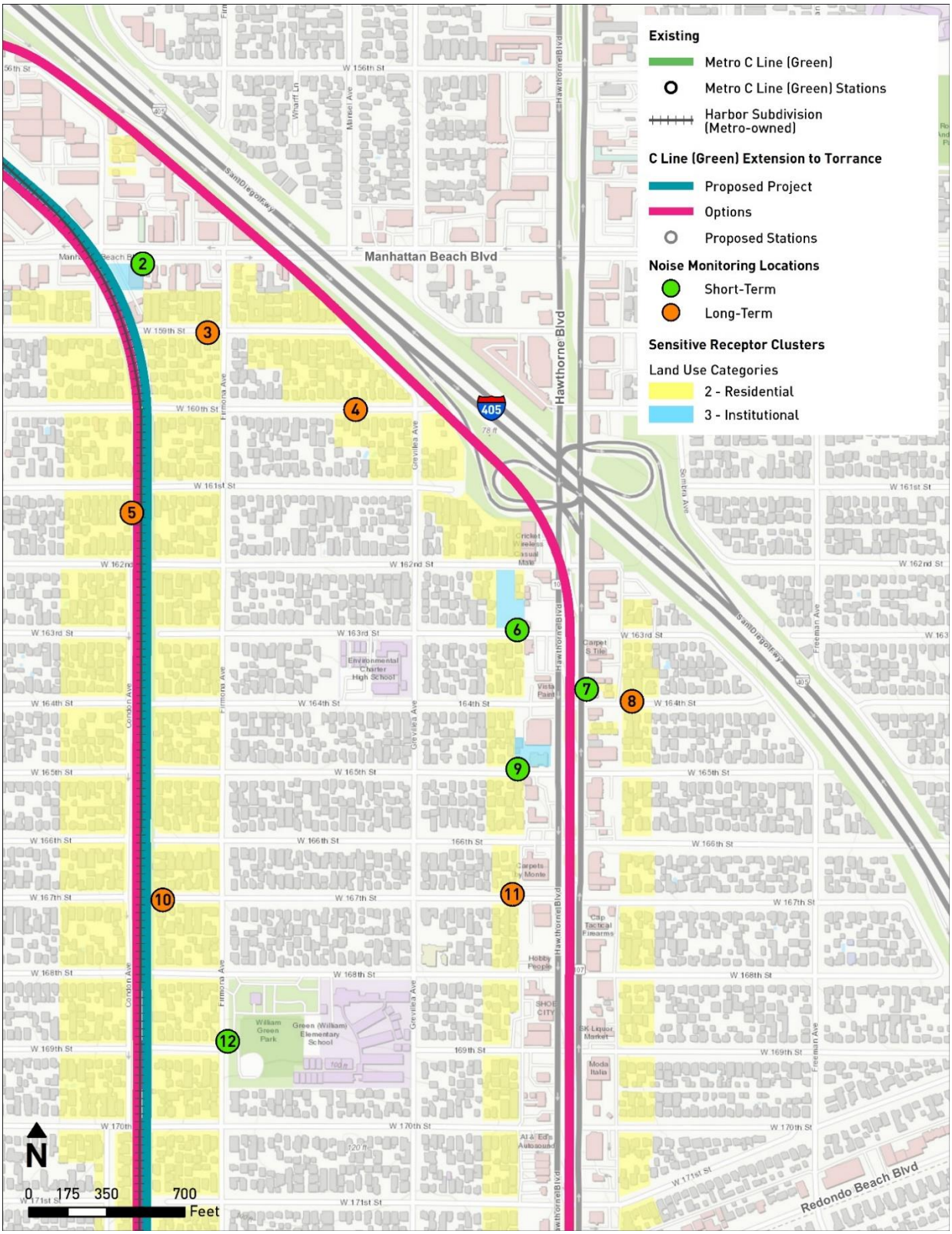
dBA = A-weighted decibels; L_{eq} = hourly equivalent noise level; L_{dn} = day-night noise level

Figure 3.6-5. Noise Monitoring Locations and Sensitive Land Uses (1 of 4)



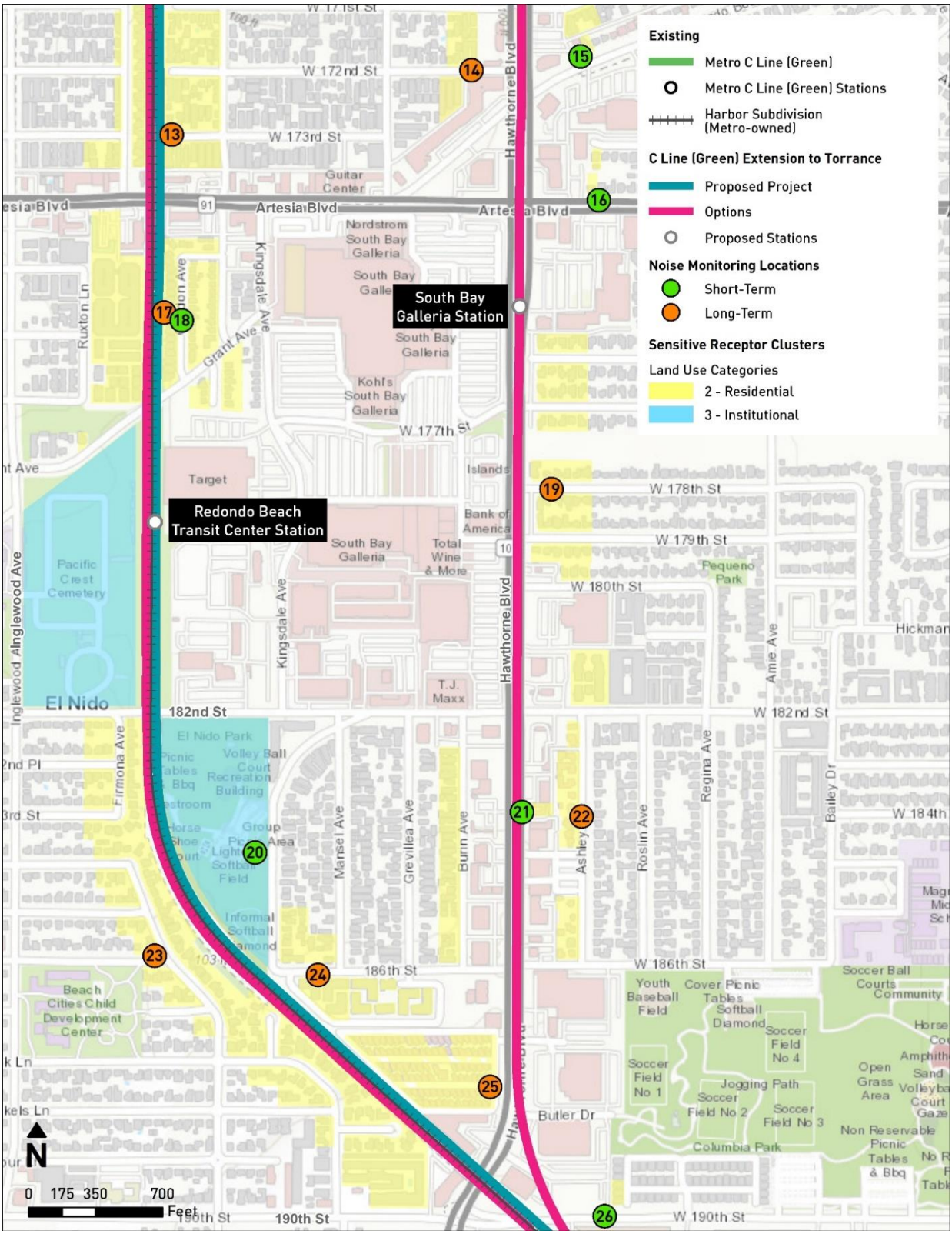
Source: TAHA, 2022

Figure 3.6-6. Noise Monitoring Locations and Sensitive Land Uses (2 of 4)



Source: TAHA, 2022

Figure 3.6-7. Noise Monitoring Locations and Sensitive Land Uses (3 of 4)



Source: TAHA, 2022

Figure 3.6-8. Noise Monitoring Locations and Sensitive Land Uses (4 of 4)

Source: TAHA, 2022

3.6-3.2 Vibration

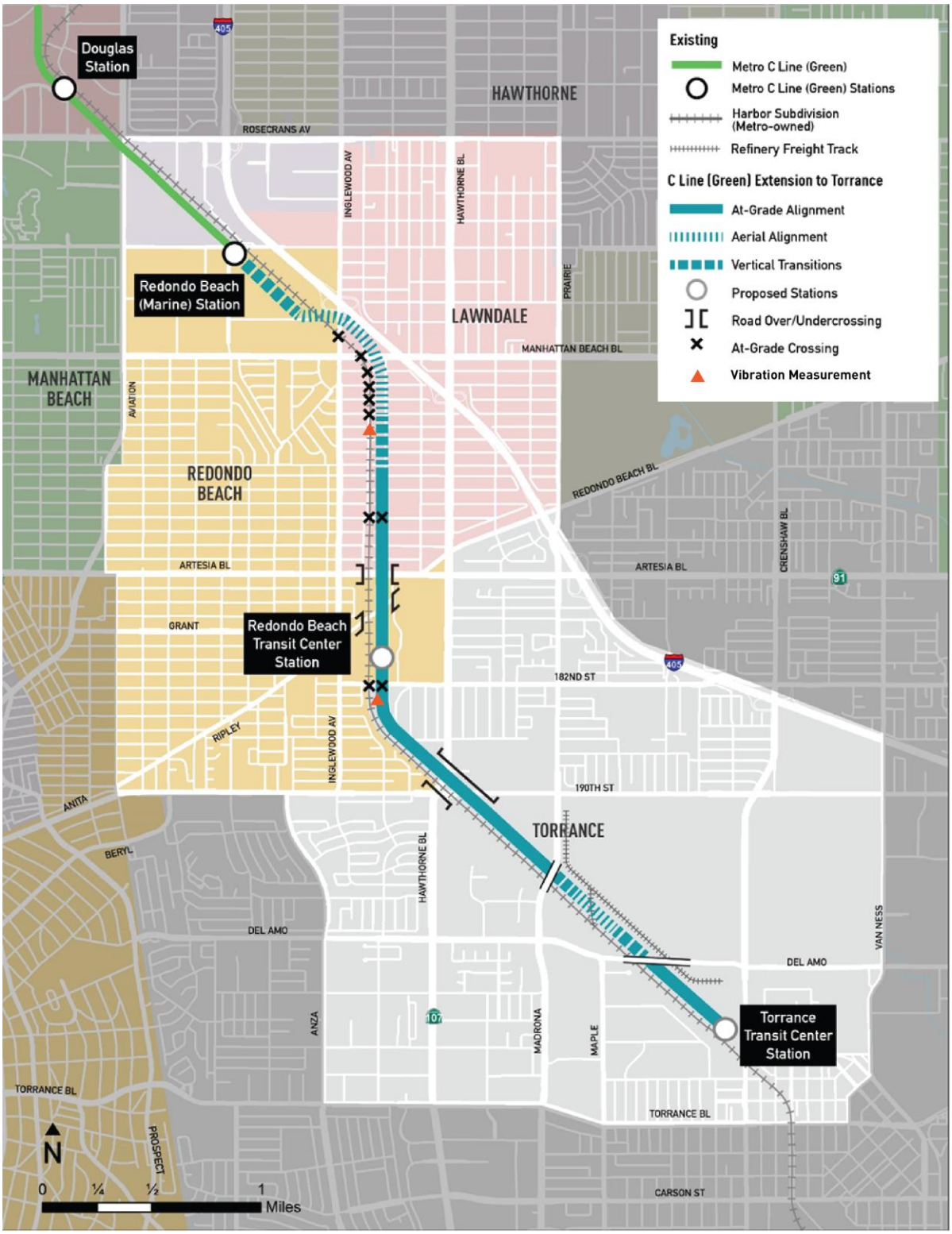
Unlike the procedures for noise impact assessment, the FTA vibration impact assessment analysis does not require vibration measurements to assess existing conditions under the general assessment methodology. However, in some cases, limited vibration measurements may help to identify if some properties may already exceed vibration impact levels if a significant vibration source (such as an active freight rail line) may already exist in the Proposed Project area, or to help develop or confirm vibration prediction techniques. In this case, an active freight rail line operates within the Metro ROW. The trains that currently use this existing track alignment are "local delivery" freight trains, servicing local industrial customers along the line, and as a result, these trains are typically much shorter and slower than mainline freight trains with fewer, limited events (typically two pass-by events per day). With only two train events occurring each day, opportunities to conduct existing vibration measurements were limited. Measurements were conducted at two locations along the Metro ROW, as described below. The purpose of these measurements was to compare actual measured vibration levels with operational levels predicted using the FTA general assessment methodology described in Section 3.6-2.3.

- **Condon Avenue**. This measurement was conducted at a location approximately 50 feet west of the existing track centerline near the edge of Condon Avenue and 50 feet south of 165th Street in Lawndale. The ground between the track ballast and the measurement location was level.
- **El Nido Park**. This measurement was conducted at the western boundary fence inside El Nido Park in Torrance, approximately 300 feet south of 182nd Street and 50 feet east of the existing track centerline (with residential properties on the opposite side of the alignment). In this area, the tracks were situated atop a steep earthen embankment, approximately 10 feet above the measurement location grade.

The two vibration measurement locations identified above were selected after a review of publicly accessible locations that would provide representative measurements for vibration-sensitive receptors within the RSA. The Condon Avenue site represented a relatively flat location, while the El Nido Park location represents an area where trackwork would be located on an embankment. The total number of measurements was constrained by the limited number of train events (just two train events per day).

Vibration measurements at both locations used a PCB model 393A03 seismic accelerometer with a sensitivity of 1000 mV/g, measuring in the vertical direction and mounted on a 20-pound inertia mounting base. The accelerometer signals were processed by a B&K 2250 signal analyzer as maximum VdB, PPV. Figure 3.6-9 shows the vibration measurement locations relative to the Proposed Project. Figure 3.6-10 shows photos of the two vibration measurement set-ups.

Figure 3.6-9 Vibration Measurement Locations



Source: STV, AECOM, 2022

Figure 3.6-10 Vibration Measurement Set-ups

Source: AECOM, 2021
Top image: Condon Avenue at 163rd Street; bottom image: El Nido Park, south of 182nd Street

The results of the limited pass-by vibration measurements are presented in Table 3.6-12 below, along with the predicted vibration levels of identical train pass-by events using the FTA General Assessment method described in Section 3.6-2.3.

Table 3.6-12 Measured Train Pass-by Vibration Levels at 50 feet

Date	Time	Location	Train Consist	Ground Type	Train Speed (mph)	Measured Level (VdB)	Predicted Level (VdB)	Level Difference	Comment
11/18/20	11:37 AM	Condon Ave	2+40	Flat	20	75.9	76.7	0.8	Good Agreement
11/18/20	3:04 PM	El Nido Park	2+12	Berm	20	89.0	76.7	-12.3	Higher than predicted
11/19/20	12:45 PM	El Nido Park	2+17	Berm	20	91.5	76.7	-14.8	Higher than predicted
11/1/20	2:55 PM	Condon Ave	2+8	Flat	21	76.5	77.1	0.6	Good Agreement

Source: AECOM, 2020
Predicted and measured vibration levels in event maximum, VdB re: 1 micro-inch/second.
Train Consists reported in number of locomotives + freight cars.
Predicted vibration levels were calculated using FTA methodology, as discussed in the FTA Manual, Section 6.4.

The results of the limited vibration measurements for existing train pass-bys indicate there is good agreement between measured and predicted levels at the Condon Avenue measurement location, meaning that the model accurately represented the real-world conditions (there was less than 1 VdB difference between measured and predicted levels). However, the results at the El Nido Park location are less consistent, showing differences of 12 and 14 VdB between measured and predicted levels. The differences here may be caused by the embankment. Specifically, the embankment is made of different material than the natural ground and may have a different density, possibly creating a more efficient vibration propagation path, meaning that vibration would travel more easily through it than through the natural ground. Therefore, for the area near El Nido Park, where the freight tracks are located on the embankment, an additional 10 VdB was included within the project's predicted vibration levels. This adjustment was made to account for the difference between the measured and predicted levels.

3.6-4 Environmental Impacts

3.6-4.1 Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

3.6-4.1.1 Construction Impacts

Significant and Unavoidable Impact. The Proposed Project would be located in a fully built-out urban environment and construction activities would occur in close proximity to sensitive land uses, including residences, parks, religious uses, and schools throughout the corridor, and may occur during daytime or nighttime hours.

Construction of the Proposed Project would take place over the course of approximately five years. It is anticipated that several construction phases would occur simultaneously along the Proposed Project alignment, accommodating activities requiring lengthy construction times such as utility relocation. Simultaneous construction may reduce the overall construction duration.

The Proposed Project would require two types of construction for the two types of light rail guideway: at-grade construction, and elevated guideway construction. Construction of the light rail guideways would use heavy earth moving equipment, generators, cranes, pneumatic tools, and other similar pieces

of equipment. Construction activity at station areas would be dependent on the profile of the station (at-grade, elevated, trenched). Construction noise levels at staging areas would be similar to noise levels generated by at-grade construction and would primarily involve the movement of equipment to and from the project site. Please see Chapter 2, Project Description for more detailed descriptions of construction methodologies and processes.

The FTA has provided guidance for assessing construction noise associated with transit projects. The criteria are based upon a 1-hour L_{eq}, as shown in Table 3.6-13. For residential uses the threshold is 90 dBA for daytime construction and 80 dBA for nighttime construction. Commercial and industrial uses are held to a 100-dBA daytime and nighttime noise construction threshold. The Proposed Project would be located in multiple jurisdictions with competing noise standards. For the purposes of this analysis, the FTA general assessment construction noise limit criteria 1-hour L_{eq} have been applied. Typical construction equipment used during each type of construction are listed in Table 3.6-13. Each construction activity type has been characterized by typical equipment utilized and is not an exhaustive list of equipment nor is equipment exclusive to each denoted activity type. An "X" denotes construction equipment that would be used for a particular type of construction. For example, at-grade construction would typically involve the extensive use of backhoes, while elevated guideway construction would not use them to the same extent. Appendix 2-C, Construction Methods Memorandum includes more details on the types of equipment used throughout each phase of construction.

The construction noise contours are depicted graphically in Figure 3.6-11 through Figure 3.6-14, which represent the noise levels that may be generated along the entirety of the alignment. The figures show the construction noise levels that were calculated at distances of 50, 100, 200, 400, and 500 feet from construction zones. For the first four distances (50, 100, 200, 400 feet) construction noise would be reduced by approximately 6 dBA with each successive distance. The final distance (500 feet) is the limit of construction noise effects. For example, the figures show that within the first contour of 50 feet (shown in dark purple), the calculated construction noise levels may be above 91 dBA L_{eq}. At the next distance of 100 feet (shown in light purple), noise levels would be reduced to approximately 85 dBA L_{eq}.

Table 3.6-13.Construction Noise by Activity Type – Proposed Project and Hawthorne Option

Equipment	1-hour L_{eq} (dBA) at 50 feet	Construction Activity Type	
		At-Grade Construction	Elevated Guideway
Backhoe	80.0	X	-
Compactor	82.0	X	X
Compressor (air)	80.0	X	-
Concrete Mixer Truck	85.0	-	X
Concrete Pump Truck	82.0	-	X
Concrete Saw	89.6	-	X
Crane	83.0	X	X
Dozer	85.0	X	X
Excavator	80.7	-	-
Flat Bed Truck	74.3	X	X
Generator	82.0	X	X
Grader	85.0	X	-
Man Lift	67.7	-	X
Paver	85.0	X	-
Pneumatic Tools	85.0	X	X
Rail Saw	90.0	X	-
Roller	85.0	X	X
Rough Terrain Forklift	79.4	-	X
Tie Handler	80.0	X	X
Tie Inserter	85.0	X	X
Trucks	76.5	X	X
Welder/Torch	74.0	X	X
Combined 1-hour L_{eq}[1] at 50 feet		**91.2**	**90.9**

Source: FHWA, 2008; FTA, 2018

[1] Logarithmic sum of two loudest pieces of equipment

dBA = A-weighted decibel; L_{eq} = equivalent sound level; - = not applicable

Pile driving was given special consideration in the construction noise analysis, as impact or vibratory pile drivers are the most noise intensive construction equipment that could result in elevated noise levels above typical construction methods. Under the Proposed Project, pile driving could be used for the retained fill south of the Redondo Beach (Marine) Station, the relocated Grant Avenue freight bridge, and the reconstructed Del Amo Boulevard roadway bridge. Pile installation methods include impact driven piles, vibratory driven piles, or cast-in-drilled-hole piles (CIDH). The required method is dependent on engineering requirements and geotechnical conditions determined at a later phase of design. As shown in Table 3.6-14, impact pile driving would generate a noise level of 94.3 dBA, L_{eq} at 50 feet versus CIDH pile installation which would generate a noise level of approximately 77.4 dBA, L_{eq} at 50 feet.

Construction noise contours for pile driving are shown in Figure 3.6-15 through Figure 3.6-17. Assuming a vibratory pile driver would be used for the retained fill south of the Redondo Beach (Marine) Station, construction may result in noise levels up to 93.8 dBA L_{eq} at 50 feet. Assuming an impact pile driver would be used for the Grant Avenue freight bridge and Del Amo Boulevard roadway bridge, construction may result in noise levels up to 94.3 dBA L_{eq} at 50 feet. As shown in Figure 3.6-15 and Figure 3.6-17, pile driving noise at sensitive receptors near the retained fill construction near the existing Redondo Beach

(Marine) Station and Del Amo Boulevard bridge are not anticipated to exceed the FTA noise criteria. As shown in the Figure 3.6-16, sensitive receptors are located within 50 feet of the relocated Grant Avenue freight bridge and could experience temporarily elevated noise levels above the FTA noise criteria.

Table 3.6-14. Construction Noise by Pile Installation Method

Equipment		1-hour L_{eq} (dBA) at 50 Feet
Pile Driver	Impact	94.3
	Vibratory	93.8
Drill for Cast-In-Drilled-Hole Piles (CIDH)		77.4

Source: FHWA, 2008; FTA, 2018
[1] Logarithmic sum of two loudest pieces of equipment
dBA = A-weighted decibel; L_{eq} = equivalent sound level

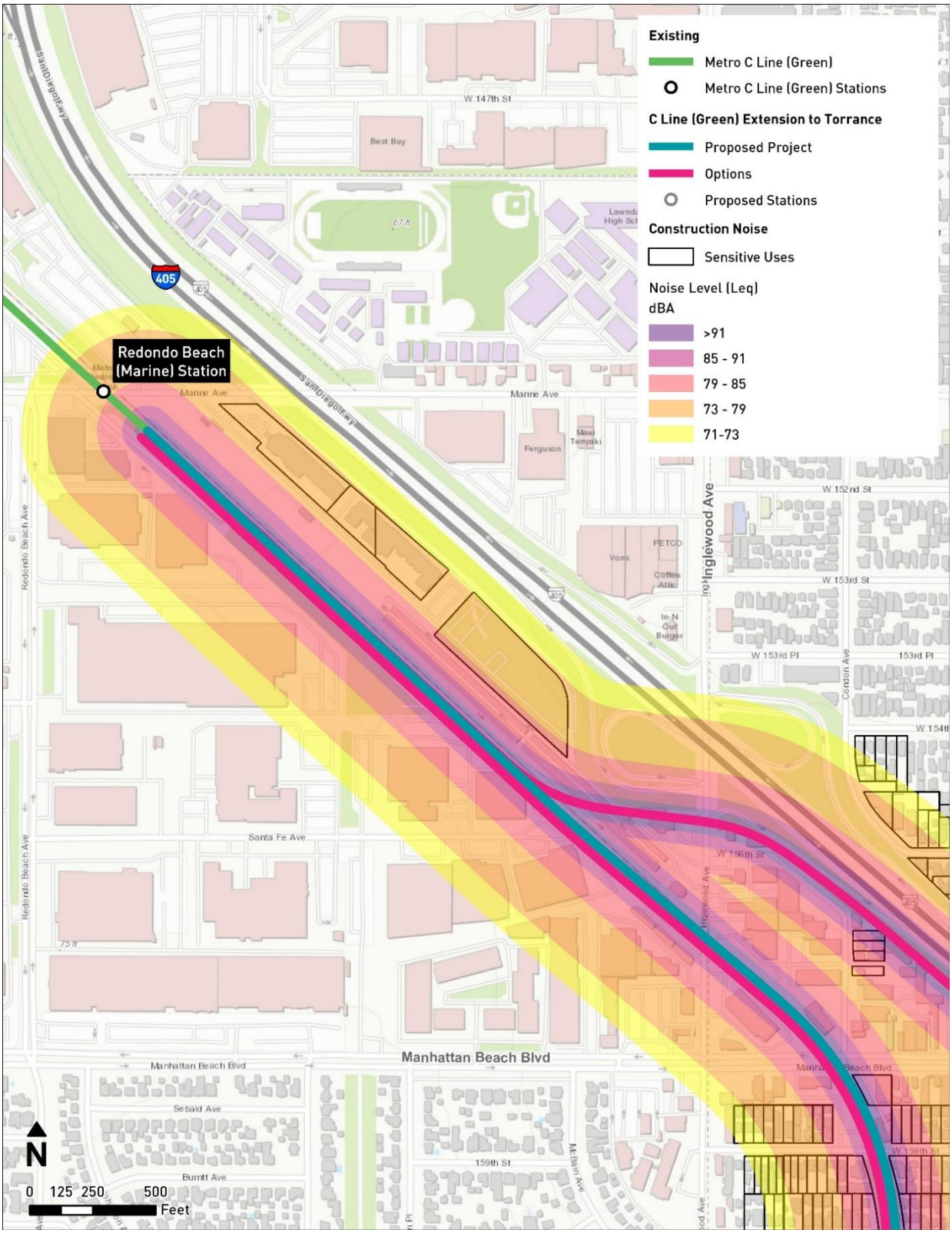
As shown on Table 3.6-13, at-grade construction would typically generate higher noise levels than elevated guideway construction. Overall, based on Table 3.6-13, at-grade construction, which would represent a typical construction day, would result in a 1-hour L_{eq} of 91.2 dBA at 50 feet. At distances greater than 200 feet, construction noise levels would typically be less than 80 dBA 1-hour L_{eq}. Sensitive receptors would be located within 50 feet of construction activity for the majority of the alignment. Noise levels during construction could typically exceed the 1-hour L_{eq} FTA standards of 90 dBA during the day and 80 dBA at night for residential uses for all types of construction. Therefore, construction of the Proposed Project would result in a significant impact, and mitigation is required.

Mitigation measure MM-NOI-1, Noise Control Plan would be implemented, which would require the contractor to prepare a Noise Control Plan describing noise-reducing methods, and would require Metro to comply with local ordinances where possible. Project construction would be minimized during weekday AM and PM peak hours and would typically occur between the hours of 7:00 a.m. and 6:00 p.m., in accordance with the most conservative of the local ordinance restrictions among all involved cities. Pursuant to MM-NOI-1, Metro would also obtain a variance to conduct construction outside of the hours of the local ordinance if required. Nighttime or weekend construction may be required at times to avoid congested freeways and surface streets or due to the nature of certain construction processes, such as construction of freight track to avoid disruption to BNSF operations or construction of bridges over major arterials.

While MM-NOI-1 would include measures that reduce construction noise levels, in some instances the FTA construction impact criteria may still be exceeded. There are no additional feasible mitigation measures that could be implemented to further reduce construction noise levels. Therefore, construction of the Proposed Project would result in noise levels that would exceed FTA's criteria, and the impact would be **significant and unavoidable**.

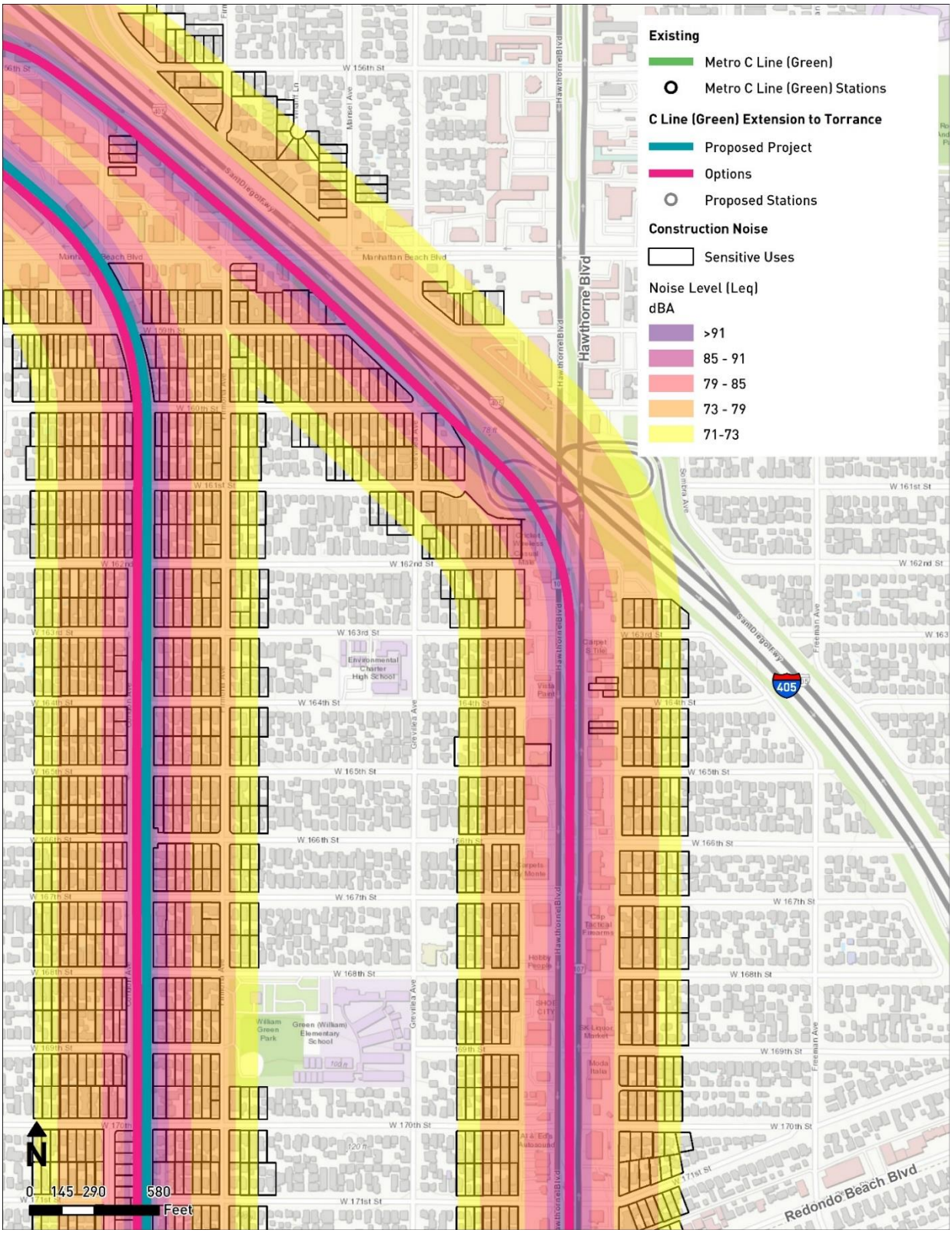
Regarding health effects of noise, it is unlikely for construction noise to result in noise-induced hearing loss for persons residing or working near construction zones, as this is an occupational hazard related to working over long periods of time (years) in high noise environments. However, construction noise could increase stress at affected sensitive uses.

Figure 3.6-11. Proposed Project and Options – Construction Noise Contours (1 of 4)



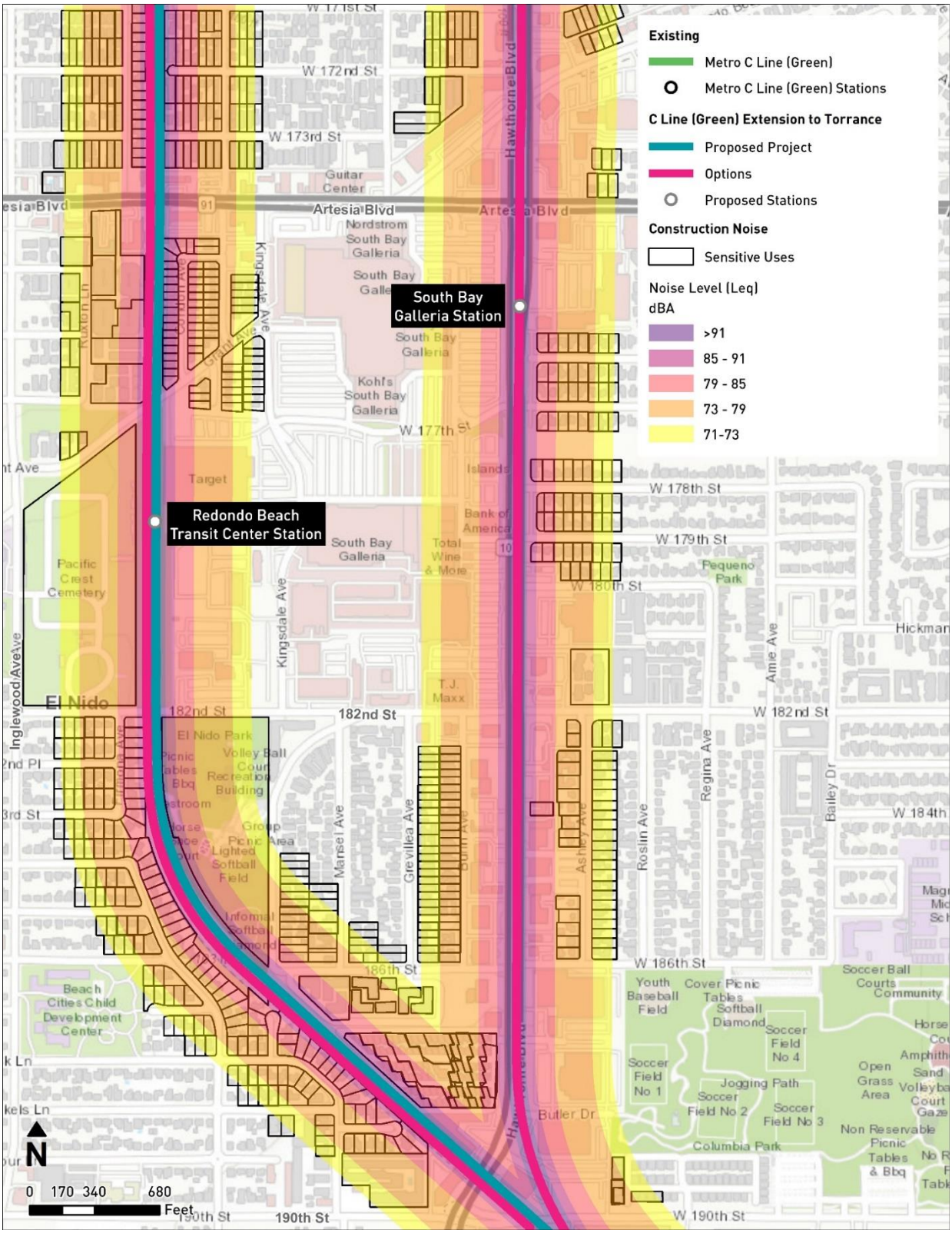
Source: TAHA, 2022

Figure 3.6-12. Proposed Project and Options– Construction Noise Contours (2 of 4)



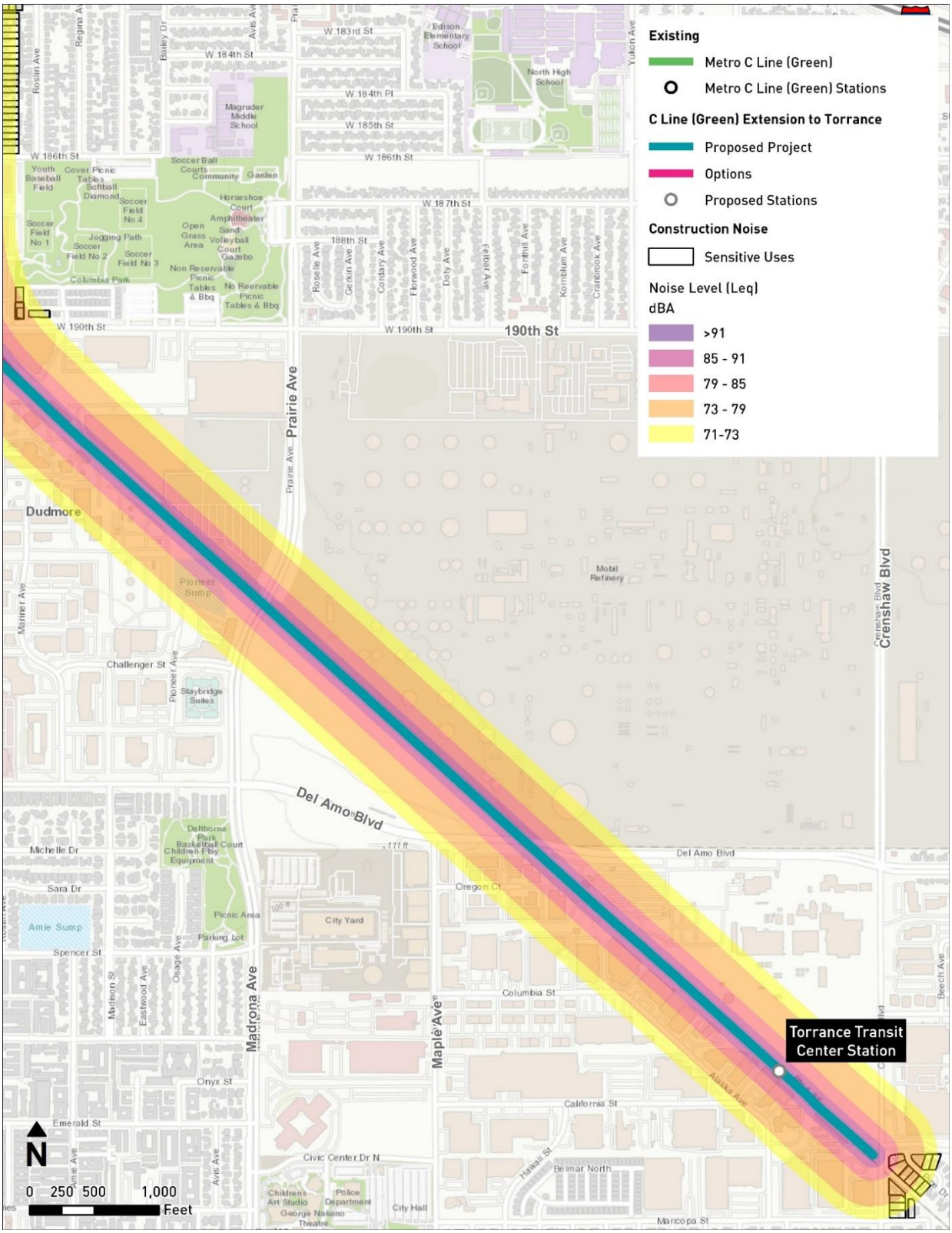
Source: TAHA, 2022

Figure 3.6-13. Proposed Project and Options – Construction Noise Contours (3 of 4)



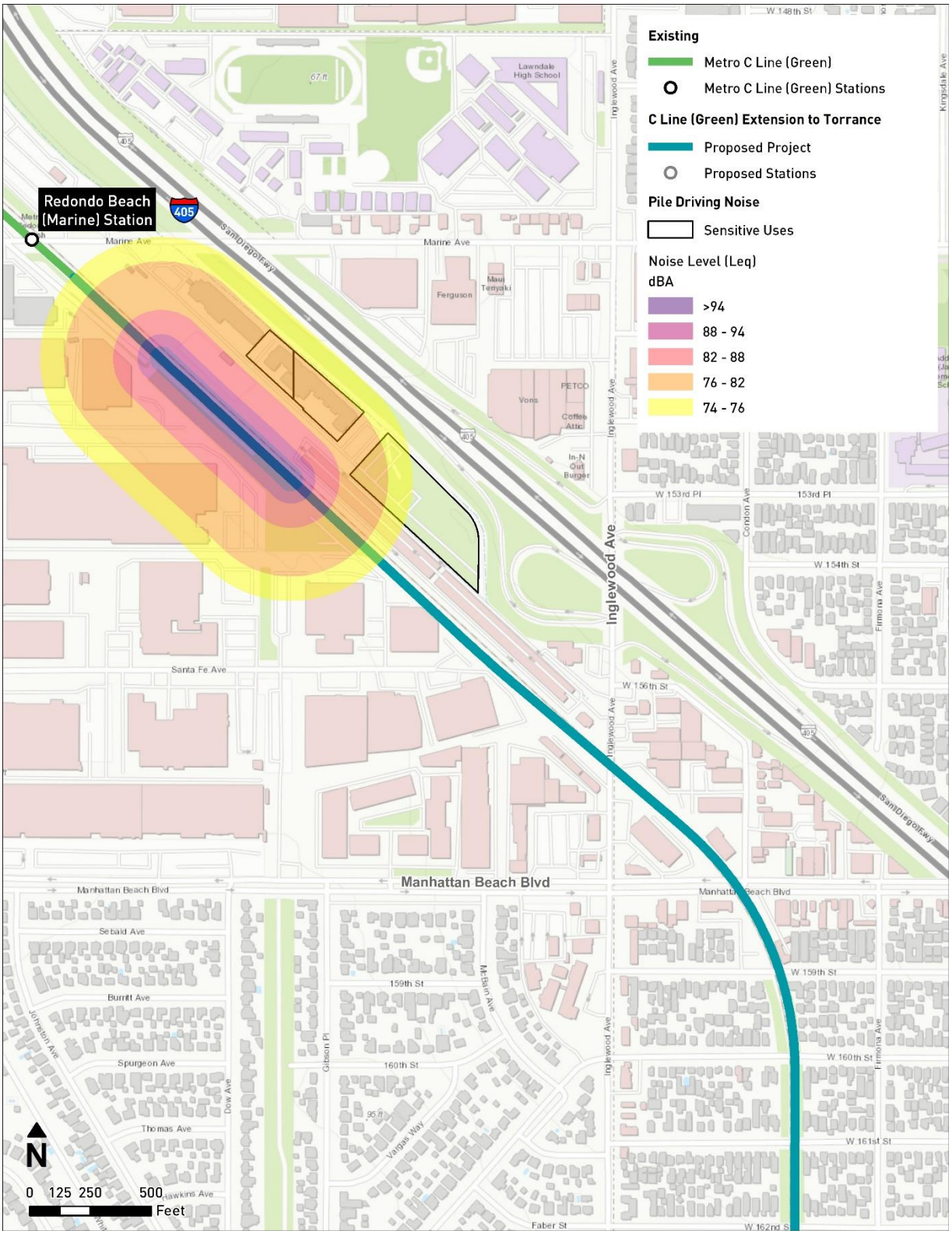
Source: TAHA, 2022

Figure 3.6-14. Proposed Project and Options – Construction Noise Contours (4 of 4)



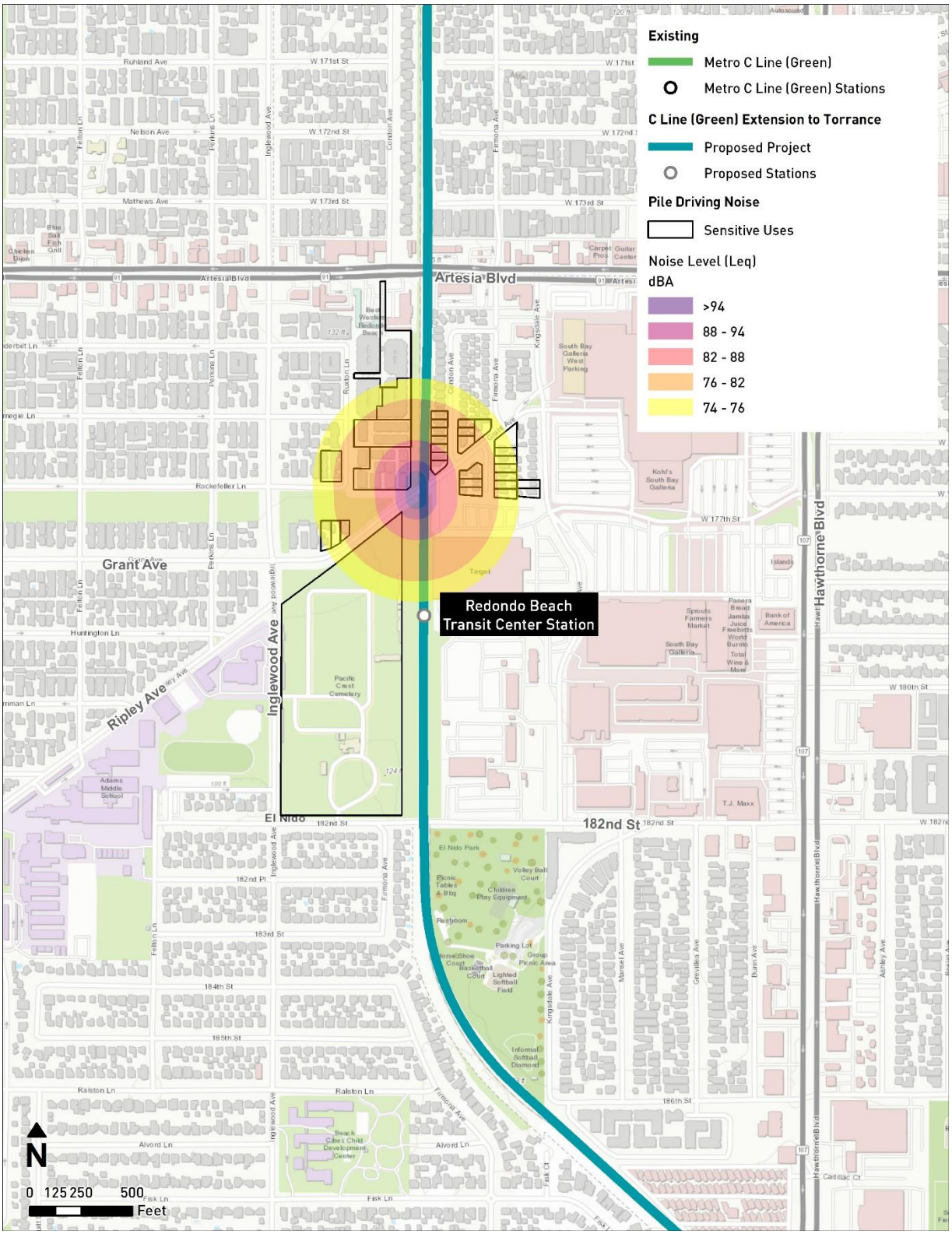
Source: TAHA, 2022

Figure 3.6-15. Proposed Project – Construction Pile Driving Noise Contours (1 of 3)



Source: TAHA, 2022

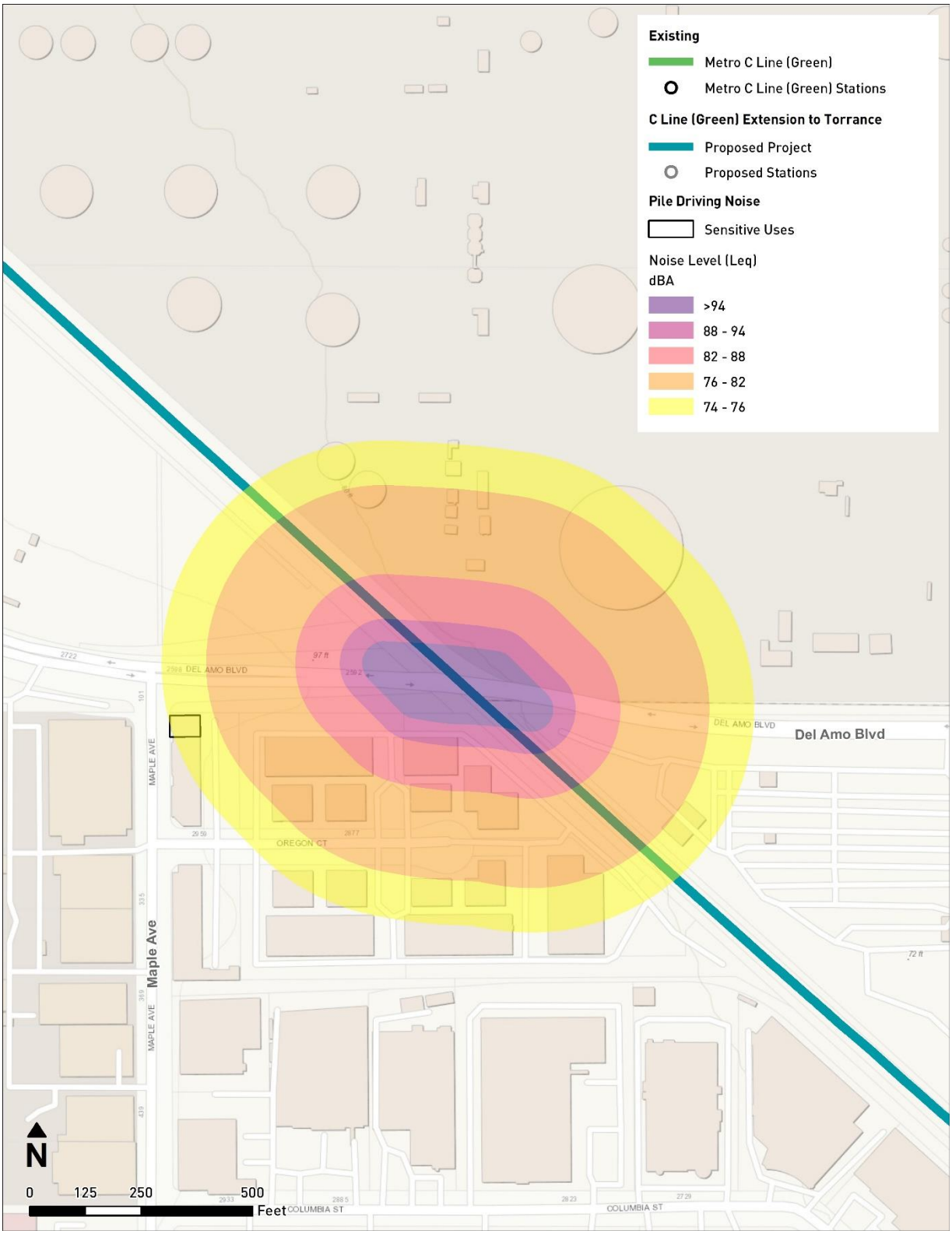
Figure 3.6-16. Proposed Project – Construction Pile Driving Noise Contours (2 of 3)



Source: TAHA, 2022

Metro

Figure 3.6-17. Proposed Project – Construction Pile Driving Noise Contours (3 of 3)



Source: TAHA, 2022

TRENCH OPTION

Significant and Unavoidable Impact. The Trench Option would be located in the same corridor as the Proposed Project, and construction activities would occur in close proximity to the same sensitive land uses. The overall construction duration would be about seven years, two years longer than the Proposed Project. There is increased excavation required for the trench, as well as construction of the roadway bridges that cross over the trench alignment, which would require longer durations. The daily hours of construction would be similar to the Proposed Project.

The Trench Option would require three types of construction for the three types of light rail guideway: at-grade construction, trench construction and elevated guideway construction. The typical construction equipment used for the Trench Option are listed below in Table 3.6-15. The construction noise contours are depicted graphically above in Figure 3.6-11 through Figure 3.6-14.

Table 3.6-15. Construction Noise by Activity Type – Trench Option

Equipment	1-hour L_{eq} (dBA) at 50 feet	Construction Activity Type		
		At-Grade Construction	Trench Construction	Elevated Guideway
Backhoe	80.0	X	X	-
Compactor	82.0	X	X	X
Compressor (air)	80.0	X	X	-
Concrete Mixer Truck	85.0	-	X	X
Concrete Pump Truck	82.0	-	X	X
Concrete Saw	89.6	-	X	X
Crane	83.0	X	X	X
Dozer	85.0	X	X	X
Excavator	80.7	-	X	-
Flat Bed Truck	74.3	X	X	X
Generator	82.0	X	X	X
Grader	85.0	X	-	-
Man Lift	67.7	-	-	X
Paver	85.0	X	-	-
Pneumatic Tools	85.0	X	X	X
Rail Saw	90.0	X	-	-
Roller	85.0	X	X	X
Rough Terrain Forklift	79.4	-	-	X
Trencher	77.3	-	X	-
Tie Handler	80.0	X	X	X
Tie Inserter	85.0	X	X	X
Trucks	76.5	X	X	X
Welder/Torch	74.0	X	X	X
Combined 1-hour L_{eq}[1] at 50 feet		**91.2**	**90.9**	**90.9**

Source: FHWA, 2008; FTA, 2018

[1] Logarithmic sum of two loudest pieces of equipment

dBA = A-weighted decibel; L_{eq} = equivalent sound level; - = not applicable

As described above for the Proposed Project, pile driving was given special consideration in the construction noise analysis, as it could result in elevated noise levels above typical construction

methods. Pile driving could potentially be required for temporary shoring of the trench walls for the Trench Option as well as a pump house located at the northwest corner of Manhattan Beach Boulevard and Condon Avenue (described in Chapter 2, Project Description). Shallower transition areas of the trench where the light rail is going into or coming out of the trench (approximately 10 feet deep or less) may require impact or vibratory driven piles, while deeper portions could use CIDH piles, which is a less noise intense method of pile installation. The required pile driving method is dependent on engineering requirements and geotechnical conditions, to be determined at a later phase of design.

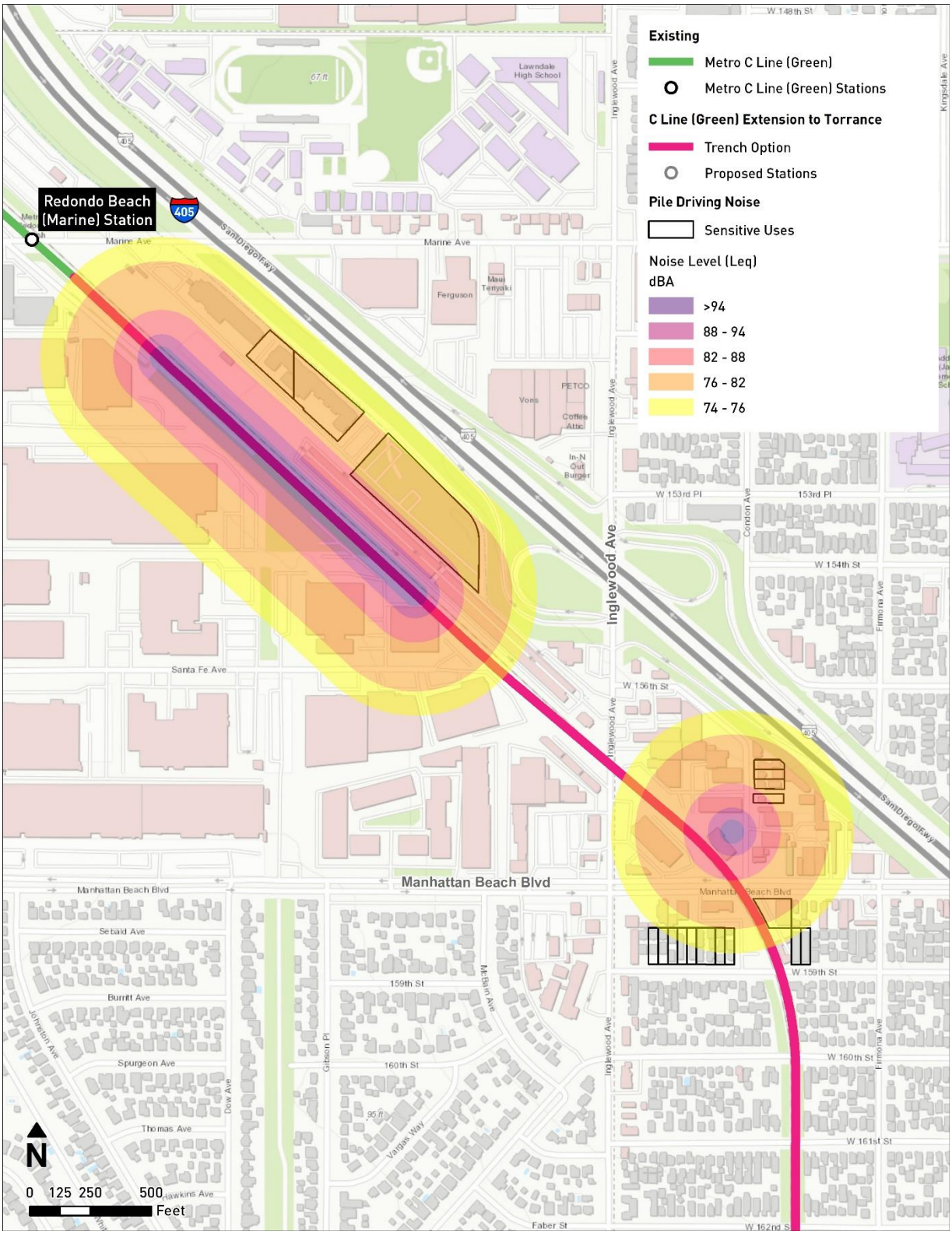
Conservatively assuming an impact pile driver would be used, pile driving related to temporary trench wall shoring may result in noise levels up to 94.3 dBA L_{eq} at 50 feet, as shown in Table 3.6-14. Sensitive receptors are located within 50 feet of potential pile driving locations and could experience temporarily elevated noise levels. It is important to note that pile driving for temporary shoring would typically only occur during the earliest phases of trench construction and would not be a regular occurrence over the multi-year construction period. Construction noise contours for pile driving related to the Trench Option are shown in Figure 3.6-18 through Figure 3.6-19.

Similar to the Proposed Project, at-grade construction, which would represent a typical construction day, would be the loudest phases with a 1-hour L_{eq} of 91.2 dBA at 50 feet for typical construction. Trench work would generate a similar 1-hour L_{eq} of 90.9 dBA. At distances greater than 200 feet construction noise levels would typically be less than 80 dBA 1-hour L_{eq}. Sensitive receptors would be located within 50 feet of construction activity for the majority of the alignment. Noise levels during construction would typically exceed the 1-hour L_{eq} FTA standards of 90 dBA during the day and 80 dBA at night for residential uses for all types of construction. Therefore, construction of the Trench Option would result in a significant impact, and mitigation is required.

Mitigation measure MM-NOI-1 would be implemented, which would require the contractor to prepare a Noise Control Plan describing noise-reducing methods, and would require Metro to comply with local ordinances where possible. Nighttime or weekend construction may be required at times to avoid congested freeways and surface streets or due to the nature of certain construction processes. While MM-NOI-1 would include measures that reduce construction noise levels, in some instances the FTA construction impact criteria may still be exceeded. There are no additional feasible mitigation measures that could be implemented to further reduce construction noise levels. Therefore, construction of the Trench Option would result in noise levels that would exceed FTA's criteria, and the impact would be **significant and unavoidable**.

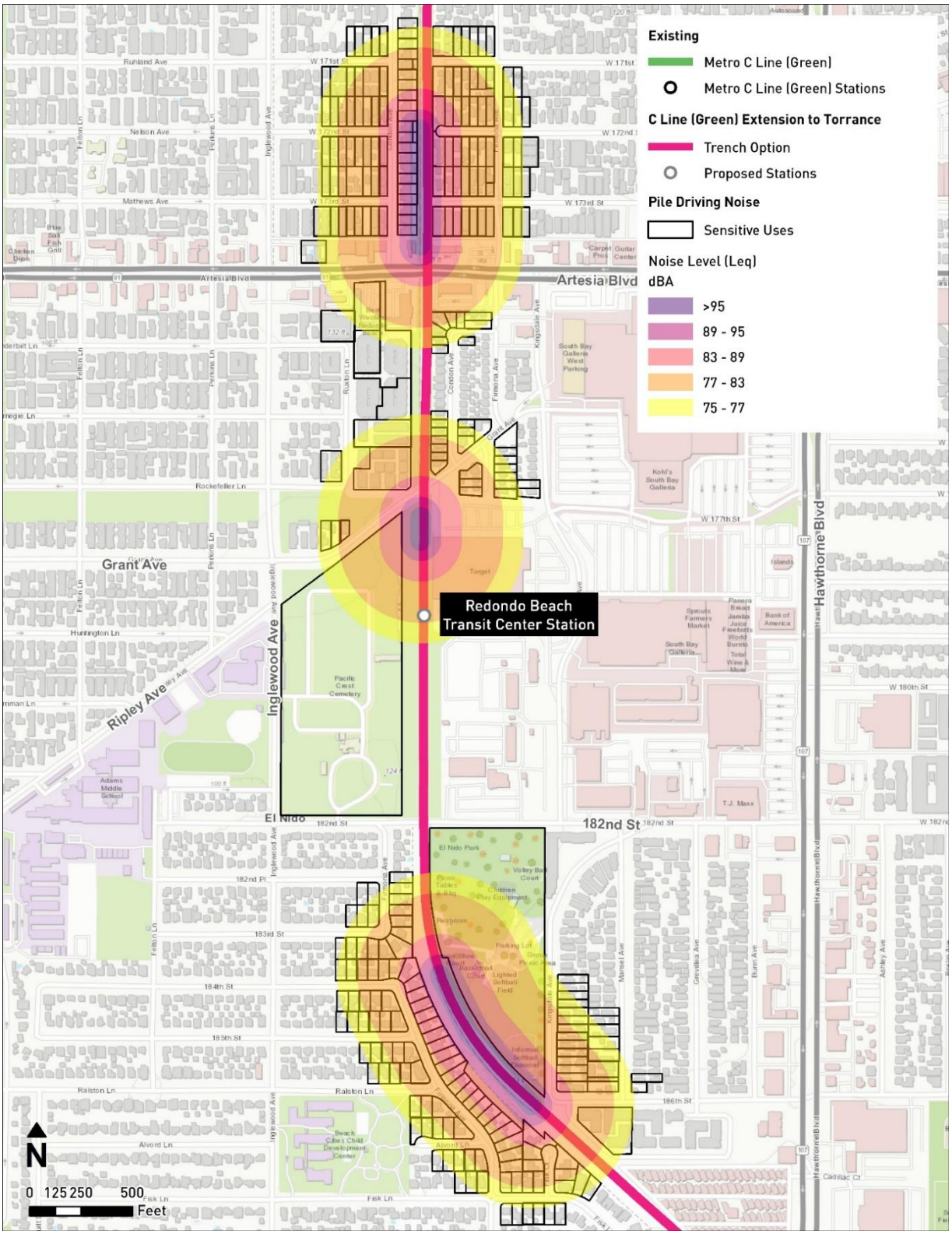
Health effects related to noise would be the same as described for the Proposed Project.

Figure 3.6-18. Trench Option - Construction Pile Driving Noise Contours (1 of 2)



Source: TAHA, 2022

Figure 3.6-19. Trench Option – Construction Pile Driving Noise Contours (2 of 2)



Source: TAHA, 2022

HAWTHORNE OPTION

Significant and Unavoidable Impact. Similar to the Proposed Project, the Hawthorne Option would be located in a fully built-out urban environment, and construction activities would occur in close proximity to sensitive land uses throughout the corridor. The overall construction duration would be about five years, similar to the Proposed Project. The daily hours of construction would be similar to the Proposed Project. The Hawthorne Option would require the same two types of construction as the Proposed Project for the two types of light rail guideway: at-grade construction, and elevated guideway construction. The typical construction equipment used for the Hawthorne Option are listed above in Table 3.6-13. The construction noise contours are depicted graphically above in Figure 3.6-11 through Figure 3.6-14.

Similar to the Proposed Project, at-grade construction would be the loudest phases with a 1-hour L_{eq} of 91.2 dBA at 50 feet for typical construction. The Hawthorne Option would involve more elevated guideway construction than the Proposed Project or Trench Option, which would generate a 1-hour L_{eq} of approximately 90.9 dBA. At distances greater than 200 feet construction noise levels would typically be less than 80 dBA 1-hour L_{eq}. Sensitive receptors would be located within 50 feet of construction activity for the majority of the alignment. Noise levels during construction would typically exceed the 1-hour L_{eq} FTA standards of 90 dBA during the day and 80 dBA at night for residential uses for all types of construction. Therefore, construction of the Hawthorne Option would result in a significant impact, and mitigation is required.

Mitigation measure MM-NOI-1 would be implemented, which would require the contractor to prepare a Noise Control Plan describing noise-reducing methods, and would require Metro to comply with local ordinances where possible. As the Hawthorne Option is located within a major arterial, project construction would be minimized during weekday AM and PM peak traffic hours. Nighttime or weekend construction may be required at times to avoid congested freeways and surface streets, or due to the nature of certain construction processes.

While MM-NOI-1 would include measures that reduce construction noise levels, in some instances the FTA construction impact criteria may still be exceeded. There are no feasible mitigation measures that could be implemented to further reduce construction noise levels. Therefore, construction of the Hawthorne Option would result in construction noise levels that would exceed FTA's criteria, and the impact would be **significant and unavoidable**.

Health effects related to noise would be the same as described for the Proposed Project.

3.6-4.1.2 Operational Impacts

Significant and Unavoidable Impact. Impacts from operation of the Proposed Project were assessed for light rail transit, ancillary facilities, the parking facility at the Torrance TC, and the combined noise of relocated freight and light rail. Overall, the Proposed Project would have a **significant and unavoidable impact** for light rail and for combined freight and light rail noise, a less than significant impact for ancillary facilities, and no impact for the parking facility. The following sections describe the impacts in detail for each subtopic.

Light Rail Transit Noise

Significant and Unavoidable Impact. Noise associated with light rail transit includes noise from steel wheels rolling on steel rails (wheel/rail noise), propulsion motors, air conditioning, and other auxiliary equipment on the vehicles. Wheel squeal could potentially occur at track curves with a radius of less than 1,000 feet (per FTA transit noise and vibration impact assessment guidance, wheel squeal does not

occur when track curves have a radius greater than 1,000 feet). No curves with a radius of less than 1,000 feet have been identified for the Proposed Project and wheel squeal is not anticipated to occur. Sensitive uses would be exposed to a combination of noise sources, including light rail train pass-by noise, audible warnings noise (crossing signal bells), TPSS noise, and special trackwork noise. The Proposed Project would include two protected at-grade crossings at 170th Street and 182nd Street, with crossing signals contributing to noise near sensitive uses. The light rail quacker horn (75 dBA at 100 feet) and emergency horn (85 dBA at 100 feet) would be less than 96 dBA at 300 feet as required by Section 46.2.8 of the City of Torrance Municipal Code.

Noise-sensitive land uses along the Proposed Project alignment were categorized using the FTA Land Use Categories of 1, 2, or 3, as described in Table 3.6-1. The sensitive uses were grouped into clusters, each having one representative receiver. Noise levels were modeled at each cluster and listed in detail in Appendix 3.6-B, Noise Analysis Detail, Table 1 for unmitigated noise and Appendix 3.6-B, Table 4 for mitigated noise. Clusters and impacts are illustrated in Figure 3.6-21 to Figure 3.6-24. A total of 227 sensitive receptor clusters have been identified. No Category 1 land uses, characterized as buildings where quiet is an essential element of their purpose, were identified. Of the sensitive receptor clusters, 224 are considered Category 2 land uses, characterized as residences and buildings where people normally sleep (e.g., homes, hospitals and hotels) and where nighttime sensitivity is assumed to be of utmost importance. Three Category 3 land uses, characterized as institutional land uses with primarily daytime use that depend on quiet as an important part of operations (i.e., schools, libraries and churches), were identified.

Under the Proposed Project, 190 of the 224 Category 2 clusters are predicted to experience potentially significant noise impacts from light rail transit noise. Two of the three Category 3 clusters (Pacific Crest Cemetery and El Nido Park) would experience a potentially significant noise impact. As described in Section 3.6-2.5, Metro would implement several project features, pending CPUC authorization (based on Metro's recent experience with similar at-grade crossings on light rail transit projects, these measures have been successfully authorized by the CPUC and implemented). Bell shrouds (PF-NV-2) would keep crossing signal noise directed at the crossing, shown in Figure 3.6-20, which is an example implemented for the Metro E Line (Expo) at the Westwood Boulevard at-grade crossing. The gate-down-bell-stop variance (PF-NV-3) would stop crossing signal noise once the gate is down. However, operation of the Proposed Project would result in a significant impact, and mitigation would be required.

MM-NOI-2, Soundwalls and MM-NOI-3, Low Impact Frogs would be implemented, which would reduce noise via installation of soundwalls at identified impacted receptors, and low impact frogs at crossovers which were determined to contribute to noise impacts. Low impact frogs incorporate mechanisms, such as spring-loaded devices, to close the gaps between running rails and thereby reduce noise and vibration impacts caused by the trains running over gaps. A detailed discussion of the implementation of mitigation measures and associated noise reductions is included in Section 3.6-5.

Figure 3.6-20. Bell Shroud Example

Source: TAHA, 2022

MM-NOI-2 and MM-NOI-3 would reduce impacts to less than significant at the majority of clusters, but noise levels at seven clusters would continue to exceed FTA noise criteria. Notably, mitigation would reduce the operational noise level at these clusters to almost below the FTA noise criteria; two of the clusters would just meet the FTA noise criteria and the remaining five clusters would only be within 1 dB to 3 dB of the threshold. However, even with implementation of mitigation measures, the impact of noise from operation would be **significant and unavoidable**.

Regarding health effects, it is unlikely for light rail transit noise to result in noise induced hearing loss, as this is an occupational hazard related to working over long periods of time in high noise environments. The Occupational Safety and Health Administration (OSHA) has established a sound level of 82 dBA as being protective of hearing for a continuous exposure of 24 hours (29 CFR 1910.95). The light rail would pass by an individual receptor typically for a period of less than one minute and would not result in a continuous exposure of noise throughout the day as would be the case with a worker exposed to factory equipment. The approximate single pass-by light rail transit noise level (without mitigation) would be 78 dBA, L_{max} at 50 miles per hour, which would be below the OSHA 82 dBA continuous exposure noise level. Over a 1-hour period the equivalent noise level would be approximately 63.7 dBA, L_{eq} for a rush hour period with high train frequency, which would be below the 82 dBA continuous exposure noise level. Additionally, predicted noise levels are exterior noise levels and standard building construction typically results in reduction of 10 dB with windows open and 20 dB closed (FHWA, 2011). Metro acknowledges increased levels of noise could increase stress at affected sensitive uses and has implemented mitigation measures to reduce these effects. This applies for other areas that would result in noise impacts.

Ancillary Facilities

Less than Significant Impact. Ancillary facilities that would be included are emergency power systems and TPSSs. Emergency, standby, and critical operations power system generators located along the alignment would be a potential source of noise. Reduction of noise from these sources would be

provided by barriers, enclosures, sound-absorptive materials, and engine silencers as applicable to the individual facility or unit design. Operation of the generators would not be a part of regular operation and would only be used during emergency situations and during weekly testing for approximately 20 minutes. Thus, generator operation has not been included as part of the operational analysis. TPSSs would supply electricity to the light rail system, and would contribute to noise perceived at sensitive receptors. Sources of TPSS noise include heating, ventilation, and cooling systems (HVAC) and transformer hum. The HVAC system is the primary source of sound emitted from a TPSS. TPSSs generate a noise level of approximately 50 dBA at 50 feet.[3] Four of the seven proposed TPSS site options would be located near sensitive receptors (sites 2, 3, 4, and 7), shown in Figure 3.6-21 to Figure 3.6-24. Appendix 3.6-B, Table 2 lists the TPSSs and sensitive receptors. TPSS noise was predicted at each potentially affected sensitive receptor and analyzed in the context of existing ambient noise levels at receptors. TPSS noise would not exceed the FTA noise impact criteria, nor would they exceed 5 decibels above existing ambient noise levels for TPSSs located in the City of Torrance and no significant impacts have been identified. Therefore, impacts related to ancillary facilities would be **less than significant**.

Parking Facility Noise

No Impact. The Proposed Project would include the construction of a surface parking lot at the Torrance TC. The nearest sensitive receptors would be residences located approximately 900 feet to the south along Crenshaw Boulevard. The sensitive receptors would be outside the analysis screening distance of 125 feet and would not be impacted by the proposed parking lot. Therefore, the Proposed Project would have **no impact** related to parking facility noise.

Combined Noise (Freight Track Relocation and Light Rail Noise)

Significant and Unavoidable Impact. Relocation of existing freight tracks would be required to accommodate the addition of the Proposed Project within the Metro ROW; the specific areas of relocation can be found in Appendix 2-A, Selected Advanced Conceptual Engineering. Relocation of the freight tracks would not change the existing frequency of freight train operation. Freight trains are anticipated to travel at a speed of 20 mph and, in the absence of a designated quiet zone, would be required to sound their warning horns within a quarter mile of at-grade crossings. The operating assumptions were observed during field visits to correlate with real world operating conditions as noted in Table 3.6-12.

The determination of impacts at sensitive receptors was made by comparing the FTA impact criteria to a combined noise level generated by both the freight noise and light rail noise.

Under the Proposed Project, 200 of 208 Category 2 clusters located near where freight track relocation is required are predicted to experience potentially significant impacts as a result of the combination of relocated freight tracks and light rail noise. Three Category 3 clusters (Iglesia Cristiana Lluvia de Gracia, Pacific Crest Cemetery, and El Nido Park) would experience potentially significant impacts. Metro would implement several project features, including PF-NV-1, which would design and construct at-grade

[3]TPSS noise levels were measured at seven feet from the cooling fan of the TPSS unit located at Farmdale Avenue and Exposition Boulevard. The resulting noise level was 66.5 dBA L_{eq} at seven feet. The equivalent noise level is approximately 49.4 dBA L_{eq} at 50 feet. The measured noise level is consistent with the specifications used for the purchase of the TPSS units for the Metro L (Gold) Line Phase 1 and the East Side extension to the L (Gold) Line.

crossings to include all required equipment needed to allow local jurisdictions to designate a quiet zone. PF-NV-2 and PF-NV-3 are also both anticipated to be implemented, pending CPUC authorization. However, the combination of relocated freight track and light rail noise related to operation of the Proposed Project would result in a significant impact, and mitigation is required.

MM-NOI-2 and MM-NOI-3 would be implemented, which would reduce noise via installation of soundwalls near identified impacted receptors and low impact frogs at crossovers which were determined to contribute to noise impacts. Mitigation measure NOI-4, Quiet Zone Establishment, would require Metro to cooperate with the City of Lawndale, City of Redondo Beach, and City of Torrance to establish a quiet zone(s) from north of Inglewood Avenue to south of 182nd Street. The quiet zone is anticipated to reduce freight noise overall along the Metro ROW by eliminating one of the primary sources of noise from freight trains, the horn, which produces a noise level of 110 dBA. In most cases, with implementation of the quiet zone, freight noise would be quieter than existing conditions even though the tracks would be in closer proximity to some sensitive receptors. The clusters and mitigated impact levels of the combination of freight relocation and light rail noise are illustrated in Figure 3.6-22 through Figure 3.6-24, which include implementation of MM-NOI-2 through MM-NOI-4. Noise levels by cluster are shown in Table 3.6-16. The combined freight relocation and light rail noise levels at each cluster are listed in detail in Appendix 3.6-B, Table 3 for unmitigated noise and Appendix 3.6-B, Table 5 for mitigated noise.

Implementation of MM-NOI-2 through MM-NOI-4 would reduce impacts to less than significant for the majority of clusters, but noise levels at two clusters located near the at-grade crossing at 170th Street would continue to exceed FTA criteria. Notably, mitigation would reduce the operational noise level at these clusters to almost below the FTA noise criteria; one of the clusters is at the FTA noise criteria threshold and one cluster would only exceed the noise criteria only by 1 dB. However, even with implementation of mitigation measures MM-NOI-2 through MM-NOI-4, the combination of light rail noise and freight track relocation noise from operation of the Proposed Project would result in noise levels that would exceed FTA's criteria, and the impact would be **significant and unavoidable**.

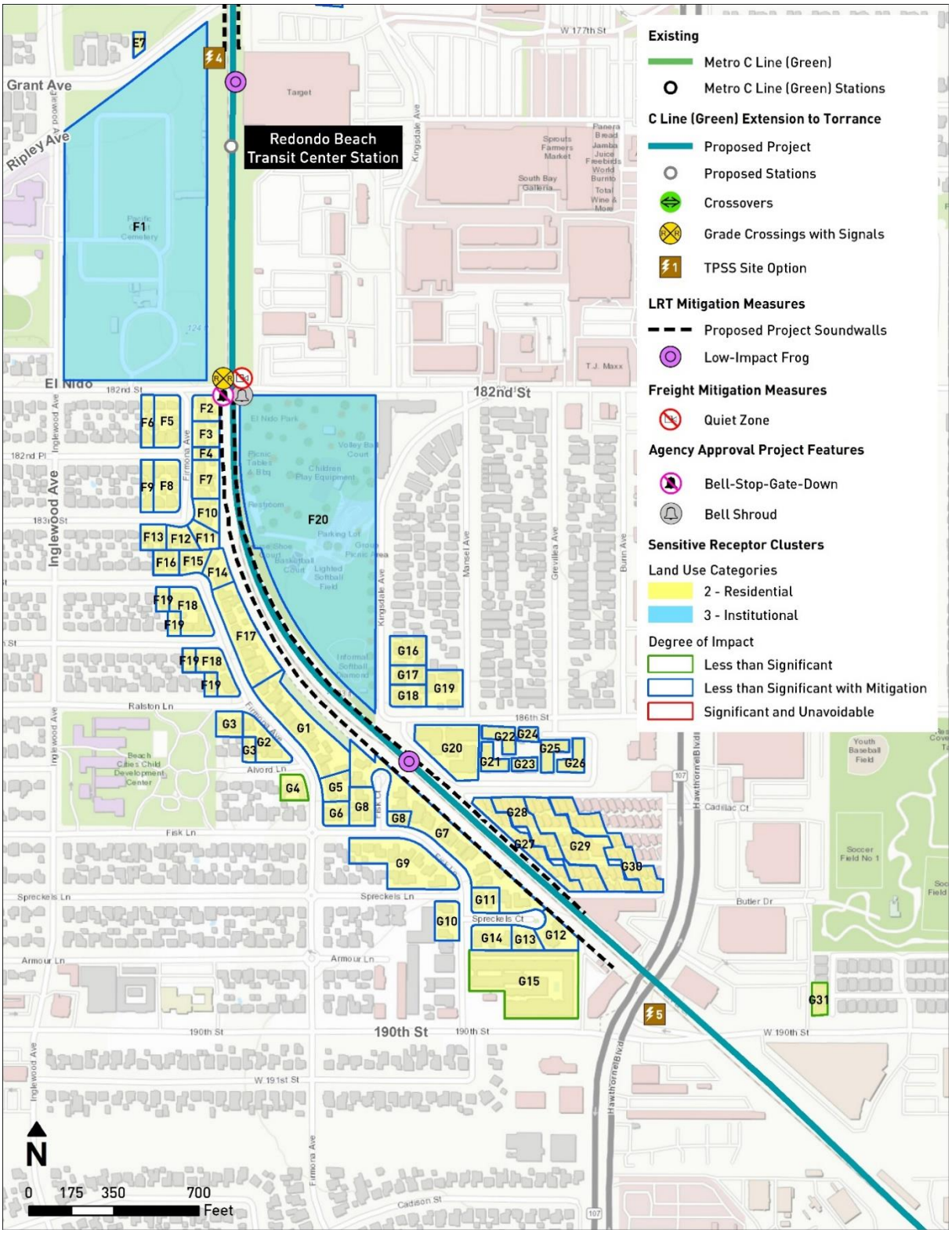
Figure 3.6-21. Proposed Project - Combined Light Rail and Freight Relocation Mitigated Noise Impacts (1 of 4)

Source: TAHA, 2022

Figure 3.6-22. Proposed Project – Combined Light Rail and Freight Relocation Mitigated Noise Impacts (2 of 4)

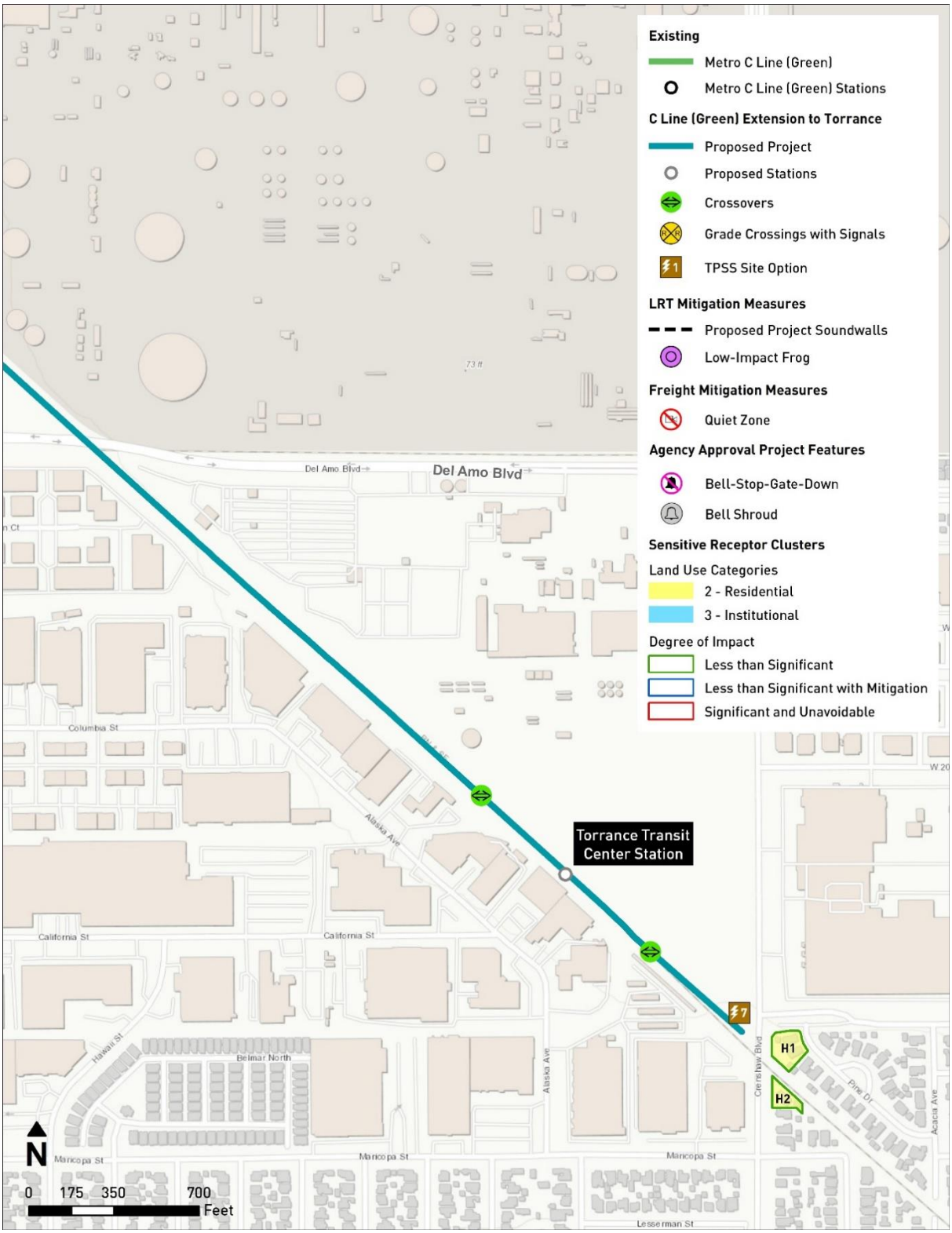
Source: TAHA, 2022

Figure 3.6-23. Proposed Project – Combined Light Rail and Freight Relocation Mitigated Noise Impacts (3 of 4)



Source: TAHA, 2022

Figure 3.6-24. Proposed Project – Combined Light Rail and Freight Relocation Mitigated Noise Impacts (4 of 4)



Source: TAHA, 2022

Table 3.6-16. Proposed Project – Combined Light Rail and Freight Relocation Mitigated Noise Impacts

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated Freight and LRT Combined	Mitigated Freight and LRT Combined	Impact Threshold[1]	
A1	2	67.0	63.0	56.0	62.0	Less Than Significant With Mitigation
A2	2	67.0	63.0	58.0	62.0	Less Than Significant With Mitigation
A3	2	67.0	59.0	51.0	62.0	Less than Significant
A4	2	70.0	62.0	50.0	64.0	Less than Significant
A5	2	70.0	62.0	51.0	64.0	Less than Significant
A6	2	70.0	63.0	51.0	64.0	Less than Significant
A7	2	70.0	63.0	52.0	64.0	Less than Significant
B1	3	71.0	73.0	60.0	70.0	Less Than Significant With Mitigation
B2	2	66.0	67.0	52.0	61.0	Less Than Significant With Mitigation
B3	2	65.0	64.0	50.0	61.0	Less Than Significant With Mitigation
B4	2	65.0	62.0	47.0	61.0	Less Than Significant With Mitigation
B5	2	67.0	70.0	56.0	62.0	Less Than Significant With Mitigation
B6	2	66.0	65.0	50.0	61.0	Less Than Significant With Mitigation
B7	2	65.0	63.0	48.0	61.0	Less Than Significant With Mitigation
B8	2	71.0	70.0	55.0	65.0	Less Than Significant With Mitigation
B9	2	70.0	65.0	50.0	65.0	Less Than Significant With Mitigation
B10	2	70.0	63.0	48.0	64.0	Less than Significant
B11	2	71.0	70.0	56.0	65.0	Less Than Significant With Mitigation
B12	2	70.0	65.0	50.0	65.0	Less Than Significant With Mitigation
B13	2	70.0	63.0	48.0	64.0	Less than Significant
B14	2	71.0	70.0	56.0	65.0	Less Than Significant With Mitigation
B15	2	70.0	65.0	51.0	65.0	Less Than Significant With Mitigation
B16	2	70.0	63.0	48.0	64.0	Less than Significant
B17	2	70.0	65.0	54.0	65.0	Less Than Significant With Mitigation
B18	2	70.0	62.0	50.0	65.0	Less than Significant
B19	2	70.0	60.0	48.0	64.0	Less than Significant
B20	2	70.0	65.0	54.0	65.0	Less Than Significant With Mitigation
B21	2	70.0	62.0	50.0	65.0	Less than Significant

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated Freight and LRT Combined	Mitigated Freight and LRT Combined	Impact Threshold[1]	
B22	2	70.0	60.0	48.0	64.0	Less than Significant
B23	2	61.0	65.0	54.0	58.0	Less Than Significant With Mitigation
B24	2	58.0	63.0	51.0	57.0	Less Than Significant With Mitigation
B25	2	57.0	60.0	48.0	56.0	Less Than Significant With Mitigation
B26	2	61.0	65.0	54.0	58.0	Less Than Significant With Mitigation
B27	2	58.0	63.0	51.0	57.0	Less Than Significant With Mitigation
B28	2	57.0	60.0	48.0	56.0	Less Than Significant With Mitigation
B29	2	61.0	65.0	54.0	58.0	Less Than Significant With Mitigation
B30	2	58.0	63.0	51.0	57.0	Less Than Significant With Mitigation
B31	2	57.0	60.0	48.0	56.0	Less Than Significant With Mitigation
B32	2	61.0	65.0	54.0	58.0	Less Than Significant With Mitigation
B33	2	58.0	63.0	51.0	57.0	Less Than Significant With Mitigation
B34	2	57.0	60.0	48.0	56.0	Less Than Significant With Mitigation
B35	2	71.0	71.0	61.0	65.0	Less Than Significant With Mitigation
B36	2	66.0	67.0	52.0	61.0	Less Than Significant With Mitigation
B37	2	65.0	64.0	49.0	61.0	Less Than Significant With Mitigation
B38	2	67.0	74.0	61.0	62.0	Less Than Significant With Mitigation
B39	2	66.0	67.0	52.0	61.0	Less Than Significant With Mitigation
B40	2	65.0	64.0	49.0	61.0	Less Than Significant With Mitigation
B41	2	71.0	72.0	59.0	65.0	Less Than Significant With Mitigation
B42	2	70.0	68.0	53.0	65.0	Less Than Significant With Mitigation
B43	2	70.0	64.0	49.0	64.0	Less Than Significant With Mitigation
B44	2	71.0	72.0	59.0	65.0	Less Than Significant With Mitigation
B45	2	70.0	68.0	53.0	65.0	Less Than Significant With Mitigation
B46	2	70.0	64.0	49.0	64.0	Less Than Significant With Mitigation
B47	2	71.0	68.0	58.0	65.0	Less Than Significant With Mitigation
B48	2	70.0	64.0	53.0	65.0	Less than Significant
B49	2	70.0	60.0	49.0	64.0	Less than Significant
B50	2	71.0	68.0	57.0	65.0	Less Than Significant With Mitigation
B51	2	70.0	64.0	53.0	65.0	Less than Significant

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated Freight and LRT Combined	Mitigated Freight and LRT Combined	Impact Threshold[1]	
B52	2	70.0	60.0	49.0	64.0	Less than Significant
B53	2	62.0	68.0	54.0	59.0	Less Than Significant With Mitigation
B54	2	59.0	64.0	50.0	57.0	Less Than Significant With Mitigation
B55	2	58.0	60.0	47.0	56.0	Less Than Significant With Mitigation
B56	2	62.0	68.0	54.0	59.0	Less Than Significant With Mitigation
B57	2	59.0	64.0	50.0	57.0	Less Than Significant With Mitigation
B58	2	58.0	60.0	47.0	56.0	Less Than Significant With Mitigation
B59	2	62.0	68.0	54.0	59.0	Less Than Significant With Mitigation
B60	2	59.0	64.0	50.0	57.0	Less Than Significant With Mitigation
B61	2	58.0	60.0	47.0	56.0	Less Than Significant With Mitigation
B62	2	62.0	68.0	54.0	59.0	Less Than Significant With Mitigation
B63	2	59.0	64.0	50.0	57.0	Less Than Significant With Mitigation
B64	2	58.0	60.0	47.0	56.0	Less Than Significant With Mitigation
C1	2	61.0	65.0	54.0	58.0	Less Than Significant With Mitigation
C2	2	59.0	63.0	51.0	57.0	Less Than Significant With Mitigation
C3	2	57.0	60.0	48.0	56.0	Less Than Significant With Mitigation
C4	2	61.0	65.0	54.0	58.0	Less Than Significant With Mitigation
C5	2	59.0	63.0	52.0	57.0	Less Than Significant With Mitigation
C6	2	57.0	60.0	48.0	56.0	Less Than Significant With Mitigation
C7	2	61.0	65.0	54.0	58.0	Less Than Significant With Mitigation
C8	2	59.0	63.0	52.0	57.0	Less Than Significant With Mitigation
C9	2	57.0	60.0	48.0	56.0	Less Than Significant With Mitigation
C10	2	61.0	65.0	54.0	58.0	Less Than Significant With Mitigation
C11	2	59.0	63.0	52.0	57.0	Less Than Significant With Mitigation
C12	2	57.0	60.0	48.0	56.0	Less Than Significant With Mitigation
C13	2	61.0	65.0	54.0	58.0	Less Than Significant With Mitigation
C14	2	59.0	63.0	52.0	57.0	Less Than Significant With Mitigation
C15	2	57.0	60.0	48.0	56.0	Less Than Significant With Mitigation
C16	2	61.0	65.0	54.0	58.0	Less Than Significant With Mitigation
C17	2	59.0	63.0	52.0	57.0	Less Than Significant With Mitigation

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated Freight and LRT Combined	Mitigated Freight and LRT Combined	Impact Threshold[1]	
C18	2	57.0	60.0	48.0	56.0	Less Than Significant With Mitigation
C19	2	61.0	65.0	54.0	58.0	Less Than Significant With Mitigation
C20	2	59.0	63.0	52.0	57.0	Less Than Significant With Mitigation
C21	2	57.0	60.0	48.0	56.0	Less Than Significant With Mitigation
C22	2	62.0	68.0	54.0	59.0	Less Than Significant With Mitigation
C23	2	59.0	64.0	50.0	57.0	Less Than Significant With Mitigation
C24	2	58.0	60.0	47.0	56.0	Less Than Significant With Mitigation
C25	2	61.0	68.0	55.0	58.0	Less Than Significant With Mitigation
C26	2	59.0	64.0	50.0	57.0	Less Than Significant With Mitigation
C27	2	57.0	60.0	47.0	56.0	Less Than Significant With Mitigation
C28	2	61.0	68.0	55.0	58.0	Less Than Significant With Mitigation
C29	2	59.0	64.0	50.0	57.0	Less Than Significant With Mitigation
C30	2	57.0	60.0	47.0	56.0	Less Than Significant With Mitigation
C31	2	61.0	68.0	55.0	58.0	Less Than Significant With Mitigation
C32	2	59.0	64.0	50.0	57.0	Less Than Significant With Mitigation
C33	2	57.0	60.0	47.0	56.0	Less Than Significant With Mitigation
C34	2	61.0	68.0	55.0	58.0	Less Than Significant With Mitigation
C35	2	59.0	64.0	50.0	57.0	Less Than Significant With Mitigation
C36	2	57.0	60.0	47.0	56.0	Less Than Significant With Mitigation
C37	2	61.0	68.0	55.0	59.0	Less Than Significant With Mitigation
C38	2	59.0	64.0	50.0	57.0	Less Than Significant With Mitigation
C39	2	57.0	60.0	47.0	56.0	Less Than Significant With Mitigation
C40	2	61.0	68.0	55.0	59.0	Less Than Significant With Mitigation
C41	2	59.0	64.0	50.0	57.0	Less Than Significant With Mitigation
C42	2	57.0	60.0	47.0	56.0	Less Than Significant With Mitigation
D1	2	61.0	65.0	54.0	58.0	Less Than Significant With Mitigation
D2	2	59.0	63.0	51.0	57.0	Less Than Significant With Mitigation
D3	2	58.0	60.0	48.0	57.0	Less Than Significant With Mitigation
D4	2	61.0	65.0	54.0	58.0	Less Than Significant With Mitigation
D5	2	59.0	62.0	51.0	57.0	Less Than Significant With Mitigation

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated Freight and LRT Combined	Mitigated Freight and LRT Combined	Impact Threshold[1]	
D6	2	58.0	60.0	49.0	57.0	Less Than Significant With Mitigation
D7	2	57.0	59.0	47.0	56.0	Less Than Significant With Mitigation
D8	2	65.0	69.0	57.0	61.0	Less Than Significant With Mitigation
D9	2	65.0	69.0	57.0	61.0	Less Than Significant With Mitigation
D10	2	65.0	69.0	57.0	61.0	Less Than Significant With Mitigation
D11	2	65.0	69.0	57.0	61.0	Less Than Significant With Mitigation
D12	2	65.0	69.0	57.0	61.0	Less Than Significant With Mitigation
D13	2	66.0	69.0	57.0	62.0	Less Than Significant With Mitigation
D14	2	66.0	69.0	58.0	62.0	Less Than Significant With Mitigation
D15	2	61.0	66.0	54.0	58.0	Less Than Significant With Mitigation
D16	2	61.0	66.0	55.0	58.0	Less Than Significant With Mitigation
D17	2	59.0	62.0	50.0	57.0	Less Than Significant With Mitigation
D18	2	58.0	60.0	49.0	57.0	Less Than Significant With Mitigation
D19	2	57.0	59.0	48.0	56.0	Less Than Significant With Mitigation
D20	2	59.0	62.0	50.0	57.0	Less Than Significant With Mitigation
D21	2	59.0	62.0	50.0	57.0	Less Than Significant With Mitigation
D22	2	59.0	62.0	50.0	57.0	Less Than Significant With Mitigation
D23	2	62.0	62.0	51.0	59.0	Less Than Significant With Mitigation
D24	2	61.0	61.0	51.0	58.0	Less Than Significant With Mitigation
D25	2	61.0	59.0	49.0	58.0	Less Than Significant With Mitigation
D26	2	61.0	69.0	55.0	59.0	Less Than Significant With Mitigation
D27	2	59.0	64.0	51.0	57.0	Less Than Significant With Mitigation
D28	2	57.0	60.0	47.0	56.0	Less Than Significant With Mitigation
D29	2	61.0	69.0	55.0	59.0	Significant and Unavoidable
D30	2	59.0	64.0	51.0	57.0	Less Than Significant With Mitigation
D31	2	57.0	60.0	47.0	56.0	Less Than Significant With Mitigation
D32	2	62.0	69.0	55.0	59.0	Significant and Unavoidable
D33	2	59.0	65.0	51.0	57.0	Less Than Significant With Mitigation
D34	2	57.0	60.0	47.0	56.0	Less Than Significant With Mitigation
D35	2	62.0	69.0	55.0	59.0	Less Than Significant With Mitigation

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated Freight and LRT Combined	Mitigated Freight and LRT Combined	Impact Threshold[1]	
D36	2	59.0	65.0	51.0	57.0	Less Than Significant With Mitigation
D37	2	57.0	60.0	47.0	56.0	Less Than Significant With Mitigation
D38	2	62.0	69.0	55.0	59.0	Less Than Significant With Mitigation
D39	2	59.0	65.0	51.0	57.0	Less Than Significant With Mitigation
D40	2	57.0	60.0	47.0	56.0	Less Than Significant With Mitigation
D41	2	63.0	68.0	57.0	60.0	Less Than Significant With Mitigation
D42	2	61.0	61.0	50.0	59.0	Less Than Significant With Mitigation
D43	2	61.0	56.0	45.0	58.0	Less than Significant
D44	2	63.0	68.0	58.0	60.0	Less Than Significant With Mitigation
D45	2	61.0	61.0	51.0	59.0	Less Than Significant With Mitigation
D46	2	61.0	56.0	46.0	58.0	Less than Significant
D47	2	61.0	68.0	57.0	58.0	Less Than Significant With Mitigation
D48	2	61.0	64.0	53.0	58.0	Less Than Significant With Mitigation
D49	2	61.0	59.0	48.0	58.0	Less Than Significant With Mitigation
D50	2	61.0	68.0	57.0	58.0	Less Than Significant With Mitigation
D51	2	61.0	64.0	54.0	58.0	Less Than Significant With Mitigation
D52	2	61.0	59.0	49.0	58.0	Less Than Significant With Mitigation
E1	2	75.0	60.0	60.0	65.0	Less than Significant
E2	2	58.0	64.0	53.0	57.0	Less Than Significant With Mitigation
E3	2	57.0	56.0	43.0	56.0	Less Than Significant With Mitigation
E4	2	58.0	69.0	54.0	57.0	Less Than Significant With Mitigation
E5	2	57.0	61.0	48.0	56.0	Less Than Significant With Mitigation
E6	2	57.0	60.0	47.0	56.0	Less Than Significant With Mitigation
E7	2	57.0	58.0	45.0	56.0	Less Than Significant With Mitigation
E8	2	57.0	61.0	48.0	56.0	Less Than Significant With Mitigation
E9	2	57.0	58.0	45.0	56.0	Less Than Significant With Mitigation
F1	3	60.0	73.0	55.0	63.0	Less Than Significant With Mitigation
F2	2	64.0	68.0	57.0	60.0	Less Than Significant With Mitigation
F3	2	64.0	67.0	56.0	60.0	Less Than Significant With Mitigation
F4	2	64.0	68.0	56.0	60.0	Less Than Significant With Mitigation

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated Freight and LRT Combined	Mitigated Freight and LRT Combined	Impact Threshold[1]	
F5	2	57.0	58.0	47.0	56.0	Less Than Significant With Mitigation
F6	2	57.0	56.0	48.0	56.0	Less Than Significant With Mitigation
F7	2	63.0	68.0	56.0	60.0	Less Than Significant With Mitigation
F8	2	57.0	58.0	47.0	56.0	Less Than Significant With Mitigation
F9	2	57.0	56.0	45.0	56.0	Less Than Significant With Mitigation
F10	2	61.0	66.0	54.0	58.0	Less Than Significant With Mitigation
F11	2	61.0	65.0	53.0	58.0	Less Than Significant With Mitigation
F12	2	59.0	61.0	50.0	57.0	Less Than Significant With Mitigation
F13	2	57.0	56.0	45.0	56.0	Less Than Significant With Mitigation
F14	2	61.0	65.0	54.0	58.0	Less Than Significant With Mitigation
F15	2	59.0	63.0	51.0	57.0	Less Than Significant With Mitigation
F16	2	57.0	57.0	46.0	56.0	Less Than Significant With Mitigation
F17	2	61.0	65.0	54.0	58.0	Less Than Significant With Mitigation
F18	2	57.0	57.0	46.0	56.0	Less Than Significant With Mitigation
F19	2	56.0	56.0	43.0	56.0	Less Than Significant With Mitigation
F20	3	60.0	72.0	52.0	63.0	Less Than Significant With Mitigation
G1	2	60.0	68.0	52.0	58.0	Less Than Significant With Mitigation
G2	2	57.0	58.0	47.0	56.0	Less Than Significant With Mitigation
G3	2	57.0	57.0	46.0	56.0	Less Than Significant With Mitigation
G4	2	56.0	55.0	47.0	56.0	Less than Significant
G5	2	56.0	67.0	52.0	56.0	Less Than Significant With Mitigation
G6	2	56.0	66.0	50.0	56.0	Less Than Significant With Mitigation
G7	2	57.0	71.0	54.0	56.0	Less Than Significant With Mitigation
G8	2	56.0	64.0	49.0	56.0	Less Than Significant With Mitigation
G9	2	56.0	62.0	47.0	56.0	Less Than Significant With Mitigation
G10	2	56.0	56.0	45.0	56.0	Less Than Significant With Mitigation
G11	2	56.0	64.0	51.0	56.0	Less Than Significant With Mitigation
G12	2	57.0	66.0	54.0	56.0	Less Than Significant With Mitigation
G13	2	56.0	63.0	50.0	56.0	Less Than Significant With Mitigation
G14	2	56.0	61.0	49.0	56.0	Less Than Significant With Mitigation

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated Freight and LRT Combined	Mitigated Freight and LRT Combined	Impact Threshold[1]	
G15	2	75.0	64.0	51.0	65.0	Less than Significant
G16	2	61.0	67.0	53.0	59.0	Less Than Significant With Mitigation
G17	2	61.0	68.0	55.0	59.0	Less Than Significant With Mitigation
G18	2	61.0	70.0	55.0	59.0	Less Than Significant With Mitigation
G19	2	61.0	66.0	53.0	59.0	Less Than Significant With Mitigation
G20	2	62.0	71.0	56.0	59.0	Less Than Significant With Mitigation
G21	2	61.0	68.0	56.0	59.0	Less Than Significant With Mitigation
G22	2	61.0	66.0	54.0	59.0	Less Than Significant With Mitigation
G23	2	61.0	66.0	54.0	59.0	Less Than Significant With Mitigation
G24	2	61.0	59.0	53.0	59.0	Less Than Significant With Mitigation
G25	2	61.0	59.0	53.0	59.0	Less Than Significant With Mitigation
G26	2	61.0	59.0	52.0	59.0	Less Than Significant With Mitigation
G27	2	62.0	75.0	56.0	59.0	Less Than Significant With Mitigation
G28	2	62.0	71.0	56.0	59.0	Less Than Significant With Mitigation
G29	2	61.0	69.0	54.0	59.0	Less Than Significant With Mitigation
G30	2	61.0	61.0	51.0	59.0	Less Than Significant With Mitigation
G31	2	75.0	59.0	59.0	65.0	Less than Significant
H1	2	70.0	57.0	57.0	64.0	Less than Significant
H2	2	70.0	54.0	54.0	64.0	Less than Significant

Source: TAHA, 2022

[1]The impact threshold is compared to (unmitigated freight and LRT combined) and (mitigated freight and LRT combined) noise level to determine impact after mitigation.

TRENCH OPTION

Less than Significant Impact with Mitigation. Impacts from operation of the Trench Option were assessed for light rail transit, ancillary facilities, the parking facility, and the combined noise of relocated freight and light rail. Overall, the Trench Option would have a **less than significant impact with mitigation** for light rail transit noise and for combined freight and light rail noise, a less than significant impact for ancillary facilities, and no impact for the parking facility. The following sections describe the impacts in detail for each subtopic.

Light Rail Transit Noise

Less than Significant Impact with Mitigation. The Trench Option would be located within the same corridor as the Proposed Project, and would have the same types of light rail noise. However, the Trench Option would not require the two protected at-grade light rail crossings at 170th and 182nd Streets because the Trench Option alignment would cross under all roadways. Therefore, the Trench Option would not include crossing signal noise. Wheel squeal could potentially occur at track curves with a radius of less than 1,000 feet (per FTA transit noise and vibration impact assessment guidance, wheel squeal does not occur when track curves have a radius greater than 1,000 feet). No curves with a radius of less than 1,000 feet have been identified for the Trench Option and wheel squeal is not anticipated to occur. As compared to the Proposed Project, the Trench Option is predicted to reduce light rail noise levels by breaking the line-of-sight between sensitive receptors and the light rail. Noise levels were modeled at each cluster and listed and illustrated in detail in Appendix 3.6-B, Table 6 for unmitigated noise and Appendix 3.6-B, Table 9 for mitigated noise.

Within the Trench Option segment (Redondo Beach (Marine) Station to 190th Street), the clusters are the same as for the Proposed Project. South of 190th Street, the impacts and clusters would be the same as the Proposed Project and are depicted in Figure 3.6-24. A total of 225 sensitive receptor clusters have been identified in the Trench Option segment, of which 222 are considered Category 2 land uses and 3 are considered Category 3 land uses. Under the Trench Option segment, 47 of the 222 Category 2 clusters are predicted to experience potentially significant impacts from light rail noise. No Category 3 receptors are predicted to experience potentially significant noise impacts. Therefore, light rail noise related to operation of the Trench Option would result in a potentially significant impact.

Mitigation measures MM-NOI-2 and MM-NOI-3 would be implemented, which would reduce noise via installation of soundwalls at identified impacted receptors and low impact frogs at crossovers which were determined to contribute to noise impacts. All impacts from the light rail would be reduced to less than FTA noise impact criteria. A detailed discussion of implementation of mitigation measures and associated noise reductions is included in Section 3.6-5. With implementation of MM-NOI-2 and MM-NOI-3, light rail noise from operation of the Trench Option would not exceed FTA's criteria. The impact would be **less than significant with mitigation**.

Ancillary Facilities

Less than Significant Impact. Within the Trench Option segment (from Redondo Beach (Marine) Station to 190th Street), the Trench Option would utilize the same TPSS site options as the Proposed Project, with the exception of TPSS site 3 as well as emergency power system generators. The Trench Option would include one TPSS site unique to its own alignment, shown in Figure 3.6-25 as site T1. Clusters A4 through A7 are located near TPSS site T1. None of the clusters would experience significant noise impacts related to TPSS noise. TPSS sites would not exceed 5 decibels above existing ambient noise levels for TPSSs located in the City of Torrance. Figure 3.6-25 to Figure 3.6-27 show the TPSS sites for the

Trench Option. Appendix 3.6-B, Table 7 includes a list of the TPSSs specific to the Trench Option and sensitive receptors. No potentially significant impacts have been identified. Therefore, impacts related to ancillary facilities would be **less than significant**.

Parking Facility Noise

No Impact. South of 190th Street, the Trench Option is the same as the Proposed Project, which would include the construction of a surface parking lot at the Torrance TC. The nearest sensitive receptors would be residences located approximately 900 feet to the south along Crenshaw Boulevard. Sensitive receptors would be located outside the screening distance of 125 feet for a parking facility. Therefore, **no impact** related to parking facility noise would occur.

Combined Noise (Freight Track Relocation and Light Rail Noise)

Less than Significant Impact with Mitigation. Similar to the Proposed Project, relocation of existing freight tracks would be required to accommodate the addition of the Trench Option to the Metro ROW. The areas of freight track relocation are similar to the Proposed Project, except the Trench Option would not require freight track relocation between Artesia Boulevard and Grant Avenue. Freight track relocations are detailed in Appendix 2-A, Select Advanced Conceptual Engineering Drawings.

Under the Trench Option, 116 of 210 Category 2 clusters located near where freight track relocation is required are predicted to experience impacts as a result of the combination of relocated freight tracks and light rail noise. Three Category 3 clusters (Iglesia Cristiana Lluvia de Gracia, Pacific Crest Cemetery and El Nido Park) would experience potentially significant impacts. Clusters and impacts are illustrated in Figure 3.6-25 to Figure 3.6-27 and shown in Table 3.6-17. South of 190th Street impacts and clusters would be the same as the Proposed Project and are depicted in Figure 3.6-24. The combined freight relocation and light rail noise impacts are listed in detail in Appendix 3.6-B, Table 8 for unmitigated noise and Appendix 3.6-B, Table 10 for mitigated noise.

As described in Section 3.6-2.5, Metro would implement PF-NV-1, which would design and construct freight railroad at-grade crossings to include all required equipment needed to allow local jurisdictions to establish a quiet zone. However, the combination of relocated freight track and light rail noise related to operation of the Trench Option would result in a significant impact, and mitigation is required.

Mitigation measures MM-NOI-2 and MM-NOI-3 would be implemented, which would reduce noise via installation of soundwalls at identified impacted receptors and low impact frogs at crossovers which were determined to contribute to noise impacts. Mitigation measure NOI-4 would require Metro to assist local jurisdictions to designate a quiet zone from north of Inglewood Avenue to south of 182nd Street. The quiet zone would eliminate the blowing of freight horns. A detailed discussion of implementation of mitigation measures and associated noise reductions is included in Section 3.6-5. After implementation of mitigation measures MM-NOI-2 through MM-NOI-4, the combination of light rail noise and freight track relocation noise from operation of the Trench Option would result in noise levels below the FTA's criteria, and the impact would be **less than significant with mitigation.**

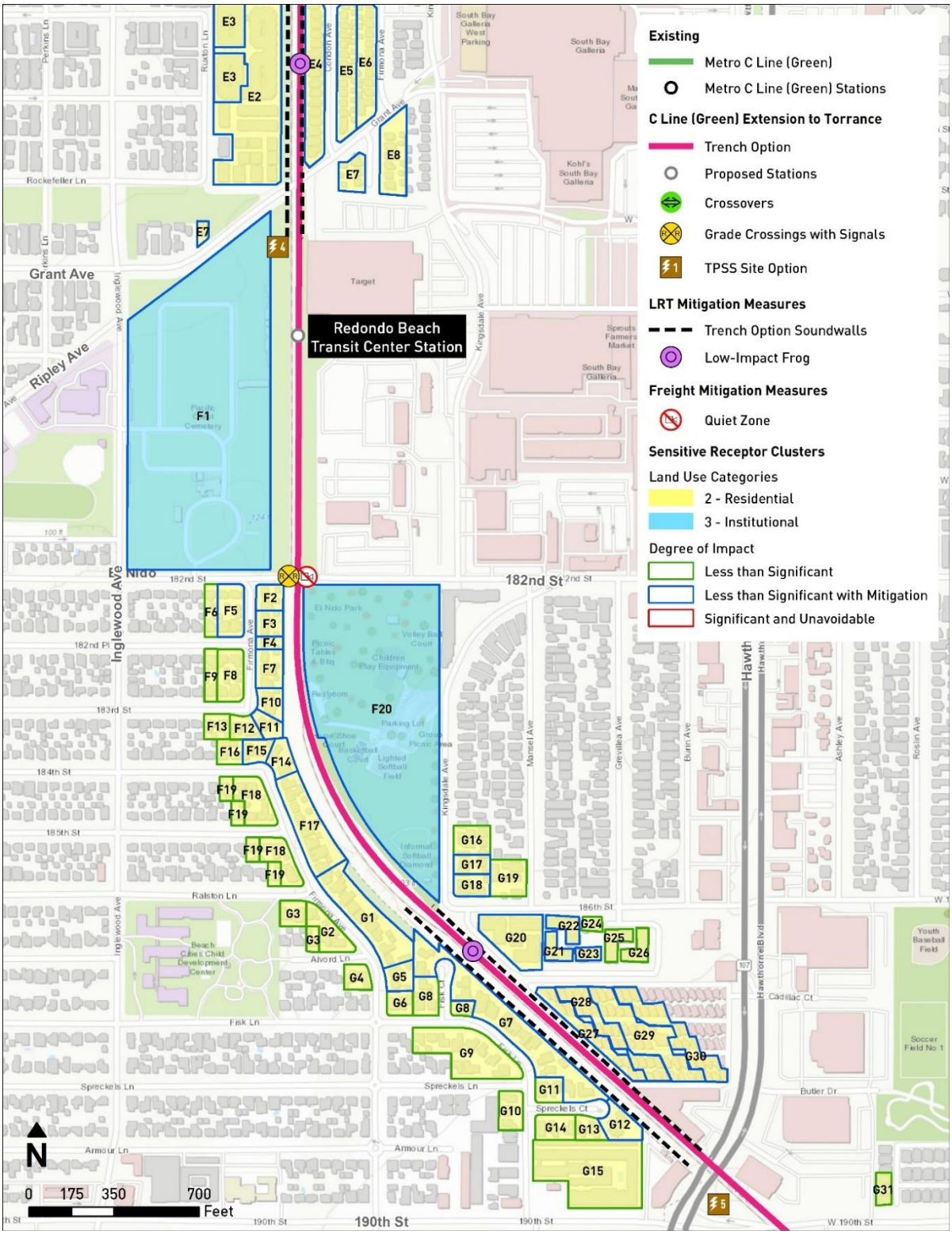
Figure 3.6-25. Trench Option – Combined Light Rail and Freight Relocation Mitigated Noise Impacts (1 of 3)

Source: TAHA, 2022

Figure 3.6-26. Trench Option – Combined Light Rail and Relocated Freight Mitigated Noise Impacts (2 of 3)

Source: TAHA, 2022

Figure 3.6-27. Trench Option – Combined Light Rail and Relocated Freight Mitigated Noise Impacts (3 of 3)



Source: TAHA, 2022

Table 3.6-17. Trench Option – Combined Light Rail and Freight Relocation Mitigated Noise Impacts

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated Freight and LRT Combined	Mitigated Freight and LRT Combined	Impact Threshold[1]	
A1	2	67.0	63.0	56.0	62.0	Less Than Significant With Mitigation
A2	2	67.0	62.0	58.0	62.0	Less Than Significant With Mitigation
A3	2	67.0	51.0	51.0	62.0	Less than Significant
A4	2	70.0	53.0	50.0	64.0	Less than Significant
A5	2	70.0	54.0	51.0	64.0	Less than Significant
A6	2	70.0	54.0	51.0	64.0	Less than Significant
A7	2	70.0	55.0	52.0	64.0	Less than Significant
B1	3	71.0	73.0	60.0	70.0	Less Than Significant With Mitigation
B2	2	66.0	58.0	52.0	61.0	Less than Significant
B3	2	65.0	56.0	50.0	61.0	Less than Significant
B4	2	65.0	53.0	47.0	61.0	Less than Significant
B5	2	67.0	63.0	55.0	62.0	Less Than Significant With Mitigation
B6	2	66.0	57.0	50.0	61.0	Less than Significant
B7	2	65.0	54.0	48.0	61.0	Less than Significant
B8	2	71.0	62.0	55.0	65.0	Less than Significant
B9	2	70.0	57.0	50.0	65.0	Less than Significant
B10	2	70.0	55.0	48.0	64.0	Less than Significant
B11	2	71.0	63.0	56.0	65.0	Less than Significant
B12	2	70.0	57.0	50.0	65.0	Less than Significant
B13	2	70.0	55.0	48.0	64.0	Less than Significant
B14	2	71.0	63.0	56.0	65.0	Less than Significant
B15	2	70.0	57.0	51.0	65.0	Less than Significant
B16	2	70.0	55.0	48.0	64.0	Less than Significant
B17	2	70.0	61.0	54.0	65.0	Less than Significant
B18	2	70.0	57.0	50.0	65.0	Less than Significant
B19	2	70.0	54.0	48.0	64.0	Less than Significant
B20	2	70.0	61.0	54.0	65.0	Less than Significant
B21	2	70.0	57.0	50.0	65.0	Less than Significant
B22	2	70.0	54.0	48.0	64.0	Less than Significant

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated Freight and LRT Combined	Mitigated Freight and LRT Combined	Impact Threshold[1]	
B23	2	61.0	61.0	54.0	58.0	Less Than Significant With Mitigation
B24	2	58.0	57.0	51.0	57.0	Less Than Significant With Mitigation
B25	2	57.0	54.0	48.0	56.0	Less than Significant
B26	2	61.0	61.0	54.0	58.0	Less Than Significant With Mitigation
B27	2	58.0	57.0	51.0	57.0	Less Than Significant With Mitigation
B28	2	57.0	54.0	48.0	56.0	Less than Significant
B29	2	61.0	61.0	54.0	58.0	Less Than Significant With Mitigation
B30	2	58.0	57.0	51.0	57.0	Less Than Significant With Mitigation
B31	2	57.0	54.0	48.0	56.0	Less than Significant
B32	2	61.0	61.0	54.0	58.0	Less Than Significant With Mitigation
B33	2	58.0	57.0	51.0	57.0	Less Than Significant With Mitigation
B34	2	57.0	54.0	48.0	56.0	Less than Significant
B35	2	71.0	63.0	61.0	65.0	Less than Significant
B36	2	66.0	57.0	52.0	61.0	Less than Significant
B37	2	65.0	54.0	49.0	61.0	Less than Significant
B38	2	67.0	63.0	61.0	62.0	Less Than Significant With Mitigation
B39	2	66.0	57.0	52.0	61.0	Less than Significant
B40	2	65.0	54.0	49.0	61.0	Less than Significant
B41	2	71.0	62.0	59.0	65.0	Less than Significant
B42	2	70.0	58.0	53.0	65.0	Less than Significant
B43	2	70.0	54.0	49.0	64.0	Less than Significant
B44	2	71.0	62.0	59.0	65.0	Less than Significant
B45	2	70.0	58.0	53.0	65.0	Less than Significant
B46	2	70.0	54.0	49.0	64.0	Less than Significant
B47	2	71.0	62.0	58.0	65.0	Less than Significant
B48	2	70.0	57.0	53.0	65.0	Less than Significant
B49	2	70.0	54.0	49.0	64.0	Less than Significant
B50	2	71.0	61.0	57.0	65.0	Less than Significant
B51	2	70.0	57.0	53.0	65.0	Less than Significant
B52	2	70.0	54.0	49.0	64.0	Less than Significant
B53	2	62.0	62.0	54.0	59.0	Less Than Significant With Mitigation

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated Freight and LRT Combined	Mitigated Freight and LRT Combined	Impact Threshold[1]	
B54	2	59.0	57.0	50.0	57.0	Less Than Significant With Mitigation
B55	2	58.0	54.0	47.0	56.0	Less than Significant
B56	2	62.0	62.0	54.0	59.0	Less Than Significant With Mitigation
B57	2	59.0	57.0	50.0	57.0	Less Than Significant With Mitigation
B58	2	58.0	54.0	47.0	56.0	Less than Significant
B59	2	62.0	61.0	54.0	59.0	Less Than Significant With Mitigation
B60	2	59.0	57.0	50.0	57.0	Less Than Significant With Mitigation
B61	2	58.0	54.0	47.0	56.0	Less than Significant
B62	2	62.0	62.0	54.0	59.0	Less Than Significant With Mitigation
B63	2	59.0	57.0	50.0	57.0	Less Than Significant With Mitigation
B64	2	58.0	54.0	47.0	56.0	Less than Significant
C1	2	61.0	61.0	54.0	58.0	Less Than Significant With Mitigation
C2	2	59.0	58.0	51.0	57.0	Less Than Significant With Mitigation
C3	2	57.0	54.0	48.0	56.0	Less than Significant
C4	2	61.0	61.0	54.0	58.0	Less Than Significant With Mitigation
C5	2	59.0	58.0	52.0	57.0	Less Than Significant With Mitigation
C6	2	57.0	54.0	48.0	56.0	Less than Significant
C7	2	61.0	61.0	54.0	58.0	Less Than Significant With Mitigation
C8	2	59.0	58.0	52.0	57.0	Less Than Significant With Mitigation
C9	2	57.0	54.0	48.0	56.0	Less than Significant
C10	2	61.0	61.0	54.0	58.0	Less Than Significant With Mitigation
C11	2	59.0	58.0	52.0	57.0	Less Than Significant With Mitigation
C12	2	57.0	54.0	48.0	56.0	Less than Significant
C13	2	61.0	61.0	54.0	58.0	Less Than Significant With Mitigation
C14	2	59.0	58.0	52.0	57.0	Less Than Significant With Mitigation
C15	2	57.0	54.0	48.0	56.0	Less than Significant
C16	2	61.0	61.0	54.0	58.0	Less Than Significant With Mitigation
C17	2	59.0	58.0	52.0	57.0	Less Than Significant With Mitigation
C18	2	57.0	54.0	48.0	56.0	Less than Significant
C19	2	61.0	61.0	54.0	58.0	Less Than Significant With Mitigation
C20	2	59.0	58.0	52.0	57.0	Less Than Significant With Mitigation

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated Freight and LRT Combined	Mitigated Freight and LRT Combined	Impact Threshold[1]	
C21	2	57.0	54.0	48.0	56.0	Less than Significant
C22	2	62.0	62.0	54.0	59.0	Less Than Significant With Mitigation
C23	2	59.0	57.0	50.0	57.0	Less Than Significant With Mitigation
C24	2	58.0	54.0	47.0	56.0	Less than Significant
C25	2	61.0	62.0	55.0	58.0	Less Than Significant With Mitigation
C26	2	59.0	57.0	50.0	57.0	Less Than Significant With Mitigation
C27	2	57.0	54.0	47.0	56.0	Less than Significant
C28	2	61.0	62.0	55.0	58.0	Less Than Significant With Mitigation
C29	2	59.0	57.0	50.0	57.0	Less Than Significant With Mitigation
C30	2	57.0	54.0	47.0	56.0	Less than Significant
C31	2	61.0	62.0	55.0	58.0	Less Than Significant With Mitigation
C32	2	59.0	57.0	50.0	57.0	Less Than Significant With Mitigation
C33	2	57.0	54.0	47.0	56.0	Less than Significant
C34	2	61.0	62.0	55.0	58.0	Less Than Significant With Mitigation
C35	2	59.0	57.0	50.0	57.0	Less Than Significant With Mitigation
C36	2	57.0	54.0	47.0	56.0	Less than Significant
C37	2	61.0	62.0	55.0	59.0	Less Than Significant With Mitigation
C38	2	59.0	57.0	50.0	57.0	Less Than Significant With Mitigation
C39	2	57.0	54.0	47.0	56.0	Less than Significant
C40	2	61.0	62.0	55.0	59.0	Less Than Significant With Mitigation
C41	2	59.0	57.0	50.0	57.0	Less Than Significant With Mitigation
C42	2	57.0	54.0	47.0	56.0	Less than Significant
D1	2	61.0	60.0	54.0	58.0	Less Than Significant With Mitigation
D2	2	59.0	58.0	51.0	57.0	Less Than Significant With Mitigation
D3	2	58.0	55.0	48.0	57.0	Less than Significant
D4	2	61.0	60.0	54.0	58.0	Less Than Significant With Mitigation
D5	2	59.0	57.0	51.0	57.0	Less Than Significant With Mitigation
D6	2	58.0	55.0	49.0	57.0	Less than Significant
D7	2	57.0	54.0	47.0	56.0	Less than Significant
D8	2	65.0	65.0	57.0	61.0	Less Than Significant With Mitigation
D9	2	65.0	65.0	57.0	61.0	Less Than Significant With Mitigation

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated Freight and LRT Combined	Mitigated Freight and LRT Combined	Impact Threshold[1]	
D10	2	65.0	65.0	57.0	61.0	Less Than Significant With Mitigation
D11	2	65.0	65.0	57.0	61.0	Less Than Significant With Mitigation
D12	2	65.0	65.0	57.0	61.0	Less Than Significant With Mitigation
D13	2	66.0	65.0	57.0	62.0	Less Than Significant With Mitigation
D14	2	66.0	65.0	58.0	62.0	Less Than Significant With Mitigation
D15	2	61.0	54.0	54.0	58.0	Less than Significant
D16	2	61.0	65.0	55.0	58.0	Less Than Significant With Mitigation
D17	2	59.0	57.0	50.0	57.0	Less Than Significant With Mitigation
D18	2	58.0	55.0	49.0	57.0	Less than Significant
D19	2	57.0	54.0	48.0	56.0	Less than Significant
D20	2	59.0	57.0	50.0	57.0	Less Than Significant With Mitigation
D21	2	59.0	57.0	50.0	57.0	Less Than Significant With Mitigation
D22	2	59.0	57.0	50.0	57.0	Less Than Significant With Mitigation
D23	2	62.0	57.0	51.0	59.0	Less than Significant
D24	2	61.0	61.0	51.0	58.0	Less Than Significant With Mitigation
D25	2	61.0	59.0	49.0	58.0	Less Than Significant With Mitigation
D26	2	61.0	62.0	55.0	59.0	Less Than Significant With Mitigation
D27	2	59.0	58.0	51.0	57.0	Less Than Significant With Mitigation
D28	2	57.0	54.0	47.0	56.0	Less than Significant
D29	2	61.0	62.0	55.0	59.0	Less Than Significant With Mitigation
D30	2	59.0	58.0	51.0	57.0	Less Than Significant With Mitigation
D31	2	57.0	54.0	47.0	56.0	Less than Significant
D32	2	62.0	62.0	55.0	59.0	Less Than Significant With Mitigation
D33	2	59.0	58.0	51.0	57.0	Less Than Significant With Mitigation
D34	2	57.0	54.0	47.0	56.0	Less than Significant
D35	2	62.0	62.0	55.0	59.0	Less Than Significant With Mitigation
D36	2	59.0	58.0	51.0	57.0	Less Than Significant With Mitigation
D37	2	57.0	54.0	47.0	56.0	Less than Significant
D38	2	62.0	62.0	55.0	59.0	Less Than Significant With Mitigation
D39	2	59.0	58.0	51.0	57.0	Less Than Significant With Mitigation
D40	2	57.0	55.0	47.0	56.0	Less than Significant

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated Freight and LRT Combined	Mitigated Freight and LRT Combined	Impact Threshold[1]	
D41	2	63.0	62.0	57.0	60.0	Less Than Significant With Mitigation
D42	2	61.0	58.0	50.0	59.0	Less than Significant
D43	2	61.0	54.0	45.0	58.0	Less than Significant
D44	2	63.0	64.0	58.0	60.0	Less Than Significant With Mitigation
D45	2	61.0	59.0	51.0	59.0	Less Than Significant With Mitigation
D46	2	61.0	54.0	46.0	58.0	Less than Significant
D47	2	61.0	61.0	57.0	58.0	Less Than Significant With Mitigation
D48	2	61.0	56.0	53.0	58.0	Less than Significant
D49	2	61.0	51.0	48.0	58.0	Less than Significant
D50	2	61.0	68.0	57.0	58.0	Less Than Significant With Mitigation
D51	2	61.0	64.0	54.0	58.0	Less Than Significant With Mitigation
D52	2	61.0	59.0	49.0	58.0	Less Than Significant With Mitigation
E1	2	75.0	65.0	60.0	65.0	Less Than Significant With Mitigation
E2	2	58.0	64.0	53.0	57.0	Less Than Significant With Mitigation
E3	2	57.0	60.0	43.0	56.0	Less Than Significant With Mitigation
E4	2	58.0	67.0	54.0	57.0	Less Than Significant With Mitigation
E5	2	57.0	66.0	48.0	56.0	Less Than Significant With Mitigation
E6	2	57.0	65.0	47.0	56.0	Less Than Significant With Mitigation
E7	2	57.0	57.0	45.0	56.0	Less Than Significant With Mitigation
E8	2	57.0	61.0	48.0	56.0	Less Than Significant With Mitigation
E9	2	57.0	58.0	45.0	56.0	Less Than Significant With Mitigation
F1	3	60.0	73.0	55.0	63.0	Less Than Significant With Mitigation
F2	2	64.0	64.0	57.0	60.0	Less Than Significant With Mitigation
F3	2	64.0	64.0	56.0	60.0	Less Than Significant With Mitigation
F4	2	64.0	64.0	56.0	60.0	Less Than Significant With Mitigation
F5	2	57.0	56.0	47.0	56.0	Less Than Significant With Mitigation
F6	2	57.0	54.0	48.0	56.0	Less than Significant
F7	2	63.0	63.0	56.0	60.0	Less Than Significant With Mitigation
F8	2	57.0	55.0	47.0	56.0	Less than Significant
F9	2	57.0	53.0	45.0	56.0	Less than Significant
F10	2	61.0	61.0	54.0	58.0	Less Than Significant With Mitigation

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated Freight and LRT Combined	Mitigated Freight and LRT Combined	Impact Threshold[1]	
F11	2	61.0	60.0	53.0	58.0	Less Than Significant With Mitigation
F12	2	59.0	56.0	50.0	57.0	Less than Significant
F13	2	57.0	54.0	45.0	56.0	Less than Significant
F14	2	61.0	60.0	54.0	58.0	Less Than Significant With Mitigation
F15	2	59.0	58.0	51.0	57.0	Less Than Significant With Mitigation
F16	2	57.0	54.0	46.0	56.0	Less than Significant
F17	2	61.0	60.0	54.0	58.0	Less Than Significant With Mitigation
F18	2	57.0	54.0	46.0	56.0	Less than Significant
F19	2	56.0	53.0	43.0	56.0	Less than Significant
F20	3	60.0	71.0	52.0	63.0	Less Than Significant With Mitigation
G1	2	60.0	60.0	52.0	58.0	Less Than Significant With Mitigation
G2	2	57.0	54.0	47.0	56.0	Less than Significant
G3	2	57.0	54.0	46.0	56.0	Less than Significant
G4	2	56.0	47.0	47.0	56.0	Less than Significant
G5	2	56.0	57.0	52.0	56.0	Less Than Significant With Mitigation
G6	2	56.0	55.0	50.0	56.0	Less than Significant
G7	2	57.0	61.0	54.0	56.0	Less Than Significant With Mitigation
G8	2	56.0	53.0	49.0	56.0	Less than Significant
G9	2	56.0	51.0	47.0	56.0	Less than Significant
G10	2	56.0	46.0	45.0	56.0	Less than Significant
G11	2	56.0	53.0	51.0	56.0	Less than Significant
G12	2	57.0	56.0	54.0	56.0	Less Than Significant With Mitigation
G13	2	56.0	52.0	50.0	56.0	Less than Significant
G14	2	56.0	51.0	49.0	56.0	Less than Significant
G15	2	75.0	53.0	51.0	65.0	Less than Significant
G16	2	61.0	58.0	53.0	59.0	Less than Significant
G17	2	61.0	59.0	55.0	59.0	Less Than Significant With Mitigation
G18	2	61.0	60.0	55.0	59.0	Less Than Significant With Mitigation
G19	2	61.0	58.0	53.0	59.0	Less than Significant
G20	2	62.0	64.0	56.0	59.0	Less Than Significant With Mitigation
G21	2	61.0	61.0	56.0	59.0	Less Than Significant With Mitigation

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated Freight and LRT Combined	Mitigated Freight and LRT Combined	Impact Threshold[1]	
G22	2	61.0	59.0	54.0	59.0	Less Than Significant With Mitigation
G23	2	61.0	59.0	54.0	59.0	Less Than Significant With Mitigation
G24	2	61.0	53.0	53.0	59.0	Less than Significant
G25	2	61.0	53.0	53.0	59.0	Less than Significant
G26	2	61.0	52.0	52.0	59.0	Less than Significant
G27	2	62.0	70.0	56.0	59.0	Less Than Significant With Mitigation
G28	2	62.0	68.0	56.0	59.0	Less Than Significant With Mitigation
G29	2	61.0	69.0	54.0	59.0	Less Than Significant With Mitigation
G30	2	61.0	66.0	51.0	59.0	Less Than Significant With Mitigation
G31	2	75.0	64.0	59.0	65.0	Less than Significant

Source: TAHA, 2022

[1]The impact threshold is compared to (unmitigated freight and LRT combined) and (mitigated freight and LRT combined) noise level to determine impact after mitigation.

HAWTHORNE OPTION

Less than Significant Impact With Mitigation. Impacts from operation of the Hawthorne Option were assessed for the light rail transit, ancillary facilities, and combined noise of relocated freight and light rail. Overall, the Hawthorne Option would have a **less than significant impact with mitigation** for light rail noise, a less than significant impact for ancillary facilities and freight track relocation, and no impact for the parking facility. The following sections describe the impacts in detail for each subtopic.

Light Rail Transit Noise

Less than Significant with Mitigation. The Hawthorne Option would be on an elevated structure and would travel parallel to the Caltrans I-405 Freeway and within the median of Hawthorne Boulevard to 190th Street. The Hawthorne Option would have the same types of light rail noise as the Proposed Project, except there would not be any at-grade light rail crossings as the Hawthorne Option alignment would cross over all roadways. Wheel squeal could potentially occur at track curves with a radius of less than 1,000 feet (per FTA transit noise and vibration impact assessment guidance, wheel squeal does not occur when track curves have a radius greater than 1,000 feet). Three curves with a radius of less than 1,000 feet have been identified for the Hawthorne Option and wheel squeal could potentially occur. Noise levels were modeled at each cluster and are shown in Appendix 3.6-B, Table 11 for unmitigated noise and Appendix 3.6-B, Table 13 for mitigated noise. Within the Hawthorne Option segment (Redondo Beach (Marine) Station to 190th Street), a total of 125 sensitive receptor clusters have been identified. No Category 1 land uses were identified. Of the sensitive receptor clusters, 122 are considered Category 2 land uses. Three Category 3 land uses were identified.

For the Hawthorne Option, 118 of 122 Category 2 clusters are predicted to experience potentially significant impacts from light rail noise. None of the identified Category 3 clusters are predicted to experience potentially significant impacts. South of 190th Street impacts and clusters would be the same as the Proposed Project and are depicted in Figure 3.6-24. Therefore, light rail noise related to operation of the Hawthorne Option would result in a potentially significant impact, and mitigation would be required.

Mitigation measures MM-NOI-2 and MM-NOI-3 would be implemented, which would reduce noise via installation of soundwalls at identified impacted receptors and low impact frogs at crossovers which were determined to contribute to noise impacts. Mitigation measure MM-NOI-5, Wheel Squeal Noise Monitoring, would eliminate wheel squeal noise that could potentially occur at two curves with a radius less than 1,000 feet. Clusters and mitigated impact levels are illustrated in Figure 3.6-28 through Figure 3.6-30. A detailed discussion of implementation of mitigation measures and associated noise reductions is included in Section 3.6-5. Under the Hawthorne Option, no impacts would remain after implementation of MM-NOI-2, MM-NOI-3, and MM-NOI-5. After implementation of mitigation measures, light rail noise from operation of the Hawthorne Option would result in noise levels below the FTA's criteria, and the impact would be **less than significant with mitigation**.

Ancillary Facilities

Less than Significant Impact. Within the Hawthorne Option segment (from Redondo Beach (Marine) Station to 190th Street), the Hawthorne Option would utilize two of the same TPSS sites as the Proposed Project (sites 1 and 5). However, these are not near sensitive land uses, and no impacts were identified at these locations. The Hawthorne Option would include two TPSS sites unique to its own alignment, shown in Figure 3.6-28 to Figure 3.6-30, but only site H1 would be near sensitive receptors. Appendix 3.6-B, Table 12 includes a list of the TPSSs specific to the Hawthorne Option and sensitive receptors.

Potentially significant impacts were not identified at any sensitive receptor. TPSS sites would not exceed 5 decibels above existing ambient noise levels for TPSSs located in the City of Torrance. Therefore, impacts related to ancillary facilities would be **less than significant**.

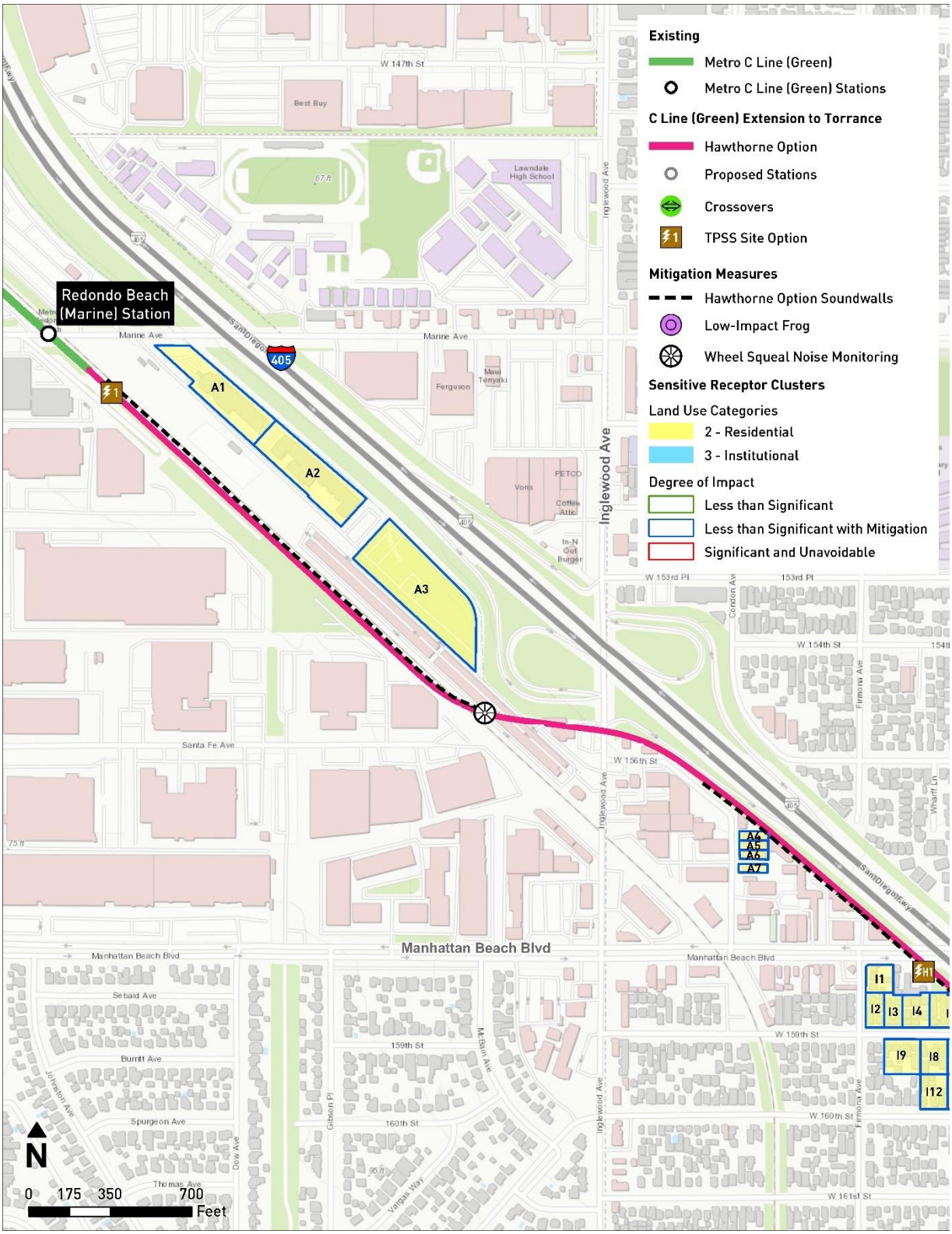
Parking Facility Noise

No Impact. Within the Hawthorne Option segment (from Redondo Beach (Marine) Station to 190th Street), there would not be any parking facilities. Similar to the Proposed Project, the Hawthorne Option would include the construction of a surface parking lot at the Torrance TC. The nearest sensitive receptors would be residences located approximately 900 feet to the south along Crenshaw Boulevard. Sensitive receptors would be located outside the screening distance of 125 feet for a parking facility Therefore, **no impact** related to parking facility noise would occur.

Combined Noise (Freight Track Relocation and Light Rail Noise)

Less than Significant Impact. Within the Hawthorne Option segment (from Redondo Beach (Marine) Station to 190th Street), there would not be any freight track relocations. Freight track relocations would be required south of 190th Street, but sensitive receptors would be located more than 350 feet away and would not be affected by noise, as seen in Figure 3.6-24. Therefore, a **less than significant impact** related to relocated freight tracks would occur.

Figure 3.6-28. Hawthorne Option – Mitigated Noise Impacts (1 of 3)

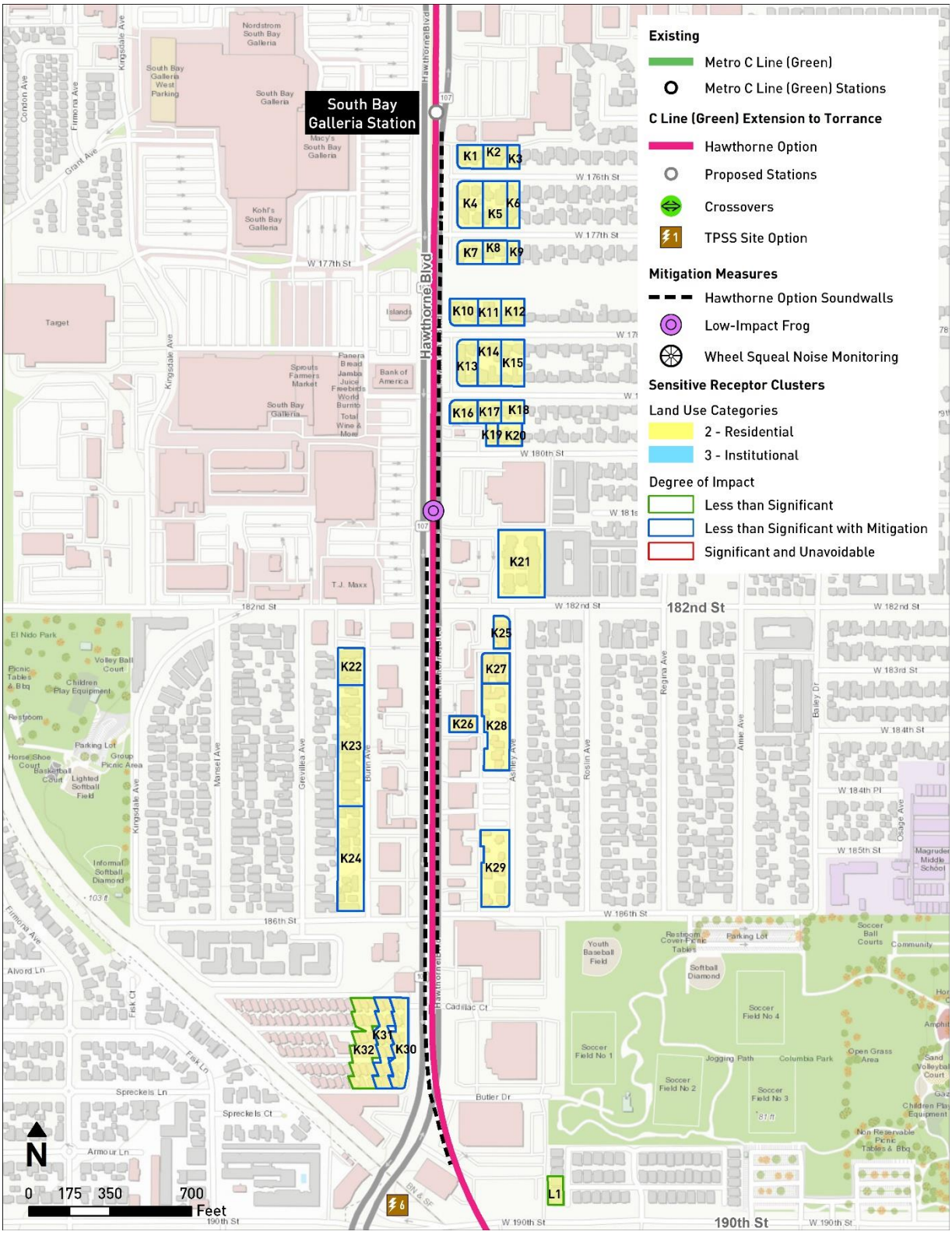


Source: TAHA, 2022

Figure 3.6-29. Hawthorne Option – Mitigated Noise Impacts (2 of 3)

Source: TAHA, 2022

Figure 3.6-30. Hawthorne Option – Mitigated Noise Impacts (3 of 3)



Source: TAHA, 2022

Table 3.6-18. Hawthorne Option – Mitigated Noise Impacts

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated LRT Combined	Mitigated LRT Combined	Impact Threshold[1]	
A1	2	67.0	62.0	56.0	62.0	Less Than Significant With Mitigation
A2	2	67.0	63.0	57.0	62.0	Less Than Significant With Mitigation
A3	2	67.0	73.0	58.0	62.0	Less Than Significant With Mitigation
A4	2	70.0	74.0	62.0	64.0	Less Than Significant With Mitigation
A5	2	70.0	71.0	60.0	64.0	Less Than Significant With Mitigation
A6	2	70.0	68.0	58.0	64.0	Less Than Significant With Mitigation
A7	2	70.0	66.0	57.0	64.0	Less Than Significant With Mitigation
I1	2	71.0	67.0	53.0	65.0	Less Than Significant With Mitigation
I2	2	65.0	63.0	50.0	61.0	Less Than Significant With Mitigation
I3	2	65.0	64.0	52.0	61.0	Less Than Significant With Mitigation
I4	2	65.0	71.0	53.0	61.0	Less Than Significant With Mitigation
I5	2	62.0	78.0	58.0	59.0	Less Than Significant With Mitigation
I6	2	62.0	74.0	55.0	59.0	Less Than Significant With Mitigation
I7	2	62.0	72.0	53.0	59.0	Less Than Significant With Mitigation
I8	2	62.0	69.0	51.0	59.0	Less Than Significant With Mitigation
I9	2	62.0	62.0	50.0	59.0	Less Than Significant With Mitigation
I10	2	62.0	71.0	53.0	59.0	Less Than Significant With Mitigation
I11	2	62.0	69.0	51.0	59.0	Less Than Significant With Mitigation
I12	2	62.0	62.0	50.0	59.0	Less Than Significant With Mitigation
I13	2	62.0	78.0	58.0	59.0	Less Than Significant With Mitigation
I14	2	62.0	70.0	52.0	59.0	Less Than Significant With Mitigation
I15	2	62.0	68.0	50.0	59.0	Less Than Significant With Mitigation
I16	2	62.0	68.0	51.0	59.0	Less Than Significant With Mitigation
I17	2	62.0	78.0	53.0	59.0	Less Than Significant With Mitigation
I18	2	62.0	74.0	51.0	59.0	Less Than Significant With Mitigation
I19	2	62.0	63.0	51.0	59.0	Less Than Significant With Mitigation
I20	2	62.0	61.0	49.0	59.0	Less Than Significant With Mitigation
I21	2	62.0	72.0	54.0	59.0	Less Than Significant With Mitigation

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated LRT Combined	Mitigated LRT Combined	Impact Threshold[1]	
I22	2	62.0	70.0	52.0	59.0	Less Than Significant With Mitigation
I23	2	62.0	75.0	56.0	59.0	Less Than Significant With Mitigation
I24	2	62.0	72.0	54.0	59.0	Less Than Significant With Mitigation
I25	2	62.0	71.0	53.0	59.0	Less Than Significant With Mitigation
I26	2	62.0	70.0	52.0	59.0	Less Than Significant With Mitigation
J1	2	60.0	72.0	52.0	58.0	Less Than Significant With Mitigation
J2	3	65.0	67.0	48.0	66.0	Less Than Significant With Mitigation
J3	2	60.0	70.0	51.0	58.0	Less Than Significant With Mitigation
J4	2	60.0	64.0	55.0	58.0	Less Than Significant With Mitigation
J5	2	60.0	63.0	54.0	58.0	Less Than Significant With Mitigation
J6	3	70.0	63.0	55.0	69.0	Less than Significant
J7	3	70.0	61.0	53.0	69.0	Less than Significant
J8	2	60.0	65.0	57.0	58.0	Less Than Significant With Mitigation
J9	2	60.0	64.0	57.0	58.0	Less Than Significant With Mitigation
J10	2	63.0	66.0	58.0	60.0	Less Than Significant With Mitigation
J11	2	63.0	64.0	57.0	60.0	Less Than Significant With Mitigation
J12	2	63.0	65.0	56.0	60.0	Less Than Significant With Mitigation
J13	2	63.0	65.0	56.0	60.0	Less Than Significant With Mitigation
J14	2	63.0	65.0	56.0	60.0	Less Than Significant With Mitigation
J15	2	63.0	65.0	56.0	60.0	Less Than Significant With Mitigation
J16	2	63.0	65.0	56.0	60.0	Less Than Significant With Mitigation
J17	2	63.0	64.0	55.0	60.0	Less Than Significant With Mitigation
J18	2	63.0	70.0	56.0	60.0	Less Than Significant With Mitigation
J19	2	63.0	69.0	55.0	60.0	Less Than Significant With Mitigation
J20	2	63.0	70.0	56.0	60.0	Less Than Significant With Mitigation
J21	2	63.0	69.0	55.0	60.0	Less Than Significant With Mitigation
J22	2	61.0	70.0	56.0	58.0	Less Than Significant With Mitigation
J23	2	61.0	69.0	55.0	58.0	Less Than Significant With Mitigation
J24	2	61.0	70.0	56.0	58.0	Less Than Significant With Mitigation
J25	2	61.0	69.0	55.0	58.0	Less Than Significant With Mitigation

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated LRT Combined	Mitigated LRT Combined	Impact Threshold[1]	
J26	2	61.0	68.0	54.0	58.0	Less Than Significant With Mitigation
J27	2	61.0	62.0	53.0	58.0	Less Than Significant With Mitigation
J28	2	61.0	63.0	54.0	58.0	Less Than Significant With Mitigation
J29	2	61.0	62.0	53.0	58.0	Less Than Significant With Mitigation
J30	2	61.0	62.0	53.0	58.0	Less Than Significant With Mitigation
J31	2	60.0	61.0	52.0	58.0	Less Than Significant With Mitigation
J32	2	60.0	60.0	51.0	58.0	Less Than Significant With Mitigation
J33	2	71.0	65.0	55.0	65.0	Less Than Significant With Mitigation
J34	2	60.0	63.0	54.0	58.0	Less Than Significant With Mitigation
J35	2	60.0	63.0	54.0	58.0	Less Than Significant With Mitigation
J36	2	71.0	70.0	61.0	65.0	Less Than Significant With Mitigation
J37	2	60.0	65.0	57.0	58.0	Less Than Significant With Mitigation
J38	2	60.0	64.0	56.0	58.0	Less Than Significant With Mitigation
J39	2	60.0	65.0	57.0	58.0	Less Than Significant With Mitigation
J40	2	60.0	64.0	57.0	58.0	Less Than Significant With Mitigation
J41	2	63.0	65.0	57.0	60.0	Less Than Significant With Mitigation
J42	2	63.0	64.0	56.0	60.0	Less Than Significant With Mitigation
J43	2	63.0	65.0	57.0	60.0	Less Than Significant With Mitigation
J44	2	63.0	64.0	57.0	60.0	Less Than Significant With Mitigation
J45	2	63.0	65.0	57.0	60.0	Less Than Significant With Mitigation
J46	2	63.0	64.0	56.0	60.0	Less Than Significant With Mitigation
J47	2	63.0	70.0	57.0	60.0	Less Than Significant With Mitigation
J48	2	63.0	69.0	57.0	60.0	Less Than Significant With Mitigation
J49	2	63.0	70.0	57.0	60.0	Less Than Significant With Mitigation
J50	2	63.0	69.0	57.0	60.0	Less Than Significant With Mitigation
J51	2	61.0	70.0	57.0	58.0	Less Than Significant With Mitigation
J52	2	61.0	69.0	56.0	58.0	Less Than Significant With Mitigation
J53	2	61.0	70.0	57.0	58.0	Less Than Significant With Mitigation
J54	2	61.0	69.0	56.0	58.0	Less Than Significant With Mitigation
J55	2	61.0	69.0	56.0	58.0	Less Than Significant With Mitigation

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated LRT Combined	Mitigated LRT Combined	Impact Threshold[1]	
J56	2	61.0	63.0	55.0	58.0	Less Than Significant With Mitigation
J57	2	71.0	62.0	54.0	65.0	Less than Significant
J58	2	61.0	59.0	54.0	58.0	Less Than Significant With Mitigation
J59	2	73.0	60.0	55.0	65.0	Less than Significant
K1	2	58.0	63.0	50.0	57.0	Less Than Significant With Mitigation
K2	2	58.0	59.0	47.0	57.0	Less Than Significant With Mitigation
K3	2	58.0	57.0	45.0	57.0	Less Than Significant With Mitigation
K4	2	58.0	65.0	52.0	57.0	Less Than Significant With Mitigation
K5	2	58.0	62.0	50.0	57.0	Less Than Significant With Mitigation
K6	2	58.0	60.0	48.0	57.0	Less Than Significant With Mitigation
K7	2	58.0	65.0	52.0	57.0	Less Than Significant With Mitigation
K8	2	58.0	62.0	50.0	57.0	Less Than Significant With Mitigation
K9	2	58.0	60.0	48.0	57.0	Less Than Significant With Mitigation
K10	2	58.0	69.0	55.0	57.0	Less Than Significant With Mitigation
K11	2	58.0	64.0	52.0	57.0	Less Than Significant With Mitigation
K12	2	58.0	63.0	51.0	57.0	Less Than Significant With Mitigation
K13	2	58.0	69.0	56.0	57.0	Less Than Significant With Mitigation
K14	2	58.0	66.0	54.0	57.0	Less Than Significant With Mitigation
K15	2	58.0	64.0	52.0	57.0	Less Than Significant With Mitigation
K16	2	58.0	75.0	56.0	57.0	Less Than Significant With Mitigation
K17	2	58.0	71.0	54.0	57.0	Less Than Significant With Mitigation
K18	2	58.0	69.0	52.0	57.0	Less Than Significant With Mitigation
K19	2	58.0	70.0	53.0	57.0	Less Than Significant With Mitigation
K20	2	58.0	70.0	53.0	57.0	Less Than Significant With Mitigation
K21	2	57.0	69.0	55.0	56.0	Less Than Significant With Mitigation
K22	2	57.0	64.0	55.0	56.0	Less Than Significant With Mitigation
K23	2	57.0	64.0	55.0	56.0	Less Than Significant With Mitigation
K24	2	57.0	64.0	55.0	56.0	Less Than Significant With Mitigation
K25	2	57.0	65.0	53.0	56.0	Less Than Significant With Mitigation
K26	2	75.0	70.0	57.0	65.0	Less Than Significant With Mitigation

Cluster No.	Land Use Category	Noise Level (Cat 2 dBA, L_{dn} or Cat 3 dBA, L_{eq})				Impact After Mitigation
		Existing	Unmitigated LRT Combined	Mitigated LRT Combined	Impact Threshold[1]	
K27	2	57.0	66.0	54.0	56.0	Less Than Significant With Mitigation
K28	2	57.0	66.0	54.0	56.0	Less Than Significant With Mitigation
K29	2	57.0	66.0	54.0	56.0	Less Than Significant With Mitigation
K30	2	75.0	68.0	61.0	65.0	Less Than Significant With Mitigation
K31	2	75.0	66.0	60.0	65.0	Less Than Significant With Mitigation
K32	2	75.0	64.0	59.0	65.0	Less than Significant
L1	2	74.0	63.0	63.0	65.0	Less than Significant

Source: TAHA, 2022

[1]The impact threshold is compared to Unmitigated LRT Combined and Mitigated LRT Combined noise level to determine impact after mitigation.

3.6-4.2 For a project located within the vicinity of a private airstrip or 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?

No Impact. No public airports or private airstrips are located within two miles of the Proposed Project. The nearest airports are Hawthorne Municipal Airport located approximately 2.3 miles to the northeast and Los Angeles International Airport located approximately three miles to the north. Therefore, **no impacts** related to airport noise would occur and mitigation would not be required.

TRENCH OPTION

No Impact. Similar to the Proposed Project, there are no airports or private airstrips within two miles of the Trench Option. Therefore, **no impacts** related to airport noise would occur and mitigation would not be required.

HAWTHORNE OPTION

No Impact. Similar to the Proposed Project, there are no airports or private airstrips within two miles of the Hawthorne Option. Therefore, **no impacts** related to airport noise would occur and mitigation would not be required.

3.6-4.3 Would the Proposed Project Result in Generation of Excessive Ground-borne Vibration Levels?

3.6-4.3.1 Construction Impacts

Significant and Unavoidable Impact. Construction of the Proposed Project would result in damage and annoyance impacts to vibration sensitive structures. Overall, the Proposed Project would have a **significant and unavoidable impact** for both damage and annoyance impacts. The following sections describe the impacts in detail for each subtopic.

Building Damage

Significant and Unavoidable Impact. The primary concern with ground-borne vibration during construction activities is structural or architectural damage to nearby structures due to the use of some types of vibration-generating construction equipment. This type of damage may include cracks in plaster or loosening in mortar, especially in some older structures. Vibration levels from construction activities at nearby structures are dependent on the type of construction activity and equipment used and the distance of the subject structures from the equipment. Ground-borne vibration is also dependent on the ground and terrain conditions, the presence of underground utilities, and the type and condition of the buildings at the receiver. As a result, except for digging, pounding or ground compaction activities in hard soils, most construction activities do not contribute to vibration impacts due to the typical distances between the activity and the structure.

Most structures located along the limits of construction are residential buildings, typically defined as Category I structures, as described in Table 3.6-5. There are some commercial and industrial buildings along the Proposed Project, but these types of buildings tend to have higher potential damage thresholds than residences due to sturdier construction methods and techniques (typically 0.5 in/sec PPV or 0.3 in/sec PPF for commercial and industrial buildings versus 0.2 in/sec PPV for residences, as described in Table 3.6-5). A desktop survey was conducted of the commercial buildings within the vibration RSAs, and the commercial buildings were determined to be constructed using modern

industrial techniques, which make them less susceptible to damage. It was determined that vibration-generating construction activities are unlikely to cause damage to commercial and industrial buildings. The analysis below therefore focuses on the damage impacts that may occur at residential structures.

The proposed construction equipment list was reviewed, and the significant sources of ground-borne vibration are summarized in Table 3.6-19. Under the Proposed Project, construction activities would include typical equipment such as bulldozers, dump trucks, drill rigs, and vibratory rollers. The distances at which an exceedance of the FTA ground-borne vibration damage criterion of 0.2 in/sec for typical timber and masonry residences range from 15 feet for trucks and bulldozers to 26 feet for vibratory rollers, as shown in Table 3.6-19. The table shows the maximum distance at which operating equipment can create an impact. As shown in Table 3.6-19, the impact pile driver has the greatest distance to impact (54 feet), followed by the vibratory roller (26 feet).

As described in Section 3.6-4.1.1, impact pile driving would be required for the construction of the Del Amo Avenue roadway bridge, which does not have residential structures in the vicinity (the closest residence is approximately 500 feet away). Impact pile driving would likely also be required at the relocated freight bridge at Grant Avenue, which is within approximately 30 feet of a multi-family residential structure. Therefore, impact pile drivers were considered as the worst-case representative equipment for the vicinity of the Grant Avenue freight bridge.

For the rest of the corridor, it was assumed that the vibratory roller may operate at any location within the limits of construction, which potentially could be the shortest distance to residential structures along the limits of construction. Therefore, the vibratory roller was considered in quantifying the construction vibration impacts for most of the corridor, as it is potentially the worst-case source of vibration.

Table 3.6-19. Construction Equipment – Sources of Significant Ground-borne Vibration (Damage Potential)

Equipment	PPV ref at 25 ft, in/sec	FTA Category III Vibration Damage Criteria, PPV, in/sec.	Distance of Equipment to Impact (feet)
Impact Pile Driver[1]	0.644	0.2	54
Vibratory Roller	0.21	0.2	26
Vibratory Pile Driver	0.17	0.2	22
Drill Rig	0.089	0.2	15
Large Bulldozer	0.089	0.2	15
Loaded Trucks	0.076	0.2	13
Small Bulldozer	0.003	0.2	2

Source: FTA, 2018, Table 7-4

[1]Impact pile driving would only be required for the relocated Grant Avenue freight bridge and Del Amo Boulevard roadway bridge.

PPV = peak particle velocity; FTA = Federal Transit Administration

Construction of the Proposed Project would result in ground-borne vibration levels that exceed FTA's criteria for damages to buildings if the distance between the most significant vibration-producing construction equipment and the nearest residential structure is less than the distance as stated in Table 3.6-19.

The number of residential structures impacted by the potential ground-borne vibration levels due to the operation of the vibratory roller and impact pile driver are summarized by segment in Table 3.6-20 and shown graphically in Appendix 3.6-C, Figures 3.6-B1 to 3.6-B33. Appendix 3.6-C shows construction impact contour lines in green for the damage threshold of 0.2 inch/second PPV; a total of 133 structures fall within those contour lines, and they would experience a potentially significant impact related to ground-borne vibration damage during construction. Construction of the Proposed Project would have a significant impact on 133 residential structures related to damage caused by excessive ground-borne vibration levels, and mitigation would be required.

Table 3.6-20. Summary of Proposed Project and Trench Option Construction Ground-borne Vibration Potential Damage Impacts by Segment

From	To	Number of Residential Structures Impacted	
		West of ROW	East of ROW
Existing Redondo Beach Station	Santa Fe Ave	0	0
Santa Fe Ave	Manhattan Beach Blvd	0	0
Manhattan Beach Blvd	160th St	4	5
160th St	Artesia Blvd	35	44
Artesia Blvd	182nd St	7	18
182nd St	190th St	15	5
190th St	Torrance TC Station	0	0

Source: AECOM, 2022
Note: Vibration damage impacts are assessed at the building envelope.

Mitigation measure VIB-1, Vibration Control Plan, would require the contractor to prepare a Vibration Control Plan, conduct monitoring to demonstrate compliance with the vibration limits, and use alternative construction methods to reduce vibration impacts as feasible. MM-VIB-2, Construction Equipment Location, would require that operation of vibratory rollers within 26 feet of a building structure would be in static mode only, and that the use of vibratory pile drivers not occur within 22 feet of a building. MM-VIB-2 would also require alternative pile driving techniques, such as CIDH, when feasible. CIDH would use equipment such as a drill rig, which has a much lower distance to impact, of only five feet. These mitigation measures would reduce the impacts to less than significant for the majority of structures. However, construction of the Grant Avenue freight bridge would require impact pile driving, which would exceed the damage thresholds at one structure to the west of the proposed bridge (see Appendix 3.6-C, Figure 3.6-C13). While additional engineering and future geotechnical investigations would determine the ultimate construction method, this analysis conservatively assumes that it would be infeasible to use a less impactful type of equipment to construct the freight bridge, and impacts would remain at the one structure. Implementation of MM-VIB-3, Pre- and Post-Construction Surveys would require the contractor to perform pre- and post-construction surveys to document preexisting damage, and damage that may have occurred from construction activities, and to repair damage caused by construction. Even with implementation of mitigation measures, the Proposed Project would have a **significant and unavoidable impact** related to vibration damage during construction.

Annoyance-Related Impacts

Significant and Unavoidable Impact. Ground-borne vibration caused by the Proposed Project's construction could also cause annoyance-related impacts. The vibration-sensitive receptors that could be impacted are defined as occupants of Category 2 land uses, which include residences, hotels, and other locations where people sleep, as described in Table 3.6-6. The only Category 2 land uses where occupants could experience annoyance impacts are residences, as there are no other types of Category 2 land uses within the impact distances. The FTA frequent event category was used to assess impacts from perceptible vibration events to reflect maximum potential construction activity. The distances at which an exceedance of the FTA vibration frequent annoyance criterion of 72 VdB for Category 2 land uses ranges depending on the equipment type, as shown in Table 3.6-21. Based on preliminary estimates, temporary ground-borne vibration annoyance impacts from construction would occur at residences within the distances listed in Table 3.6-21.

Table 3.6-21. Typical Distance for Vibration Annoyance Impact (72 VdB) from Construction Activity

Equipment	Reference Vibration Level (Lv) at 25 feet	Potential Area of Use	Distance to Annoyance Impact (feet)
Impact Pile Driver	104	Bridge Work (Del Amo Boulevard & Grant Ave)	290
Vibratory Pile Driver	93	Retained fill, trench Sections along edge of guideway	125
Vibratory Roller	94	Anywhere within limits of construction	135
Hoe Ram/Large Bulldozer	87	Anywhere within limits of construction	80
Drill Rig (Pre-drilled pile insertion)	87	Retained fill, trench sections along edge of guideway	80
Loaded Trucks	86	Anywhere within limits of construction	75
Jackhammer	79	Anywhere within limits of construction	45

Source: FTA, 2018; AECOM, 2022

Annoyance due to vibration would be limited only to the periods when the vibration-generating equipment is operating in close proximity to residences, which may be limited to only a few hours at a time, after which the equipment would move on to another area of construction. Nevertheless, construction activities would require the use of equipment within the distances listed in Table 3.6-21, and the impact would be potentially significant. MM-VIB-1 would require a Vibration Control Plan and vibration monitoring, to demonstrate compliance with the vibration criteria and use alternative construction methods to reduce impacts as feasible. Implementation of MM-VIB-2 would limit the use of vibratory rollers and vibratory pile drivers, and require the use of alternative pile driving methods when feasible, which would reduce the impacts associated with those pieces of equipment. However, it would not be feasible to limit the use of all types of equipment to be within the distances listed in Table 3.6-21, as some pieces of equipment cannot be modified or replaced. Even with implementation of mitigation, the Proposed Project would have a **significant and unavoidable impact** related to vibration annoyance during construction.

TRENCH OPTION

Significant and Unavoidable Impact. Construction of the Trench Option would result in annoyance impacts to vibration-sensitive structures. Overall, the Trench Option would have a **less than significant impact with mitigation** related to damage, and a **significant and unavoidable impact** for annoyance. The following sections describe the impacts in detail for each subtopic.

Building Damage

Less than Significant Impact with Mitigation. As noted for the Proposed Project, commercial and industrial buildings are unlikely to experience building damage, given their construction type and materials. The construction equipment anticipated to be used for the Trench Option would be similar to the equipment used to construct the Proposed Project. Similar to the Proposed Project, the vibratory roller was assumed to operate within any location within the limits of construction, which potentially could be the shortest distance to the residential structures along the limit of construction. Additionally, construction of the Trench Option would require pile driving for the retained fill south of the Redondo Beach (Marine) Station, temporary shoring of the trench walls, as well as for installation of a pump house, as described in Section 3.6-4.1.1. It was assumed that the vibratory pile driver would be used for construction of these elements. For the trench walls, it was assumed that the vibratory pile driver would be used at the edge of the trench guideway. Unlike the Proposed Project, the Trench Option would not require construction of the relocated Grant Avenue freight bridge, thereby avoiding the impacts associated with impact pile driving. Considering the vibratory roller and vibratory pile driver as of the worst-case representative equipment, the Trench Option would result in ground-borne vibration levels that exceed FTA's criteria for damages to buildings.

The ground-borne vibration impacts for the Trench Option are identified in Table 3.6-20 and shown graphically in Appendix 3.6-C, Figures 3.6-B34 to 3.6-B55. The Trench Option would have damage-related construction ground-borne vibration impacts to the same 133 residential structures as the Proposed Project, though it would have lower potential damage impacts near Grant Avenue as it would not construct the relocated freight bridge. Construction of the Trench Option would have a significant impact related to ground-borne vibration levels in excess of FTA's damage levels, and mitigation would be required. Mitigation Measure MM-VIB-1 would require the contractor to prepare a Vibration Control Plan, conduct monitoring to demonstrate compliance with the vibration limits, and reduce vibration impacts as feasible. Implementation of MM-VIB-2 would limit the use of vibratory rollers from occurring within 26 feet of buildings, and vibratory pile drivers from occurring within 22 feet of buildings, as well as require alternative pile driving techniques, such as CIDH, when feasible. With implementation of MM-VIB-1 and MM-VIB-2, construction of the Trench Option would not result in generation of excessive ground-borne vibration. The impact would be **less than significant with mitigation**.

Annoyance-Related Impacts

Significant and Unavoidable Impact. Similar to the Proposed Project, ground-borne vibration caused by the Trench Option's construction could also cause annoyance-related impacts. The only Category 2 land uses where occupants could experience annoyance impacts are residences, as there are no other types of Categories 2 land uses within the impact distances. Based on preliminary estimates, temporary ground-borne vibration annoyance impacts from construction would occur for residences within the distances listed in Table 3.6-21. While annoyance impacts would be limited in duration, construction activities would exceed the annoyance threshold, and the impact would be significant, and require mitigation. As described for the Proposed Project, MM-VIB-1 would require preparation of a Vibration Control Plan and vibration monitoring, to demonstrate compliance with the vibration criteria and use

alternative construction methods to reduce impacts as feasible. Implementation of MM-VIB-2 would limit the use of vibratory rollers and vibratory pile drivers, and require the use of alternative pile driving methods when feasible, which would reduce the impacts associated with those pieces of equipment. However, it would not be feasible to limit the use of all types of equipment to be within the distances listed in Table 3.6-21, as some pieces of equipment cannot be modified or replaced. Therefore, the Trench Option would have a **significant and unavoidable impact** related to vibration annoyance during construction.

HAWTHORNE OPTION

Significant and Unavoidable Impact. Construction of the Hawthorne Option would result in annoyance impacts to vibration sensitive structures. Overall, the Hawthorne Option would have a **less than significant impact with mitigation** related to damage, and a **significant and unavoidable impact** for annoyance. The following sections describe the impacts in detail for each subtopic.

Building Damage

Less than Significant Impact with Mitigation. As noted for the Proposed Project, commercial and industrial buildings are unlikely to experience building damage, given their construction type and materials. Additionally, there are three identified historical buildings along Hawthorne Boulevard, as described in Section 3.13, Cultural Resources. These include two furniture stores and a car wash. Historical buildings often are more susceptible to damage and have a lower threshold for damage potential (0.12 in/sec PPV, as shown in Table 3.6-5), depending on their structure type. It was determined that the three historical buildings are not anticipated to be particularly fragile or susceptible to vibration damage based on their construction type and materials. Therefore, they were not provided special consideration in the vibration impact analysis, and vibration-generating construction activities are unlikely to result in any building damage.

Similar to the Proposed Project, the vibratory roller was considered in quantifying the construction ground-borne vibration impacts as it is potentially the worst-case source of vibration. The number of residential structures impacted by the potential ground-borne vibration levels due to the operation of the vibratory roller is summarized by segment in Table 3.6-22 and shown graphically in Appendix 3.6-C, Figures 3.6-B56 to 3.6-B75.

Table 3.6-22. Summary of Hawthorne Option Construction Ground-borne Vibration Damage Impacts by Segment

From	To	Number of Residential Structures Impacted	
		West of ROW	East of ROW
Existing Redondo Beach Station	Santa Fe Ave	1	0
Santa Fe Ave	162nd St	10	0

Source: AECOM, 2022

Construction of the Hawthorne Option would have a significant damage impact related to excessive ground-borne vibration levels on 11 residential structures, and mitigation would be required. Mitigation measure MM-VIB-1 would require the contractor to prepare a Vibration Control Plan, conduct monitoring to demonstrate compliance with the vibration limits, and reduce vibration impacts as feasible. Implementation of MM-VIB-2 would limit the use of vibratory rollers from occurring within 26 feet of buildings, and vibratory pile drivers from occurring within 22 feet of buildings, as well as require alternative pile driving techniques, such as CIDH, when feasible. With implementation of MM-VIB-1 and

MM-VIB-2, construction of the Hawthorne Option would not result in generation of excessive ground-borne vibration. The impact would be **less than significant with mitigation**.

Annoyance-Related Impacts

Significant and Unavoidable Impact. Similar to the Proposed Project, ground-borne vibration caused by the Hawthorne Option's construction could also cause annoyance-related impacts. The only Category 2 land uses where occupants could experience annoyance impacts are residences, as there are no other types of Category 2 land uses within the impact distances. Based on preliminary estimates, temporary ground-borne vibration annoyance impacts from construction would occur at residences within the distances listed in Table 3.6-21.

As noted previously, there are three historical resources (two furniture stores and a car wash) located along Hawthorne Boulevard, described in Section 3.13, Cultural Resources. However, they do not represent a vibration-sensitive land use, which is defined as Category 2 land uses (home and places where people sleep).

While annoyance impacts would be limited in duration, construction activities would exceed the annoyance threshold, and the impact would be significant, and require mitigation. As described for the Proposed Project, MM-VIB-1 would require preparation of a Vibration Control Plan and vibration monitoring, to demonstrate compliance with the vibration criteria and use alternative construction methods to reduce impacts as feasible. Implementation of MM-VIB-2 would limit the use of vibratory rollers and vibratory pile drivers, and require the use of alternative pile driving methods when feasible, which would reduce the impacts associated with those pieces of equipment. However, it would not be feasible to limit the use of all types of equipment to be within the distances listed in Table 3.6-21, as some pieces of equipment cannot be modified or replaced. Even with implementation of mitigation measures, the Hawthorne Option would have a **significant and unavoidable impact** related to vibration annoyance during construction.

3.6-4.3.2 Operational Vibration Impacts

Operational vibration impacts are generally associated with annoyance, not damage, and the analysis of building damage is typically limited to construction activity. The potential PPV values of light rail or freight train operation are comparable to that of loaded trucks, which are on the low end of the range for vibration damage potential. As noted previously, the only Category 2 land uses where occupants could experience annoyance impacts are residences, as there are no other types within the impact distances. Therefore, the following section focuses on annoyance-related impacts to residences during operation.

Less than Significant Impact with Mitigation. Operational impacts were assessed across the entire rail corridor, which includes vibration annoyance impacts from the relocated freight alignment as well as the proposed northbound and southbound light rail tracks. Review of the surrounding land uses across the rail corridor determined that the potentially affected land uses are primarily FTA Category 2 which correspond to residences and buildings where people normally sleep (such as hotels). The freight and light rail lines would have different train frequencies per day, therefore different ground-borne vibration impact criteria are applicable to each train type (as per Table 3.6-23). The two train types are evaluated separately since they have different impact thresholds and mitigation requirements.

Table 3.6-23. Ground-borne Vibration Annoyance Impact Criteria

Land Use Category	Train Type	Daily Events	Event Frequency Category	Vibration Annoyance Impact Criteria (VdB)
Category 2	Locomotive – Freight	Fewer than 30 events per day	Infrequent	80
Category 2	LRT	More than 70 events per day	Frequent	72

Source: FTA 2018, Table 6-3
LRT = light rail transit; VdB = decibel notation

Generalized ground surface vibration equations referenced in Section 3.6-2.2.3 were used for the appropriate train type to calculate the distance at which the impact criteria are exceeded. These distances were calculated from the Metro ROW extent line in the east and west directions. Different distances to the impact threshold were generated for each unique track alignment across the Metro ROW. Various unique sections were identified across the rail corridor and appropriate adjustments were applied to the ground surface vibration equations based on speed, track structure (elevated or at-grade) and special trackwork. For the Proposed Project, there would be crossover tracks in four locations: approximately 1,000 feet south of the Redondo Beach (Marine) Station, south of Grant Avenue near the Redondo Beach TC Station, south of El Nido Park near 186th Street, and just north of the Torrance TC Station. As mentioned in Section 3.6-3.2, an offset between measured and predicted vibration values was observed in the El Nido Park area which may be due to the efficient soil propagation caused by the embankment. Therefore, for impacts calculated between 182nd Street and Hawthorne Boulevard (El Nido Park area), a +10 VdB adjustment was applied to account for efficient soil propagation in this area.

The number of residences impacted by the potential ground-borne vibration levels due to the operation of the proposed relocated freight and light rail are summarized in Table 3.6-24, along with the worst-case ground-borne vibration level that would occur within each segment of the alignment. Impacts identified for freight impacts from Manhattan Beach Blvd to 160th St would be a result of the freight track re-alignment. Between 182nd Street and 190th Street, there would be freight-related ground-borne vibration impacts on both sides of the Metro ROW. The freight track would be shifted approximately eight to 12 feet to the west. However, this realignment of the freight track is not anticipated to be the primary reason for the impacts on the west side of the ROW, as the existing ground-borne vibration levels in this area likely already exceed FTA criteria. Additionally, this analysis applied a +10 VdB adjustment in this area to account for the observed existing ground-borne vibration levels near the embankment, as described above, so the number of impacts listed in Table 3.6-24 are conservative. Appendix 3.6-C shows the Proposed Project operational impact contour lines in blue and red for freight and light rail, respectively, in Figures 3.6-B1 to 3.6-B33. A total of 267 residences fall within those contour lines, and occupants would experience a potentially significant annoyance impact during operation.

Table 3.6-24 Summary of Proposed Project Operational Ground-borne Vibration Annoyance Impacts

From	To	LRT			Freight		
		Number of Residences Impacted		Worst-Case Vibration Level (VdB)	Number of Residences Impacted		Worst-Case Vibration Level (VdB)
		West of ROW	East of ROW		West of ROW	East of ROW	
Existing Redondo Beach Station	Santa Fe Ave	0	0	-	0	0	-
Santa Fe Ave	Manhattan Beach Blvd	0	0	-	0	0	-
Manhattan Beach Blvd	160th St	0	0	-	3	0	88
160th St	Artesia Blvd	23	42	80	0	0	0
Artesia Blvd	Grant Ave	3	20	82	0	0	-
Grant Ave	182nd St	0	0	-	0	0	-
182nd St	190th St	60	70	93	35	11	87
190th St	Torrance TC Station	0	0	-	0	0	-

Source: AECOM, 2022
LRT = light rail transit; VdB = decibel notation; ROW = right-of-way; TC = Transit Center

As shown in Table 3.6-24, the ground-borne vibration levels in areas where residences would experience an annoyance impact would exceed the FTA vibration impact criteria for light rail and freight. Therefore, operation of the Proposed Project would have a significant impact related to excessive ground-borne vibration levels, and mitigation would be required. Mitigation measure MM-VIB-4, Low Impact Frogs would be implemented, which would require installation of spring frogs at specific locations to reduce the impact from crossovers by reducing the width of gaps at joints when steel wheels roll over steel rails at rail joints. Mitigation measures MM-VIB-5, Resilient Fasteners and MM-VIB-6, Ballast Mats would be implemented, which would require the use of resilient fasteners to incorporate resilience into the track support systems and install ballast mats to reduce the impacts from train pass-bys caused by steel wheels rolling over steel rails at rail joints (which could provide a combined vibration reduction of up to 15 VdB). These mitigation measures and their proposed locations are discussed in more detail in Section 3.6-5. With implementation of these mitigation measures, the Proposed Project would not result in excessive ground-borne vibration during operation. The impact would be **less than significant with mitigation**.

TRENCH OPTION

Less than Significant Impact with Mitigation. The operational ground-borne vibration effects due to the Trench Option were evaluated in the same way as the Proposed Project, but with a few adjustments made to account for areas where the light rail tracks would be in a trench and for differences in the crossover track location. Ground-borne vibration impacts are related to the distance to the sensitive receiver, with fewer impacts occurring as the source of impact gets farther away. As the Trench Option light rail tracks would be below-grade and slightly farther from sensitive receptors, the Trench Option analysis calculated the slant distance from sensitive receptors to the trench track structure, which resulted in a slightly increased separation distance between the light rail alignment and the sensitive receptors. The deepest part of the trench would be 24 feet, which corresponds to a maximum change of distance from the track to the receiver of less than six feet. This difference would not result in a noticeable change in ground-borne vibration levels compared to the Proposed Project for the areas where the track is below-grade. Within the Trench Option segment (from Redondo Beach (Marine) Station to 190th Street), the crossover tracks near the Redondo Beach TC Station would differ in that they would be located just north of Grant Avenue, which would result in potential ground-borne vibration impacts to sensitive receivers in that area. Finally, the freight track relocation for the Trench Option would be similar to the Proposed Project, except the freight track would not be relocated between Artesia Boulevard and Grant Avenue; however, this did not result in a difference in impacts compared to the Proposed Project.

Table 3.6-25 summarizes the impacts for the Trench Option for light rail and freight. Appendix 3.6-C shows operational impact contour lines in blue and red for freight and light rail, respectively, in Figures 3.6-B34 to 3.6-B55. The freight-related impacts would be the same as the Proposed Project, but there would be 12 more impacted residences from light rail operations, for a total of 279 impacts.

Table 3.6-25. Summary of Trench Option Operational Ground-borne Vibration Annoyance Impacts

From	To	LRT			Freight		
		Number of Residences Impacted		Worst-Case Vibration Level (VdB)	Number of Residences Impacted		Worst-Case Vibration Level (VdB)
		West of ROW	East of ROW		West of ROW	East of ROW	
Existing Redondo Beach Station	Santa Fe Ave	0	0	-	0	0	-
Santa Fe Ave	Manhattan Beach Blvd	0	0	-	0	0	-
Manhattan Beach Blvd	160th St	0	0	-	3	0	88
160th St	Artesia Blvd	23	42	80	0	0	0
Artesia Blvd	Grant Ave	5	30	82	0	0	-
Grant Ave	182nd St	0	0	-	0	0	-
182nd St	190th St	60	70	93	35	11	87
190th St	Torrance TC Station	0	0	-	0	0	-

Source: AECOM, 2022
LRT = light rail transit; VdB = decibel notation; ROW = right-of-way; TC = Transit Center

As shown in Table 3.6-25, the ground-borne vibration levels in areas where residences would experience an annoyance impact would exceed the FTA vibration impact criteria for light rail and freight. Operation of the Trench Option would have a potentially significant impact related to excessive ground-borne vibration levels, and mitigation would be required. Mitigation Measures VIB-4, VIB-5, and VIB-6 would be implemented, which would utilize spring frogs, resilient fasteners, and ballast mats to reduce vibration (which could provide a combined vibration reduction of up to 15 VdB). These mitigation measures and their proposed locations are discussed in more detail in Section 3.6-5. With implementation of these mitigation measures, the Trench Option would not result in excessive ground-borne vibration during operation. The impact would be **less than significant with mitigation**.

HAWTHORNE OPTION

Less than Significant. Compared to the Proposed Project, the Hawthorne Option track alignment would have an increased distance from sensitive receptors, as the light rail track would be on an elevated structure. The elevated structure itself would also provide some vibration reduction. The medium that the vibration travels through are the columns supporting the elevated rail track. Unlike the Proposed Project and Trench Option, where vibration contour lines are represented by lines parallel to the light rail and freight tracks (due to the tracks being in continuous contact with the ground), the vibration from the Hawthorne Option would propagate radially as a point source (due to the vibration being transferred to the ground at intermittent column locations) through the columns. Appendix 3.6-C Figures 3.6-B56 through 3.6-B75 provide the distance to vibration impact thresholds that propagate radially outwards from each column. As shown in Appendix 3.6-C, the vibration impact thresholds around each column do not intersect with any residences, and therefore are not expected to result in any vibration impacts. Operation of the Hawthorne Option would have a **less than significant impact** related to excessive ground-borne vibration levels.

3.6-5 Mitigation Measures

Noise Mitigation Measures

MM-NOI-1: Noise Control Plan

Prior to the initiation of localized construction activities, Metro's contractor shall develop a Noise Control Plan demonstrating how the FTA 1-hour L_{eq} noise criteria would be achieved during construction. The Noise Control Plan shall be prepared by a board-certified acoustical engineer. The FTA 1-hour Leq construction noise standards are as follows: Residential daytime standard of 90 dBA L_{eq} and nighttime standard of 80 dBA L_{eq}, and Commercial and Industrial daytime standard of 100 dBA L_{eq} and nighttime standard of 100 dBA L_{eq}. The Noise Control Plan shall be designed to follow Metro requirements, and shall include measurements of existing noise, a list of the major pieces of construction equipment that would be used, predictions of the noise levels at the closest noise-sensitive receivers (residences, hotels, schools, churches, temples, and similar facilities), and noise mitigation measures to be implemented to achieve compliance with applicable noise thresholds. The Noise Control Plans must be approved by Metro prior to initiating noise-generating construction activities. The contractor shall conduct continuous noise monitoring to demonstrate compliance with the FTA 1-hour L_{eq} noise limits. If the FTA 1-hour L_{eq} criteria are exceeded, the contractor shall implement alternative construction measures to reduce construction noise as much as feasible. The contractor shall establish a public information and complaint system. The contractor shall respond to and provide corrective action for complaints filed within a time period of 24-hours. In addition, Metro shall comply with local noise ordinances when applicable, including by obtaining a variance(s) from the applicable local jurisdiction

when nighttime work is required. Noise-reducing methods that may be implemented by the contractor include:

- If nighttime construction is planned, a noise variance may be prepared by the contractor, if required by the jurisdiction, that demonstrates the implementation of control measures to maintain noise levels below the applicable FTA and local standards.
- Where construction occurs near noise sensitive land uses, specialty equipment with enclosed engines, acoustically attenuating shields, and/or high-performance mufflers may be used.
- Limit unnecessary idling of equipment.
- Install temporary/movable noise barriers or noise-control curtains, where feasible and as required by the Noise Control Plan.
- Reroute construction-related truck traffic away from local residential streets and/or sensitive receivers.
- Limit impact pile driving where feasible and effective.
- Use electric instead of diesel-powered equipment and hydraulic instead of pneumatic tools where feasible.
- Minimize the use of impact devices such as jackhammers and hoe rams, using concrete crushers and pavement saws instead.

MM-NOI-2: Soundwalls

Where feasible, soundwalls shall be placed at the edge of the near light rail track with appropriate setback distance from the tracks or at the edge of elevated structures to reduce noise related to light rail vehicles as required to meet FTA criteria. Height, length, and need for absorptive noise-reducing materials will be finalized during final design as necessary to reduce noise from light rail trains to below the FTA moderate impact criteria, as feasible. Materials, color, landscaping, and/or other aesthetic treatments would also be integrated into the design of the soundwall to minimize dominance and scale.

MM-NOI-3: Low Impact Frogs

Low impact frogs (crossing point of two rails) shall be installed to reduce crossover impact noise where necessary to reduce noise from light rail trains to below the FTA moderate impact criteria. Locations shall be verified during final design as necessary to reduce noise from light rail trains to below the FTA moderate impact criteria.

MM-NOI-4: Quiet Zone Establishment (Proposed Project and Trench Option)

Metro shall cooperate with City of Lawndale, City of Redondo Beach, and City of Torrance to provide support and guidance during the quiet zone establishment process. The cities shall comply with FRA requirements (49 CFR Section 222.35 to Section 222.57) to establish a quiet zone(s) from north of Inglewood Avenue to south of 182nd Street, including by providing written notice to BNSF, Metro, and CPUC on its intent to establish a quiet zone(s) for the listed freight crossings:

- Inglewood Avenue
- Manhattan Beach Boulevard
- 159th Street
- 160th Street

- 161st Street
- 162nd Street
- 170th Street
- 182nd Street

MM-NOI-5: Wheel Squeal Noise Monitoring (Hawthorne Option)

Metro shall conduct wheel squeal noise monitoring prior to the start of revenue operations to determine if wheel squeal is occurring at the listed curves with a radius less than 1,000 feet located near sensitive receptors. If wheel squeal occurs, Metro shall use wayside rail lubrication as necessary to ensure wheel squeal does not occur and to reduce noise from light rail trains to below the FTA moderate impact criteria.

- Curve between Santa Fe Avenue and Inglewood Avenue
- Curve between 161st Street and 163rd Street

Vibration Mitigation Measures

MM-VIB-1: Vibration Control Plan

Prior to construction, the contractor would prepare a Vibration Control Plan demonstrating how the FTA building damage risk criteria and the FTA vibration annoyance criteria would be achieved. The Vibration Control Plan must be approved by Metro prior to initiating vibration-generating construction activities. The Vibration Control Plan would include a list of the major pieces of construction equipment that would be used, and the predictions of the vibration levels are the closest sensitive receivers. The contractor would conduct vibration monitoring to demonstrate compliance with the vibration limits. Where the construction cannot be performed to meet the vibration criteria, the contractor would investigate alternative means and methods of construction measures to reduce vibration levels as much as feasible.

MM-VIB-2: Construction Equipment Location

To address potential building damage, the following measures would be implemented.

- Where a vibratory roller would be operated within 26 feet of a building structure, the vibratory roller shall be operated in static mode only.
- Where pile driving is needed, the use of vibratory pile driving would be limited to be no closer than 22 feet of the nearest sensitive structure. In areas adjacent to sensitive structures where the distance cannot be limited to 22 feet or greater, pile driving will use alternative technology such as CIDH.
- Limit the location of impact pile driving to the extent feasible.

MM-VIB-3: Pre- and Post-Construction Surveys

In the areas where impact pile driving is required, where MM-VIB-1 and MM-VIB-2 cannot reduce vibration levels to below the damage threshold of 0.2 inch/sec PPV, the contractor would conduct a pre- and post-construction survey of buildings by a qualified structural engineer to document and pre-existing damage (such as cracked plaster, damaged windows, etc.) and any such damage that may have resulted because of construction activity. Based on the post-construction surveys, Metro's contractor shall repair damage were caused by construction.

MM-VIB-4: Low Impact Frogs

Frogs with spring-loaded mechanisms shall be installed to close the gaps between running rails such that a 10 dB vibration reduction is achieved and the impact is reduced to below FTA criteria (80 VdB for freight and 72 VdB for light rail). The locations of the frogs shall be verified during final design using a site-specific Detailed Vibration Assessment, including transfer mobility measurements, for the preferred alignment option (as per FTA guidance, Section 6.5).

MM-VIB-5: Resilient Fasteners

Resilient fasteners shall be installed to fasten the rail to concrete track slabs or ties such that a minimum 5 dB vibration is achieved and the impact is reduced to below FTA criteria (80 VdB for freight and 72 VdB for light rail). The locations of the resilient fasteners shall be verified during final design using a site-specific Detailed Vibration Assessment, including transfer mobility measurements, for the preferred alignment option (as per FTA guidance, Section 6.5).

MM-VIB-6: Ballast Mats

Ballast mats consist of a rubber or other type of elastomer pad that is placed under the track ballast. Ballast mats shall be installed such that a minimum 10 dB vibration reduction is achieved and the impact is reduced to below FTA criteria (80 VdB for freight and 72 VdB for light rail). The locations of the ballast mats shall be verified during final design using a site-specific Detailed Vibration Assessment, including transfer mobility measurements, for the preferred alignment option (as per FTA guidance, Section 6.5).

3.6-6 Project Impacts Remaining After Mitigation

3.6-6.1 Noise

3.6-6.1.1 Construction Impacts

The Proposed Project would result in temporary and periodic increases in ambient noise levels due to construction activity that would exceed FTA's criteria, and, where applicable, the standards established by the local noise ordinances. While MM-NOI-1 would be implemented, which would include noise-reducing measures, there may still be temporary or periodic increases in ambient noise levels that exceed FTA construction impact criteria. There are no feasible mitigation measures to reduce construction noise levels. Therefore, impacts related to construction noise would be **significant and unavoidable**.

Regarding health effects of noise, it is unlikely for construction noise to result in noise-induced hearing loss for persons residing or working near construction zones, as this is an occupational hazard related to working over long periods of time (years) in high noise environments. However, construction noise could increase stress at affected sensitive uses. Health effects related to noise would be the same for other Options and where noise impacts would occur.

TRENCH OPTION

The Trench Option would result in temporary and periodic increases in ambient noise levels due to construction activity that would exceed FTA's criteria, and, where applicable, the standards established by the local noise ordinances. While MM-NOI-1 would be implemented, which would include noise-reducing measures, there would still be temporary or periodic increases in ambient noise levels that exceed FTA construction impact criteria. There are no feasible mitigation measures to reduce construction noise levels. Therefore, impacts related to construction noise would be **significant and unavoidable**.

HAWTHORNE OPTION

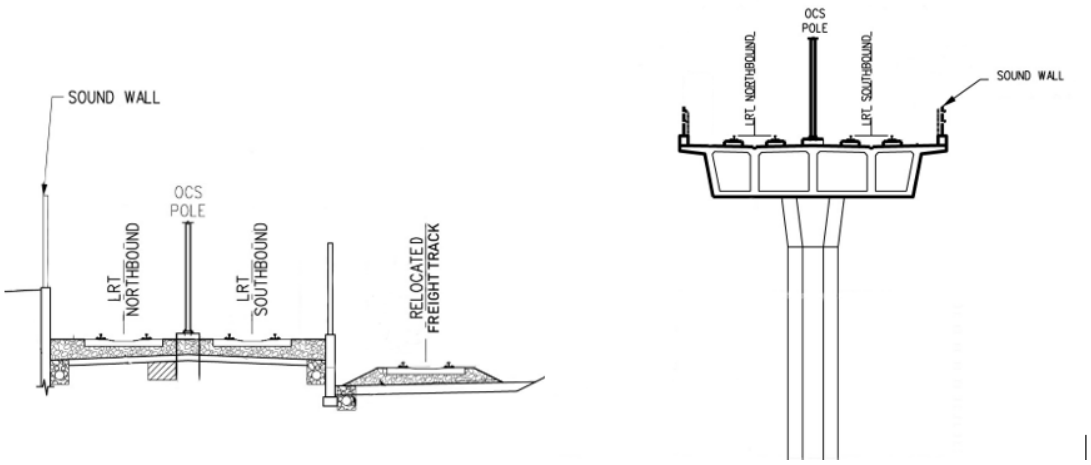
The Hawthorne Option would result in temporary and periodic increases in ambient noise levels due to construction activity that would exceed FTA's criteria, and, where applicable, the standards established by the local noise ordinances. While MM-NOI-1 would be implemented, which would include noise-reducing measures, there would still be temporary or periodic increases in ambient noise levels that exceed FTA construction impact criteria. There are no feasible mitigation measures to reduce construction noise levels. Therefore, impacts related to construction noise would be **significant and unavoidable**.

3.6-6.1.2 Operational Impacts

Mitigated Light Rail Transit Noise

Clusters that have been determined to have noise impacts related to light rail pass-by noise are discussed below with recommended mitigation measures implemented. Light rail pass-by noise is mitigated by breaking the line-of-sight between receivers and the train. This can be achieved using soundwalls, which according to the FTA Transit Noise and Vibration Impact Assessment guidance, provide up to a 12-dB reduction for non-absorptive barriers and up to 15 dB for absorptive barriers. (MM-NOI-2). Height, length, and soundwall features will be identified during final design to reduce noise to below the FTA moderate noise criteria. Soundwall locations are identified in Figure 3.6-21 through Figure 3.6-24. (See Figure 3.6-31 for examples of soundwall placement). Table 3.6-26 lists the identified soundwall locations for the Proposed Project. The level of noise reduction is based on the height of the soundwall and elevation of the receiver relative to the trackwork. Soundwalls can be installed both at-grade and on elevated structures. Soundwalls may not be feasible in some instances, such as if there is an at-grade crossing or other physical features that prevent installation. This condition occurs under the Proposed Project at the 170th Street and 182nd Street at-grade crossings in order maintain vehicle travel through these crossings. Increased light rail noise also occurs as a result of impact noise created by crossovers. A low impact frog (MM-NOI-3), which decreases impact noise caused by the wheels hitting the crossover, is a common mitigation measure for reducing crossover noise. Anticipated installation locations of low impact frogs are shown in Figure 3.6-21 through Figure 3.6-24 and listed in Table 3.6-27. The low impact frogs would eliminate the impact created by the light rail trains passing over the crossovers. The majority of light rail related noise impacts would be mitigated with the use of soundwalls and low impact frogs. Detailed information regarding mitigated light rail noise can be found in Appendix 3.6-B, Table 4. Under the Proposed Project, light rail noise levels at seven clusters would continue to exceed FTA criteria even after implementation of mitigation measures MM-NOI-2 and MM-NOI-3. Therefore, under the Proposed Project, operational noise impacts related to the light rail would be **significant and unavoidable**.

Figure 3.6-31. Soundwall Placement



Source: STV, 2022

Table 3.6-26. Proposed Project Light Rail Soundwall Locations

Location	Track Side	Placement
Between Redondo Beach (Marine) station and Inglewood Ave	Northbound	Elevated
Between Manhattan Beach Blvd and 165th St	Southbound	Elevated
Between Manhattan Beach Blvd and 163rd St	Northbound	Elevated
Between 163rd St and 164th St	Northbound	Elevated
Between 163rd St and 164th St	Southbound	Elevated
Between 164th St and 169th St	Northbound	Edge-of-Track
Between 164th St and 170th St	Southbound	Edge-of-Track
Between 169th St and 170th St	Northbound	Edge-of-Track
Between 170th St and Artesia Blvd	Southbound	Edge-of-Track
Between 170th St and 172nd St	Northbound	Edge-of-Track
Between 172nd St and Artesia Blvd	Northbound	Edge-of-Track
Between Artesia Blvd and south of Grant Ave	Southbound	Edge-of-Track
Between Artesia Blvd and south of Grant Ave	Northbound	Edge-of-Track
Between 182nd St and Hawthorne Blvd	Northbound	Edge-of-Track
Between 182nd St and Hawthorne Blvd	Southbound	Edge-of-Track

LRT = light rail transit

Table 3.6-27. Proposed Project Low Impact Frog Locations

Location
South of Grant Ave
Between 186 St and Hawthorne Blvd

Mitigated Combined Noise (Freight Track Relocation and Light Rail Noise) with Project Features Subject to Future Agency Approval

As discussed above, the majority of noise associated with the freight trains is associated with the warning horns that are sounded within a quarter mile of grade crossings. Pursuant to PF-NV-1, the equipment necessary to allow designation of a quiet zone would be installed, which would enable local jurisdictions to establish quiet zones that eliminate freight horns sounding within a quarter mile of grade

crossings listed in Table 3.6-28. PF-NV-2 and PF-NV-3 would apply at 170th Street and 182 Street, and would be subject to future CPUC authorization for implementation. PF-NV-2 would install directional shrouds to reduce crossing signal bell noise at the intersection and PF-NV-3 would reduce the ringing duration of crossing signal bells. Table 3.6-29 and Table 3.6-30 below list the specific locations for where bell shrouds and gate-down stop variances would apply.

Table 3.6-28. Proposed Project Quiet Zone Locations

Grade Crossing Locations
Inglewood Avenue
Manhattan Beach Boulevard
159th Street
160th Street
161st Street
162nd Street
170th Street
182nd Street

Table 3.6-29. Proposed Project Crossing Signal Bells Shroud Locations

Grade Crossing Locations
170th Street
182nd Street

Table 3.6-30. Proposed Project Gate Down Stop Variance Locations

Grade Crossing Locations
170th Street
182nd Street

Based on previous Metro experience with light rail transit projects, Metro anticipates that the cities would implement a quiet zone. It is therefore assumed that quiet zones would be designated at the locations shown in Table 3.6-28 should the local jurisdictions take that step. Pursuant to Mitigation Measure MM-NOI-4, Metro shall cooperate with the local jurisdictions to designate the quiet zone(s). The quiet zone is anticipated to reduce freight noise overall along the Metro ROW by eliminating one of the primary sources of noise from freight trains, the horn, which produces a noise level of 110 dBA. In most cases, with implementation of the quiet zone, freight noise would be quieter than existing conditions even though the tracks would be in closer proximity to some sensitive receptors.

As described in Section 3.6-4.1.2, PF-NV-1 through PF-NV-3 in combination with MM-NOI-2, MM-NOI-3, and MM-NOI-4 would reduce noise levels related to relocated freight and light rail noise such that FTA's criteria would be exceeded at two clusters, shown in Figure 3.6-21 through Figure 3.6-24. Therefore, under the Proposed Project, operational noise impacts related to the combination of the relocated freight tracks and light rail transit would be **significant and unavoidable.**

In the event that quiet zones were implemented along with MM-NOI-2 and MM-NOI-3, but the CPUC does not authorize the bell shroud and gate-down-stop project features, four clusters would exceed the FTA noise criteria. Detailed information on combined freight and mitigated light rail noise with all mitigation measures but without PF-NV-2 and PF-NV-3 is shown in Appendix 3.6-B, Table 14.

In the event that MM-NOI-2 and MM-NOI-3 were implemented, but quiet zones were not implemented and CPUC also does not authorize the bell shroud and gate-down-stop project features, 92 clusters would

exceed the FTA noise criteria. Detailed information on combined freight and light rail noise without implementation of quiet zones or PF-NV-2 and PF-NV-3 is shown in Appendix 3.6-B, Table 15.

TRENCH OPTION

Mitigated Light Rail Transit Noise

The majority of light rail-related noise impacts would be mitigated with the use of soundwalls and the use of low-impact frogs as required by MM-NOI-2 and MM-NOI-3. Under the Trench Option, no light rail transit noise impacts would remain. Detailed information regarding mitigated light rail noise can be found in Appendix 3.6-B, Table 9. Soundwall locations are shown in Figure 3.6-25 through Figure 3.6-27. See Figure 3.6-31 for examples of soundwall placement. Table 3.6-31 lists the identified soundwall locations for the Trench Option. Anticipated installation locations of low impact frogs are shown in Figure 3.6-25 through Figure 3.6-27 and listed in Table 3.6-32. Therefore, under the Trench Option, operational noise impacts related to the light rail would be **less than significant with mitigation.**

Table 3.6-31. Trench Option Light Rail Soundwall Locations

Location	Track Side	Placement
Between Redondo Beach (Marine) Station and Inglewood Ave	Northbound	Elevated
Between 163rd St and 172nd St	Northbound	Top of Trench
Between 172nd St and 173rd St	Northbound	Top of Trench
Between 173rd St and Artesia Blvd	Northbound	Edge-of-Track
Between 173rd St and Artesia Blvd	Southbound	Edge-of-Track
Between Artesia Blvd and south of Grant Ave	Southbound	Edge-of-Track
Between Artesia Blvd and south of Grant Ave	Northbound	Edge-of-Track
Between 186th St and Hawthorne Blvd	Northbound	Edge-of-Track
Between 186th St and Hawthorne Blvd	Southbound	Edge-of-Track

Table 3.6-32. Trench Option Low Impact Frog Locations

Location
Between Artesia Blvd and Grant Ave
Between 186th St and Hawthorne Blvd

Mitigated Combined Noise (Freight Track Relocation and Light Rail Noise)

Clusters and impacts associated with the combination of freight relocation and light rail noise are shown in Table 3.6-17 and illustrated in Figure 3.6-25 through Figure 3.6-27. Additional detail regarding mitigated noise for the Trench Option can be found in Appendix 3.6-B, Table 10. Light rail noise impacts would be reduced by soundwalls (MM-NOI-2) and the use of low impact frogs (MM-NOI-3). Pursuant to PF-NV-1, the equipment necessary to allow designation of a quiet zone would be installed, and MM-NOI-4 would allow local jurisdictions to establish a quiet zone from north of Inglewood Avenue to south of 182nd Street to eliminate freight horn noise. Under the Trench Option, after mitigation, combined freight and light rail noise levels would be fully mitigated and reduced to below the FTA noise criteria. Therefore, under the Trench Option, operational noise impacts related to the combination of the relocated freight tracks and light rail transit would be **less than significant with mitigation.**

In the event that local jurisdictions do not apply for a quiet zone so that MM-NOI-4 were not to be implemented, the combination of light rail noise and freight track relocation would exceed the FTA criteria at 87 clusters; the impact would be **significant and unavoidable** in this situation. Detailed

information on combined freight and mitigated light rail noise without implementation of quiet zones is shown in Appendix 3.6-B, Table 16.

HAWTHORNE OPTION

Mitigated Light Rail Transit Noise

Clusters that have been determined to have noise impacts related to light rail pass-by noise are shown in Figure 3.6-28 through Figure 3.6-30. The majority of light rail related noise impacts could be mitigated with the use of soundwalls and the use of low-impact frogs as required by MM-NOI-2 and MM-NOI-3. Soundwall locations are identified in Figure 3.6-28 through Figure 3.6-30. Detailed information regarding mitigated light rail noise can be found in Appendix 3.6-B, Table 13.

See Figure 3.6-31 for examples of soundwall placement. Table 3.6-33 lists the identified soundwall locations for the Hawthorne Option. Anticipated installation locations of low impact frogs are shown in Figure 3.6-28 through Figure 3.6-30 and listed in Table 3.6-34. Mitigation measure MM-NOI-5 would require wheel squeal noise monitoring at curves with a radius less than 1,000 feet near sensitive receptors and the application of wayside friction lubricators to reduce wheel squeal noise should it be identified. Under the Hawthorne Option, after mitigation, noise levels would be fully mitigated and reduced to below the FTA noise criteria. Therefore, under the Hawthorne Option operational noise impacts related to the light rail would be **less than significant with mitigation**.

Table 3.6-33. Hawthorne Option Light Rail Soundwall Locations

Location	Track Side	Placement
Between Redondo Beach (Marine) Station and Inglewood Ave	Northbound	Elevated
Between Manhattan Beach Blvd and I-405 Ramps on Hawthorne Blvd	Southbound	Elevated
Between I-405 Ramps on Hawthorne Blvd and 162nd St	Southbound	Elevated
Between 162nd St and Artesia Blvd	Southbound	Elevated
Between 162nd St and Redondo Beach Blvd	Northbound	Elevated
Between Redondo Beach Blvd and Artesia Blvd	Northbound	Elevated
Between 176th St and south of 186th St	Northbound	Elevated
Between north of 182nd St and south of 186th St	Southbound	Elevated
Between south of 186th St to north of 190th St	Southbound	Elevated

Table 3.6-34. Hawthorne Option Low Impact Frog Locations

Location
Between 159th St and 160th St
Between 169th St and 171st St
Between 180th St and 182nd St

3.6-6.2 Vibration

3.6-6.2.1 Construction Impacts

Without mitigation, the Proposed Project would generate ground-borne vibration levels that exceed FTA impact criteria for damage at 133 structures during construction. Construction of the Proposed Project would also result in temporary annoyance impacts to residences along the Metro ROW. MM-VIB-1, MM-VIB-2, and MM-VIB-3 would be implemented, which would reduce the potential for damage impacts, but one impact would remain at a residential structure near Grant Avenue. Mitigation measures would also reduce impacts related to annoyance, but not all equipment types can be feasibly replaced. Therefore, the impact would be **significant and unavoidable** for both damage and annoyance after mitigation.

TRENCH OPTION

Without mitigation, the Trench Option would generate ground-borne vibration levels that exceed FTA impact criteria for damage at 133 structures during construction. While the same structures as the Proposed Project would have potential damage impacts, unlike the Proposed Project, the Trench Option would not require construction of the relocated Grant Avenue freight bridge, thereby avoiding the impacts associated with impact pile driving. Implementation of MM-VIB-1 and MM-VIB-2 would reduce damage impacts to less than significant. Construction of the Trench Option would also result in temporary annoyance impacts to residences along the Metro ROW. MM-VIB-1 and MM-VIB-2 would reduce impacts, but impacts related to annoyance cannot be fully mitigated, and the impact would be **significant and unavoidable** after mitigation.

HAWTHORNE OPTION

Without mitigation, the Hawthorne Option would generate ground-borne vibration levels that exceed FTA impact criteria for damage at 11 structures during construction. Implementation of MM-VIB-1 and MM-VIB-2 would reduce damage impacts to less than significant, but impacts related to annoyance cannot be fully mitigated, and the impact would be **significant and unavoidable** after mitigation.

3.6-6.2.2 Operational Impacts

Without mitigation, the Proposed Project would generate ground-borne vibration levels that exceed FTA impact criteria for annoyance at 267 residences during operations. Implementation of MM-VIB-4, MM-VIB-5, and MM-VIB-6 at the locations identified in Table 3.6-35 and Table 3.6-36 would reduce impacts of the Proposed Project to a **less than significant** level.

TRENCH OPTION

Without mitigation, the Trench Option would generate ground-borne vibration levels that exceed FTA impact criteria for annoyance at 279 sensitive receivers during operations. Implementation of MM-VIB-4, MM-VIB-5, and MM-VIB-6 at the locations identified in Table 3.6-35 and Table 3.6-37 would reduce operation impacts of the Trench Option to a **less than significant** level.

Table 3.6-35. Proposed Project and Trench Option Vibration Mitigation Locations – Freight Track

Section	Track Structure	Switches/Crossovers	Resilient Fasteners	Ballast Mat	Spring Frog
Existing Redondo Beach (Marine) Station to Santa Fe Ave	At grade	None	Not Required	Not Required	Not Required
Santa Fe Ave to Manhattan Beach Blvd	At grade	None	Not Required	Not Required	Not Required
Manhattan Beach Blvd to 160th St	At grade	None	Not Required	Required (Station 315 to 319)	Not Required
160th St to Artesia Blvd	At grade	None	Not Required	Not Required	Not Required
Artesia Blvd to 182nd St	At grade	None	Not Required	Not Required	Not Required
182nd St to Hawthorne Blvd	At grade	None	Required (Station 394 to 422)	Required (Station 394 to 422)	Not Required
Hawthorne Blvd to Torrance TC Station	At grade	None	Not Required	Not Required	Not Required

Source: AECOM, 2022

Table 3.6-36. Proposed Project Vibration Mitigation Locations – Light Rail

Segment	Track Structure	Switches/Crossovers	Resilient Fasteners	Ballast Mat	Spring Frog
Existing Redondo Beach (Marine) Station to Santa Fe Ave	At grade	Yes	Not Required	Not Required	Not Required
Santa Fe Ave to Inglewood Ave	At grade	None	Not Required	Not Required	Not Required
Inglewood Ave to 162nd St	Elevated	None	Not Required	Not Required	Not Required
162nd St to Artesia Blvd	At grade	None	Not Required	Required (Station 326 to 364)	Not Required
Artesia Blvd to Grant Ave	At grade	None	Required (Station 365 to 374)	Required (Station 365 to 374)	Not Required
Grant Ave to 182nd St	At grade	Yes	Not Required	Not Required	Not Required
182nd St to Hawthorne Blvd	At grade	Yes	Required (Station 390 to 422)	Required (Station 390 to 422)	Required (Station 390 to 422)
Hawthorne Blvd to Torrance TC Station	At grade	None	Not Required	Not Required	Not Required

Source: AECOM, 2022

Table 3.6-37. Trench Option Vibration Mitigation Locations – Light Rail Transit

Segment	Track Structure	Switches/Crossovers	Resilient Fasteners	Ballast Mat	Spring Frog
Existing Redondo Beach (Marine) Station to Santa Fe Ave	Elevated	None	Not Required	Not Required	Not Required
Santa Fe Ave to Inglewood Ave	At-grade/Trench	None	Not Required	Not Required	Not Required
Inglewood Ave to 162nd St	Trench	None	Not Required	Not Required	Not Required
162nd St to Artesia Blvd	Trench	None	Not Required	Required (Station 326 to 364)	Not Required
Artesia Blvd to Grant Ave	At grade	Yes	Required (Station 365 to 374)	Required (Station 365 to 374)	Required (Station 368 to 374)
Grant Ave to 182nd St	Trench	No	Not Required	Not Required	Not Required
182nd St to Hawthorne Blvd	Trench/At-grade	Yes	Required (Station 390 to 422)	Required (Station 390 to 422)	Required (Station 390 to 422)
Hawthorne Blvd to Torrance TC Station	At grade	None	Not Required	Not Required	Not Required

Source: AECOM, 2022

HAWTHORNE OPTION

No operational mitigation measures are required for the Hawthorne Option.

3.6-7 Cumulative Impacts

The methodology for cumulative analysis and a description of relevant projects and projections are included in Section 3.0, Introduction.

3.6-7.1 Noise

3.6-7.1.1 Construction

The geographic scope of the cumulative analysis for noise during construction is the immediate vicinity (within 500 feet) of the Proposed Project where project construction-generated noise could be heard concurrently with noise from other sources.

PROPOSED PROJECT

Construction of the Proposed Project would require heavy earth-moving equipment, generators, cranes, pneumatic tools, and other similar machinery. The existing cumulative noise condition is characterized by existing traffic noise and existing freight noise which was captured by existing ambient noise measurements. Construction noise levels for the Proposed Project would exceed FTA and local noise standards due to the intensive nature of light rail construction activities and the proximity of sensitive land uses to the corridor. Implementation of MM-NOI-1 (Noise Control Plan) would reduce construction noise levels, but there may still be temporary or periodic exceedances of the FTA construction noise criteria and local standards resulting in temporary adverse effects related to construction noise. Similar to the Proposed Project, construction of projected future projects would likely include the use of heavy construction equipment that would generate elevated construction noise levels. Projected future projects would go through their own environmental clearance process and would include mitigation for construction noise to reduce impacts. Related projects within 500 feet of Proposed Project construction could result in a cumulative construction noise impact at sensitive receptors. Related projects listed in Table 3.0-1 that are in the pre-construction or construction phase are anticipated to be completed prior to construction of the Proposed Project. Construction of the South Bay Galleria Development Project is located within 500 feet and may overlap with construction of the Proposed Project and result in increased construction noise levels from the combination of the two projects. Although it is not possible to predict which related projects would result in a cumulative construction noise scenario, the construction noise levels associated with the Proposed Project could increase ambient noise levels. Therefore, when combined with noise generated by past, present and probable future projects, the Proposed Project would result in a significant cumulative noise effects during construction, and the Proposed Project's incremental contribution to this impact would be **cumulatively considerable**.

TRENCH OPTION

Similar to the Proposed Project, construction of the Trench Option would require heavy earth-moving equipment, generators, cranes, pneumatic tools, and other similar machinery. The existing cumulative noise condition is characterized by existing traffic noise and existing freight noise which was captured by existing ambient noise measurements. Construction noise levels for the Trench Option would exceed FTA and local noise standards due to the intensive nature of light rail construction activities and the proximity of sensitive land uses to the corridor. Implementation of MM-NOI-1 (Noise Control Plan) would reduce construction noise levels, but there may still be temporary or periodic exceedances of the FTA construction noise criteria and local standards resulting in temporary adverse effects related to

construction noise. Similar to the Proposed Project, related projects within 500 feet of Trench Option construction could result in a cumulative construction noise impact at sensitive receptors. Related projects listed in Table 3.0-1 that are in the pre-construction or construction phase are anticipated to be completed prior to construction of the Trench Option. Construction of the South Bay Galleria Development Project is located within 500 feet and may overlap with construction of the Trench Option and result in increased construction noise levels from the combination of the two projects. Therefore, when combined with noise generated by projected future projects, the Trench Option would result in significant cumulative noise effects during construction, and the Trench Option's incremental contribution to this impact would be **cumulatively considerable**.

HAWTHORNE OPTION

Similar to the Proposed Project, construction of the Hawthorne Option would require heavy earth-moving equipment, generators, cranes, pneumatic tools, and other similar machinery. Construction noise levels for the Hawthorne Option would exceed FTA and local noise standards due to the intensive nature of light rail construction activities and the proximity of sensitive land uses to the corridor. Implementation of MM-NOI-1 (Noise Control Plan) would reduce construction noise levels, but there may still be temporary or periodic exceedances of the FTA construction noise criteria and local standards resulting in temporary adverse effects related to construction noise. Similar to the Proposed Project, related projects within 500 feet of Hawthorne Option construction could result in a cumulative construction noise impact at sensitive receptors. Related projects listed in Table 3.0-1 that are in the pre-construction or construction phase are anticipated to be completed prior to construction of the Hawthorne Option. Construction of the South Bay Galleria Development Project is located within 500 feet and may overlap with construction of the Hawthorne Option and result in increased construction noise levels from the combination of the two projects. Therefore, when combined with noise generated by projected future projects, the Hawthorne Option would result in significant cumulative noise effects during construction, and the Hawthorne Option's incremental contribution to this impact would be **cumulatively considerable**.

3.6-7.1.2 Operations

The geographic scope for the cumulative operational noise analysis is the immediate vicinity (within 350 feet of light rail tracks) of the Proposed Project where project-generated noise could be heard concurrently with noise from other sources. The FTA Transit Noise and Vibration Impact Assessment guidance considers 350 feet the potential area of noise effects for light rail transit project operations.

PROPOSED PROJECT

The noise environment in the vicinity of the alignment can be primarily defined by traffic on adjacent roadways, freight trains, and the existing Metro C (Green) Line. Cumulative growth and development in the cities located in the vicinity of the Proposed Project could result in increases in roadway traffic volumes over time that would concurrently increase ambient noise levels in the vicinity of the Proposed Project. However, future increases in roadway noise are expected to be minimal along the alignment because of limited roadway capacity. Freight train noise is generally intermittent, as only there are only two train pass-bys each day. However, the Proposed Project would result in significant operational noise impacts at sensitive receptors along the project alignment. Implementation of MM-NOI-2 and MM-NOI-3, which would require installation of soundwalls and low impact frogs, would reduce the significant impacts related to noise. MM-NOI-4 would allow local jurisdictions to designate a quiet zone from north of Inglewood Avenue to south of 182nd Street to eliminate freight horn noise. However, not all affected areas would be fully mitigated, and significant and unavoidable impacts would remain. Therefore, the

Proposed Project in combination with future traffic noise would result in a significant cumulative impact. The Proposed Project's incremental contribution to the cumulatively significant impact on noise would be **cumulatively considerable**.

TRENCH OPTION

The noise environment in the vicinity of the alignment can be primarily defined by traffic on adjacent roadways, freight trains, and the existing Metro C (Green) Line. Cumulative growth and development in the cities located in the vicinity of the Trench Option could result in increases in roadway traffic volumes over time that would concurrently increase ambient noise levels in the vicinity of the Trench Option. However, future increases in roadway noise are expected to be minimal along the alignment because of limited roadway capacity. Freight train noise is generally intermittent, as only there are only two train pass-bys each day. However, the Trench Option would result in significant operational noise effects at sensitive receptors along the project alignment. Implementation of MM-NOI-2 and MM-NOI-3, which would require installation of soundwalls and low impact frogs, would reduce the light rail transit operational noise impacts to a less than significant level. MM-NOI-4 would allow local jurisdictions to designate a quiet zone from north of Inglewood Avenue to south of 182nd Street to eliminate freight horn noise. However, the combination of noise related to the light rail transit and relocated freight tracks would result in a significant and unavoidable impact. Therefore, the Trench Option in combination with future traffic noise would result in a significant cumulative impact. The Trench Option's incremental contribution to the cumulatively significant impact on noise would be **cumulatively considerable**.

HAWTHORNE OPTION

The noise environment in the vicinity of the alignments can be primarily defined by traffic on adjacent roadways, freight trains, and the existing Metro C (Green) Line. Cumulative growth and development in the cities located in the vicinity of the Hawthorne Option could result in increases in roadway traffic volumes over time that would concurrently increase ambient noise levels in the vicinity of the Hawthorne Option. However, future increases in roadway noise are expected to be minimal along the alignment because of limited roadway capacity. Freight train noise is generally intermittent, as only there are only two train pass-bys each day. However, the Hawthorne Option would result in significant operational noise effects at sensitive receptors along the project alignment. Implementation of MM-NOI-2, MM-NOI-3, and MM-NOI-5, which would require installation of soundwalls, low impact frogs, and wayside friction modifiers would reduce the operational noise impacts; however, not all affected areas would be fully mitigated, and significant and unavoidable impacts would remain. Therefore, the Hawthorne Option in combination with future traffic noise would result in a significant cumulative impact. The Hawthorne Option's incremental contribution to the cumulatively significant impact on noise would be **cumulatively considerable**.

3.6-7.2 Vibration

3.6-7.2.1 Construction

PROPOSED PROJECT

Construction of the Proposed Project would result in significant and unavoidable vibration impacts, even with implementation of MM-VIB-1, MM-VIB-2, and MM-VIB-3. However, it is not anticipated that vibration-generating equipment from past, present, and probable future projects would operate at the same time and in the same location as the construction equipment for the Proposed Project. Therefore, the Proposed Project, combined with past, present, and reasonably foreseeable projects would **not result in a cumulatively significant impact** related to vibration.

TRENCH OPTION

Construction of the Trench Option would result in significant vibration impacts, but they would be mitigated with implementation of MM-VIB-1 and MM-VIB-2 to below FTA impact criteria. It is not anticipated that vibration-generating equipment from past, present, and probable future projects would operate at the same time and in the same location as the construction equipment for the Trench Option. Therefore, the Trench Option, combined with past, present, and reasonably foreseeable projects would **not result in a cumulatively significant impact** related to vibration.

HAWTHORNE OPTION

Construction of the Hawthorne Option would result in significant vibration impacts, but they would be mitigated with implementation of MM-VIB-1 and MM-VIB-2 to below FTA impact criteria. It is not anticipated that vibration-generating equipment from past, present, and probable future projects would operate at the same time and in the same location as the construction equipment for the Hawthorne Option. Therefore, the Hawthorne Option, combined with past, present, and reasonably foreseeable projects would **not result in a cumulatively significant impact** related to vibration.

3.6-7.2.2 Operations

PROPOSED PROJECT

Existing vibration occurs within the corridor due to the freight line. It is possible that the ground-borne vibration generated from the light rail and the freight line (both the relocated and non-relocated existing tracks) could combine to produce a cumulatively significant ground-borne vibration effect. However, implementation of MM-VIB-4, MM-VIB-5, and MM-VIB-6 would ensure ground-borne vibration caused by the light rail and relocated freight tracks are less than significant. Therefore, with mitigation, the incremental contribution of the Proposed Project to cumulatively significant vibration impacts would **not be cumulatively considerable.**

TRENCH OPTION

Existing vibration occurs within the corridor due to the freight line. It is possible that ground-borne vibration generated from the light rail and freight line (both the relocated and non-relocated tracks) could combine to produce a cumulatively significant ground-borne vibration effect. However, implementation of MM-VIB-4, MM-VIB-5, and MM-VIB-6 would ensure ground-borne vibration impacts caused by the light rail and realigned freight tracks are less than significant. Therefore, with mitigation, the incremental contribution of the Trench Option to cumulatively significant ground-borne vibration impacts would be **less than cumulatively considerable.**

HAWTHORNE OPTION

Unlike the Proposed Project and Trench, the Hawthorne Option would not cause significant ground-borne vibration impacts. Ground-borne vibration from the Hawthorne Option combined with past, present and probable future projects would **not be cumulatively significant**.

3.7 BIOLOGICAL RESOURCES

This section of the Draft EIR provides an analysis of the potential impacts on biological resources.

3.7-1 REGULATORY FRAMEWORK

Federal, state, regional, and local regulations concerning biological resources are described in the following section.

3.7-1.1 Federal Regulations

Endangered Species Act

The Endangered Species Act (16 United States Code [USC] Section 1531 et seq.) and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Section 7 of the Endangered Species Act requires federal agencies to aid in the conservation of listed species and ensure that their activities do not jeopardize the continued existence of listed species or adversely modify designated critical habitat. At the federal level, the United States Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration are responsible for the administration of the Endangered Species Act. Permits associated with Section 7 of the Endangered Species Act are not anticipated as part of the Proposed Project, or Trench or Hawthorne Options, as there are no federally endangered or threatened species identified with potential to occur that could be impacted by construction or operation activities.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC Section 703 et seq.) decrees that all migratory birds and their parts (including eggs, nests and feathers) are fully protected. Under this act, taking, killing or possessing migratory birds is unlawful. Projects that are likely to result in the taking of birds protected under the MBTA require take permits from the USFWS. Activities that require such a permit include, but are not limited to, the destruction of migratory bird nesting habitat during the nesting season when eggs or young are likely to be present. In order to ensure compliance with the Act, nesting bird surveys are required to determine if nests would be disturbed and, if so, a buffer area with a specified radius around the nest would be established so that no disturbance or intrusion would be allowed until the young had fledged and left the nest. If not otherwise specified in the permit, the size of the buffer area would vary with species and local circumstances (e.g., the presence of busy roads) and would be based on the professional judgment of the monitoring biologist. Nesting bird surveys are anticipated as part of the Proposed Project, and Trench or Hawthorne Options, during all situations in which potential nesting substrate and breeding birds could be impacted and/or disturbed by construction or activities during the nesting bird season (defined herein as February 1 through September 15).

Clean Water Act

The goal of the Clean Water Act (CWA) (33 USC Section 1251 et seq.) is to eliminate the discharge of pollutants and to restore and maintain the chemical, physical and biological integrity of the nation's waters. The CWA also established the National Pollutant Discharge Elimination System (NPDES) permit system. NPDES permits are required for the discharge of pollutants from point sources into navigable waters.

Section 401(a)(1) of the CWA specifies that an applicant for a federal license or permit, in order to obtain authorization to conduct any activity (i.e., construction or operation of facilities that may result in any discharge into navigable waters), shall obtain a certification from the state in which the discharge

originates. Any such discharge will comply with the applicable provisions of Sections 301, 302, 303, 306 and 307 of the CWA. Succinctly, this means that, in California, Regional Water Quality Control Boards (RWQCBs) must certify that a project will comply with water quality standards.

Section 404 of the CWA establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Activities in waters of the United States regulated under this program include fill for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports) and mining projects. A Section 404 permit is required by the United States Army Corps of Engineers (USACE) for the dredging or filling of lakes, streams, tidelands, marshes or low-lying areas behind dikes along the coast as well as the dumping of dredged material into the ocean. This permit is not required as part of the Proposed Project, or Trench or Hawthorne Options, unless USACE jurisdictional waters are impacted, which is not anticipated under any scenario. The Proposed Project and Options footprints do not cross or otherwise encroach on any known jurisdictional waters.

United States Fish and Wildlife Coordination Act

The USFWS Coordination Act (16 USC Section 661-666 or 16 USC 662 S.2) requires consultation with the USFWS and the state agency responsible for wildlife resources whenever a stream or other body of water is proposed to be modified for any purpose whatsoever. Neither the Proposed Project, nor Trench or Hawthorne Options are anticipated to require USFWS coordination related to impacts of rivers, streams, or lakes as their footprints do not cross or otherwise encroach on any sensitive habitat types, such as rivers, streams, or lakes.

3.7-1.2 State and Regional Regulations

California Endangered Species Act

The California Department of Fish and Wildlife (CDFW) is responsible for the administration of the California Endangered Species Act (California Fish and Game Code, Section 2050 et seq.). For projects that affect state listed species, a take permit under the California Endangered Species Act is required. The state endangered species act also lends protection to species that are considered rare enough by the scientific community and trustee agencies to warrant special consideration, particularly regarding the protection of isolated populations, nesting or den locations, communal roosts and other essential habitat. A 2081 take permit under the California Endangered Species Act would be a requirement of the Proposed Project, and Trench or Hawthorne Options, if construction and operation activities have potential to impact any of the state-listed special-status species identified with potential to occur (included Table 3.7-1). A 2081 take permit is not anticipated as part of the Proposed Project, or Trench or Hawthorne Options, as there are no state threatened or endangered species identified with potential to occur that could be impacted by construction or operation activities; however, consultation with CDFW could be required.

California Fish and Game Code (Sections 3500-3705 and 1600 et seq.)

Sections 3500 through 3705 of the California Fish and Game Code (CFGC) prohibit the taking of nesting birds, their nests, eggs or any portion thereof during the nesting season. Typically, the breeding/nesting season for all passerine species is from February 1 through September 15 (which captures all the various breeding/nesting durations for all applicable birds) and January 15 to September 15 for all raptors (birds of prey). Depending on each year's seasonal factors, the breeding season can start earlier and/or end later. In order to ensure compliance with CFGC, nesting bird surveys are required during the breeding/nesting season to determine if active nests have potential to be disturbed as a result of

construction activities. If so, buffer areas with a specified radius are to be established so that no disturbance or intrusion would be allowed until the young had fledged and left the nest.

Section 1602 of the CFGC requires agencies to notify the CDFW of any project that will divert, obstruct or change the natural flow or bed, channel or bank of any river, stream or lake. If CDFW jurisdictional areas are impacted by a project, a Section 1602 Streambed Alteration Agreement would be required. The Proposed Project is not anticipated to impact CDFW jurisdictional areas related to rivers, streams, or lakes as the Proposed Project footprint does not cross or otherwise encroach on any sensitive habitat types.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (1969), codified as Division 7 ("Water Quality") of the State Water Code, established the responsibilities and authorities of the State Water Resources Control Board and the nine RWQCBs. Each RWQCB prepares and adopts a Water Quality Control Plan, or Basin Plan, which incorporates the unique aspects of a particular region. Regional differences may include existing water quality, beneficial uses of surface and ground waters and localized water quality problems. The RWQCBs implement Basin Plans by issuing and enforcing waste discharge regulations to individuals, communities or businesses whose discharges can affect water quality. These regulations can be either Waste Discharge Requirements (WDRs) for discharges to land or NPDES permits for discharges to surface water. The RWQCBs may issue WDRs for impacts to isolated wetlands that are not jurisdictional to the USACE. The Porter-Cologne Water Quality Control Act has the potential to add regulatory requirements and state-level permitting for potential impacts to isolated wetlands. Yet, because the footprints do not cross or otherwise encroach on any known isolated wetlands, the Proposed Project, and Trench or Hawthorne Options, would not require Porter-Cologne Water Quality Control Act authorization. The State of California recently established a wetland and riparian protection policy, which became effective in 2020.

County of Los Angeles Significant Ecological Area (SEA) Program

The County of Los Angeles has designated the Madrona Marsh and adjacent sandy upland as a Significant Ecological Area (SEA). SEAs are officially designated areas within the County with irreplaceable biological resources. An SEA within unincorporated areas of the County is maintained and regulated by the County's SEA Program, whereas an SEA within an incorporated city, such as the Madrona Marsh, is maintained and regulated by the incorporated city.

3.7-1.3 Local Regulations

The discussion below summarizes the biological resource objectives and policies identified in the Dominguez Watershed Management Master Plan and the City of Torrance General Plan and City of Torrance Street Tree Master Plan. Related policies, goals, or objectives were not identified in the Redondo Beach and Lawndale City General Plans. No additional tree protection ordinances were noted within the Resource Study Area (RSA). The RSA for biological resources includes a quarter-mile buffer around the footprints of the Proposed Project, and Trench and Hawthorne Options, as shown in Figure 3.7-1, and further described in Section 3.7-2.1, below.

Dominguez Watershed Management Master Plan

The majority of the RSA is contained within the Dominguez Watershed, within which the Dominguez Channel is the largest drainage feature. The Dominguez Watershed Management Master Plan (WMMP) was developed by the Dominguez Watershed Advisory Council, which consists of local governmental representatives, environmental groups, regulating agencies, members of business and industry, water

and sewer service providers and private citizens. The Dominguez WMMP was developed to manage and enhance water quality and habitats within the watershed (DCWMAG, 2004).

According to the Dominguez WMMP, native habitats constitute approximately 16% of the watershed. Despite the fragmented nature and urbanized context of the natural habitats, the watershed supports several hundred species of wildlife. Issues of concern for biological resources include the following: channelization of drainages; exotic, invasive plant species and non-native animals; further habitat fragmentation; narrow buffers to urban development; protection of special-status species[1] and wildlife corridors; sediment contamination and eutrophication (i.e., increase of nitrogen, phosphorus, and other nutrients in surface waters); and trash and debris.

The Dominguez WMMP outlines goals and objectives to address issues, problems, and concerns identified through stakeholder outreach described in Table 3.7-1 below.

[1] For the purpose of this document, "special-status species" are defined as those plant and wildlife species with the following designations.
Federal Status Designations:
FE – Federally Endangered; FT – Federally Threatened
FC – Federal Candidate Species for Listing
State Status Designations:
SC – State Candidate Species for Listing
SSC – California Department of Fish and Wildlife Species of Special Concern; SE – State Endangered; ST – State Threatened
California Native Plant Society Codes:
1B. – Rare or Endangered in California and elsewhere
1B.1 – Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
1B.2 – Fairly endangered in California (20-80% occurrences threatened)
Other Special-Status Designations:
BLMS – Bureau of Land Management Sensitive
WBWG – Western Bat Working Group
H = High Conservation Priority
M = Medium Conservation Priority
LM = Low-Medium Conservation Priority

Table 3.7-1. Dominguez WMMP – Relevant Regulations

Code/Goal/Policy	Description
Dominguez WMMP	
Goal 1	Protect and enhance water quality
Goal 2	Protect, enhance and restore native habitats and biological resources
Goal 3	Protect, enhance and restore native habitats and biological resources
Goal 4	Promote public awareness and involvement in watershed management
Goal 5	Implement stewardship of the watershed and its resources in balance with economic and environmental impacts
Objective 1	Diminish and eliminate further degradation of the watershed and its resources through better management practices
Objective 2	Promote, preserve and protect beneficial uses of the watershed
Objective 3	Restore and enhance ecological systems of the watershed
Objective 4	Increase the viability, diversity, and health of the watershed
Objective 5	Raise public awareness of the Dominguez Watershed and encourage participation in management and protection of watershed resources
Objective 6	Obtain grant funds to implement watershed improvement projects

Source: Dominguez WMMP, 2014

City of Torrance General Plan

The 2010 Torrance General Plan contains several objectives and policies that relate to biological resources, specifically those relating to designated areas of open space; the relevant objectives and policies are described in Table 3.7-2 below.

Table 3.7-2. City of Torrance – Relevant Regulations

Code/Goal/Policy	Description
City of Torrance General Plan	
Section 1.3: Open Space Objectives and Policies	
Objective CR.1	To utilize open space as a means of achieving desirable growth patterns.
Policy CR.1.1	Continue to evaluate the environmental impact of public and private projects on properties that have significant open space value.
Policy CR.1.2	Require the provision of on-site open space in new developments.
Policy CR.1.3	Require that development projects involving modifications or additions include plans to upgrade or add open space and landscaping.
Objective CR.2	To preserve natural resource lands that contribute to the environmental quality of the City.
Policy CR.2.1	Assign open space designations and apply preservation policies to significant natural habitat areas.
Objective CR.5	To preserve open space necessary to protect the health, safety, and well-being of City residents.
Policy CR.5.1	Maintain open space features that are critical components of the City's flood control system.
Section 3.8: Wildlife Habitat Objectives and Policies	
Objective CR.16	The preservation of unique and beneficial wildlife habitat in Torrance.
Policy CR.16.1	Maintain the Madrona Marsh Nature Preserve[1] for the enjoyment and education of present and future generations.
Policy CR.16.2	Support the dual use of drainage detention and retention basins for open space, recreation, and/or wildlife habitat opportunities, and increased groundwater recharge as long as the secondary use does not conflict or interfere with the operation and maintenance of the primary function of flood control and drainage.

Source: City of Torrance General Plan, 2010a

[1]Madrona Marsh is a permanent ecological preserve owned and maintained by the City of Torrance

City of Torrance Street Tree Master Plan

The Street Tree Master Plan (City of Torrance, 2015f) was created to enhance and preserve the City's trees by having a set list of recommended trees that would best fit each area of the city. Rather than a list of protected, native species that may occur in open space areas, the tree list is a recommended replacement list in cases of tree removal (e.g., due to disease). In addition, The Street Tree Master Plan identifies eight "Special Designated Areas for Tree Conservation and Protection."

3.7-2 METHODOLOGY

An ecosystem is the interaction between biological resources (e.g., plants, animals, microorganisms) and the physical environment in which they live, all of which function together as a unit. Ecosystems are made up of living organisms, including humans and the environment they inhabit. Understanding this relationship between living organisms and their environment is basic to the assessment of impacts on ecosystems. Information in this report is primarily based on the following activities:

- Evaluating available inventories and mapped resources: (a) special-status species and vegetation communities; (b) wetlands and riparian habitat; (c) wildlife corridors; and (d) local policies, and ordinances (e.g., tree protections).
- A search of the California Natural Diversity Database (CNDDB) was conducted to identify special-status plants and animals with the potential to occur in the RSA. To identify special-status plants and animals with the potential to occur in the RSA, topographic quadrangle maps corresponding with the RSA were included in the CNDDB search. A quadrangle typically refers to a map sheet published by the United States Geological Survey (USGS). The "7.5-minute" series is the smallest scale topographic quadrangle map, and is also known as a topographic or topo map. The Proposed Project, Trench Option, and the Hawthorne Option are located within the Inglewood and Torrance 7.5-minute quadrangles, and both quadrangles were included in the CNDDB records search exercise.
- Visual surveys were conducted in November of 2020, the methods of which included both a windshield (from a vehicle) and pedestrian survey (surveying on foot). Surveys consisted of visual observation and selected photographic documentation of all parks and open space areas within the RSA; photographic documentation of which are provided in Figure 3.7-2 through Figure 3.7-13.
- An aerial photograph review was conducted in May of 2020 using web-based aerial photographs of parks and other public open spaces within a quarter mile of either side of the proposed alignments and stations. This work also included using Google Earth (2020) to compare past (starting in 1994) and current biological conditions. This effort also included web-based research and the review of reports and local planning documents relevant to the RSA (such as watershed plans and city and county general plans).

The thresholds of significance related to biological resources in Appendix G of the CEQA Guidelines, discussed below, were used as the basis to determine if the Proposed Project would result in direct or indirect impacts to biological resources. These thresholds, described in Section 3.7-2.2, include the following issue areas: special status species, riparian habitat, and other sensitive natural communities, state and federally protected wetlands, wildlife movement corridors, and local policies, ordinances, and Habitat Conservation Plan (HCPs) that serve to protect biological resources.

3.7-2.1 Resource Study Area

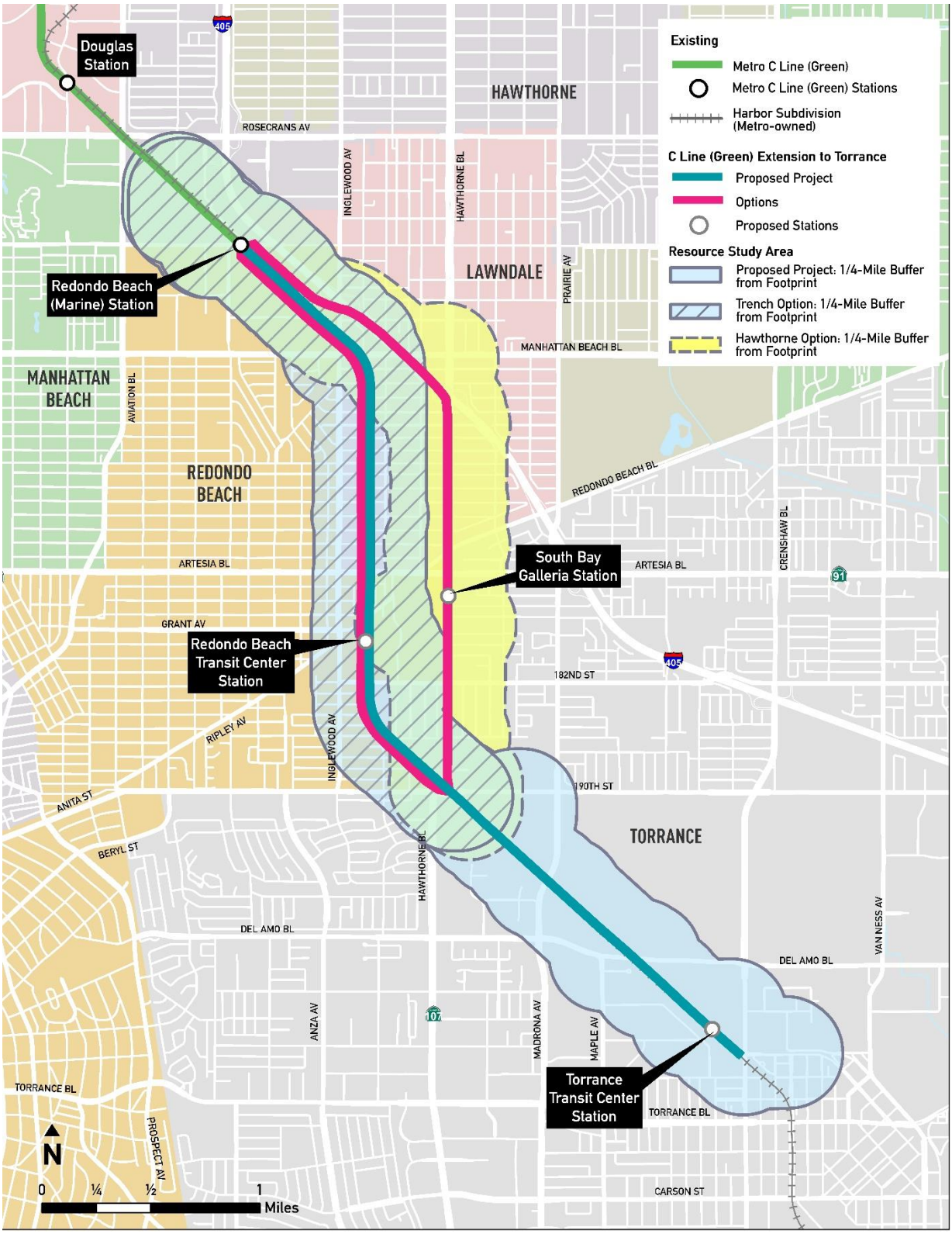
The RSA for biological resources includes the Proposed Project, Trench Option, and Hawthorne Option footprints, as well as a quarter-mile buffer around the footprints to evaluate and assess nearby biological resources in a larger context, as shown in Figure 3.7-1.

The Proposed Project footprint is defined as the area necessary to construct, operate, and maintain the Proposed Project. The Proposed Project footprint is approximately 91 acres, which includes all areas that may be potentially disturbed during construction.

Within the Trench Option segment (from Redondo Beach (Marine) Station to 190th Street), the footprint is approximately 60 acres (compared to approximately 59 acres for the Proposed Project within the segment).

Within the Hawthorne Option segment (from Redondo Beach (Marine) Station to 190th Street), the footprint is approximately 62 acres (compared to approximately 59 acres for the Proposed Project within the segment).

Figure 3.7-1. Biological Resources Resource Study Area



Source: STV, 2022; AECOM, 2022

3.7-2.2 Significance Thresholds

Based upon the thresholds of significance contained in Appendix G of the CEQA Guidelines, implementation of the Proposed Project would result in a significant impact related to biological resources if it would:

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 CDFW or USFWS
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 CDFW or USFWS
c. Have a substantial adverse effect on state or federally protected wetlands (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 HCP, Natural Community Conservation Plan (NCCP), or other approved local, regional, or state HCP

3.7-2.3 Project Features

As described in Chapter 2, Project Description, a number of features have been incorporated into the project to ensure compliance with the laws, guidelines, or best practices of federal, state, local, and regional agencies. There are no specific project features for biological resources.

3.7-3 AFFECTED ENVIRONMENT / EXISTING CONDITIONS

This section describes the affected environment/existing conditions related to biological resources within the RSAs (Figure 3.7-1). In addition, biological resources located outside the RSA but within the adjacent cities of Redondo Beach and Lawndale are also discussed if they are regionally significant, otherwise noteworthy resources, or have some potential for indirect impacts from being located within the same local watershed. Areas discussed that extend beyond the RSA are located within the City of Torrance, and represent a regional network of water quality basins discussed below.

3.7-3.1 General Characterization of the RSA

Historically, development and rapid urbanization has been occurring in the surrounding region, and associated RSA, since the late 1800s. Today, the region is an established metropolitan setting consisting of a mostly highly urbanized landscape including both industrial and residential communities. Continued development relating to infrastructure improvement, housing construction, and other community needs is regularly, and frequently, occurring. In general, natural landscapes and areas of native habitat within the RSA are extremely fragmented and potential biological resources are limited to a few parks and vacant parcels. Such parks, listed in order of location from north to south, include William Green Park (Lawndale), El Nido Park (Redondo Beach), Franklin Park (Redondo Beach), Pequeno Park (Torrance), Columbia Park (Torrance), and Delthorne Park (Torrance). These parks are primarily landscaped areas consisting or ornamental vegetation, and wildlife species utilizing the parks are mostly those adapted to living in an urban environment. Native plant species are mainly limited to those few, such as California sycamore (*Platanus racemosa*), preserved within public parks. Vegetation within the parks and vacant

parcels may provide potential roosting and/or nesting sites for numerous avian species as well as food and cover for other human-tolerant wildlife adapted to surviving in an urban environment.

Within the RSA of the Proposed Project and Trench Option, the main biological resources (in the form of ornamental trees) are located within a north-south oriented section of the Metro ROW parallel to Condon Avenue, between 159th Street (in the north) to Grant Avenue (to the south) in the Cities of Redondo Beach and Lawndale. For the Hawthorne Option, the center median of Hawthorne Boulevard, between 162nd Street in the north to West 182nd Street in the south (in the Cities of Torrance, Redondo Beach, and Lawndale) contains the main biological resource in the form of ornamental trees. A complete inventory of native and non-native trees within the Metro ROW is provided in Table 3.7-3. Selected photographic documentation of surveys of all parks and open space areas within the RSA are provided in Figure 3.7-2 through Figure 3.7-13.

Table 3.7-3. Trees and Shrubs Located in Metro Right-of-Way with Potential for Trimming or Removal

Tree/Shrub Species [1]	East Side	West Side	Total within Metro Right-of-Way [2]
Major Trees and Shrubs along right-of-way			
Pinus halepensis (Aleppo pine- most large trees; some non-mature)	10 (7 M/3 IM) [3]	64 (54 M/10 IM) [3]	74 (61 M/13 IM) [3]
Myoporum laetum (Ngaio tree- small trees; two small shrubs)	29 (29 M/0 IM) [3]	2 (0 M/2 IM) [3]	31 (29M /2 IM) [3]
Washingtonia robusta (Mexican fan palm- four large trees, two small shrubs)	4 (2 M/2 IM) [3]	2 (2 M/0 IM) [3]	6 (4 M/2 IM) [3]
Schinus terebinthifolius (Brazilian Pepper; small tree)	3	0	3
Fraxinus sp. (Ornamental ash; small tree)	0	1	1
Morus sp. (Mulberry; small tree)	1	0	1
Nerium oleander (Oleander; shrub)	0	48	48
Ornamental Plantings along right-of-way			
Cupressus sempervirens (Italian cypress; ornamental shrub)	0	2	2
Rosmarinus officinalis (Rosemary; ornamental shrub)	0	2	2
Escallonia x exoniensis (Pink Princess Escallonia; ornamental shrub)	0	3	3
Lingustrum texanum (Texas privet; ornamental shrub)	0	1	1
Phoenix roebelenii (Pygmy date palm; ornamental shrub)	0	3	3
Bougainvillea sp. (Bougainvillea; ornamental shrub)	1	0	1
Total Count	**48**	**128**	**176**

[1] All trees and shrubs were non-native species. Various other plants, such as flowering plants and grasses (e.g., pampas grass, [*Cortaderia* sp.]) were not included in this table. The data in the table is focused on woody plants (trees, shrubs) that have potential to be impacted by construction.

[2] Trees and shrubs growing immediately adjacent to the edge of the ROW were not included; only trees and shrubs that would need to be removed or trimmed were included (and counted).

[3] M = Mature tree for a given species; IM = Immature (Non-Mature) tree for a given species. Definition of mature is subjective, but basically refers to relative size of trunks and canopy coverage. The N, IM data were only provided for the three dominant species within the ROW. Other species were either immature trees or shrubs.

Figure 3.7-2. View of freight bridge over 190th Street located west of Hawthorne Blvd in City of Torrance

Source: AECOM, 2020

Figure 3.7-3. View of individual non-native trees within Metro ROW from 182nd Street facing towards El Nido Park (southeast) in Redondo Beach

Source: AECOM, 2020

Figure 3.7-4. Southern tarplant in bloom (Centromadia parryi ssp. australis; List 1B.1 sensitive plant)

Source: AECOM, 2020

Figure 3.7-5. A southern tarplant individual within the established Open Space Preserve (Torrance TC); facing south

Source: AECOM, 2020

Figure 3.7-6. View Across Torrance TC Towards Proposed Station at Torrance TC; facing southwest

Source: AECOM, 2020

Figure 3.7-7. Metro ROW with current freight track, south of 182nd Street; facing south

Source: AECOM, 2020

Figure 3.7-8. View of Metro ROW with current freight track, looking north from 182nd Street

Source: AECOM, 2020

Figure 3.7-9. Surrounding residential neighborhood near Metro ROW at West 162nd Street and Condon Avenue; facing south

Source: AECOM, 2020

Figure 3.7-10. Existing conditions at the intersection of Hawthorne Boulevard and Artesia Boulevard; facing west

Source: AECOM, 2020

Figure 3.7-11. Existing freight bridge in Metro ROW, crossing over Artesia Boulevard; facing west

Source: AECOM, 2020

Figure 3.7-12. Ornamental trees located within the Metro ROW; facing northeast

Source: AECOM, 2020

Figure 3.7-13. Proposed laydown area adjacent to the Open Space Preserve (Torrance TC); facing north

Source: AECOM, 2020

3.7-3.2 Potential Biological Resources Within the RSA

Potential Biological Resources Near Rail Alignments

There are no SEAs or officially delineated wetland and riparian areas located within or adjacent to the RSAs (Figure 3.7-1 and Figure 3.7-14). Potential wetland features were observed within the Pioneer Basin, as discussed below, but no official delineation has been conducted at that location.

The following features are located within the RSA and have the potential to contain biological resources:

- Pioneer Flood Control Basin (Pioneer Basin) – The Pioneer Basin is located on the north side of Prairie Avenue and adjacent to the western edge of the Proposed Project in the City of Torrance (City of Torrance, 2009). The Pioneer Basin is the only basin located within the RSA. The Pioneer Basin is owned by the City of Torrance, zoned as Public/Quasi-Public/Open Space, is identified on National Wetland Inventory (NWI) maps (USFWS, 2020) as a palustrine wetland and has a pumping station associated with the basin. The Pioneer Basin supports ruderal (weedy) vegetation, ornamental vegetation, as well as wetland species such as bulrush (*Scirpus* sp.) and dock (*Rumex* sp.). This basin is one of four basins in the City of Torrance that has an on-site pumping station, which is used to manage water levels during the wet season.
- Industrial Open Space Areas in Torrance – Open space areas zoned for heavy industrial land uses, but not currently actively used, are located on the south side of Prairie Avenue, across and adjacent to the western edge of the Proposed Project. These areas contain some native vegetation communities, though are predominately non-native vegetation, and may support urban-tolerant wildlife. This property, owned by ExxonMobil, supports vegetation dominated by ruderal (weedy) vegetation and non-native grassland. Typical species observed during the various site visits included garland chrysanthemum (*Chrysanthemum coranarium*), filaree (*Erodium* sp.), mallow (*Malva* sp.), and several non-native grasses (e.g., *Bromus* spp., *Avena* sp.). Overall, the site shows signs of disturbance, and a portion of the site is grazed by horses (an equestrian area is located adjacent the open space area).

Potential Biological Resources Near Light Rail Stations and Surface Parking Lot

There are no SEAs or officially-delineated wetland and riparian areas located within or adjacent to the proposed stations. The Torrance TC site, which is adjacent to the Proposed Project's surface parking lot, contains features with the potential to contain biological resources, as described below. This site, currently owned by the City of Torrance, was once the property of Pittsburg Paint and Glass and has undergone on-site remediation of contaminated soils. Previous CEQA-related documentation (i.e., Initial Study and Negative Declaration (California Department of Toxic Substances Control [DTSC], 2008; City of Torrance, 2015d)) completed for Pittsburg Paint and Glass reported the presence of non-native grassland and coastal scrub habitat. A special-status plant species, the southern tarplant (List 1B.1 sensitive plant), was observed across the southern portion of the site during 2008 (DTSC, 2008). A subsequent site visit in May 2010 also found several populations of the southern tarplant, as well as several seasonally ponded areas that provide habitat for plant species often found associated with wetlands. Additional studies of this site have been conducted by the City of Torrance (City of Torrance, 2015e; 2020g; Helix, 2014; Green, 2015, 2019; Friends of Madrona Marsh, 2016); the results of which included additional southern tarplant detections, as well as areas of suitable habitat including several seasonally ponded areas. These previously detected wetland features located at the Torrance TC site have since been disturbed by other projects. In order to offset impacts resulting from the Torrance TC, the City of Torrance established the Southern Tarplant Mitigation Plan and subsequent two-acre Open Space Preserve, located in the northwestern portion of the site. The Open Space Preserve was established, and is currently managed, to ensure long-term survival of the existing southern tarplant population. The rest of the site was graded by the City of Torrance for the Torrance TC project (Cooper, 2014).

3.7-3.3 Potential Biological Resources Adjacent to the RSA

This section discusses biological resources located adjacent to the RSAs. Within the City of Torrance, features located beyond but within proximity to the RSA are discussed below if they contain regionally

significant, otherwise noteworthy biological resources, or have potential for indirect impacts from being located within the same local watershed. This section describes such features, which are also shown in Figure 3.7-14.

City of Torrance

The majority of undeveloped, open space areas adjacent to the RSA is located within the City of Torrance and adjacent to or within proximity to the RSA. According to the Torrance General Plan (City of Torrance, 2010a), "sumps" is a local term for shallow depressions that are used for flood control and retention basins. The sumps also contain adjacent wetland, riparian and upland habitats, which may provide foraging, shelter, and breeding areas for wildlife species, including migratory birds (City of Torrance, 2015b; Friends of Madrona Marsh, 2016; City of Torrance 2020d, City of Torrance 2020f; CWE, 2013). The City of Torrance has several sumps (also called storm water retention basins) and detention basins, both of which serve the primary purpose of controlling stormwater runoff and preventing localized ponding and flooding. Retention basins (or sumps) hold water after a storm but have no outlet, while detention basins have an outlet and retain the water for a period of time. These features are also required to prevent storm water with bacteria from being discharged to the Santa Monica Bay. The City of Torrance is in the process of improving several of these basins in order to provide natural treatment systems, improve groundwater recharge, and provide the community with more opportunities for recreational uses. These features are shown in Figure 3.7-14. Pioneer Basin, located adjacent to the Metro ROW in the City of Torrance, is discussed in Section 3.7-3.2. Additional sump and wetland habitat near the RSA include:

> Entradero Sump and Drainage Ditch (located to the west of Hawthorne Boulevard, between 190th Street to the north and Del Amo Boulevard to the south): Identified on NWI maps as being an intermittent streambed and palustrine (also called depressional, with no drainage outflow) wetland feature. The wetland feature is within a park that is used for recreational uses.

> Amie Sump (located east of Hawthorne Boulevard, between Del Amo Boulevard to the north and Torrance Boulevard to the south): Identified on NWI maps as being a palustrine wetland feature. A pumping station exists at this facility, and the City of Torrance is planning future habitat improvements to this facility (City of Torrance, 2010a).

> Henrietta Sump (located south of Del Amo Boulevard, east of Anza Avenue, and north of Torrance Boulevard): Identified as a palustrine wetland feature. The City of Torrance is planning future habitat improvements to this facility (City of Torrance, 2010a).

> Bishop Montgomery Sump, Ocean Ave Sump, and Del Amo Basin (located generally south of Entradero Sump and west of Madrona Marsh): Identified on NWI maps as being palustrine wetlands. In general, these sumps and basins do not support high quality wetland habitat.

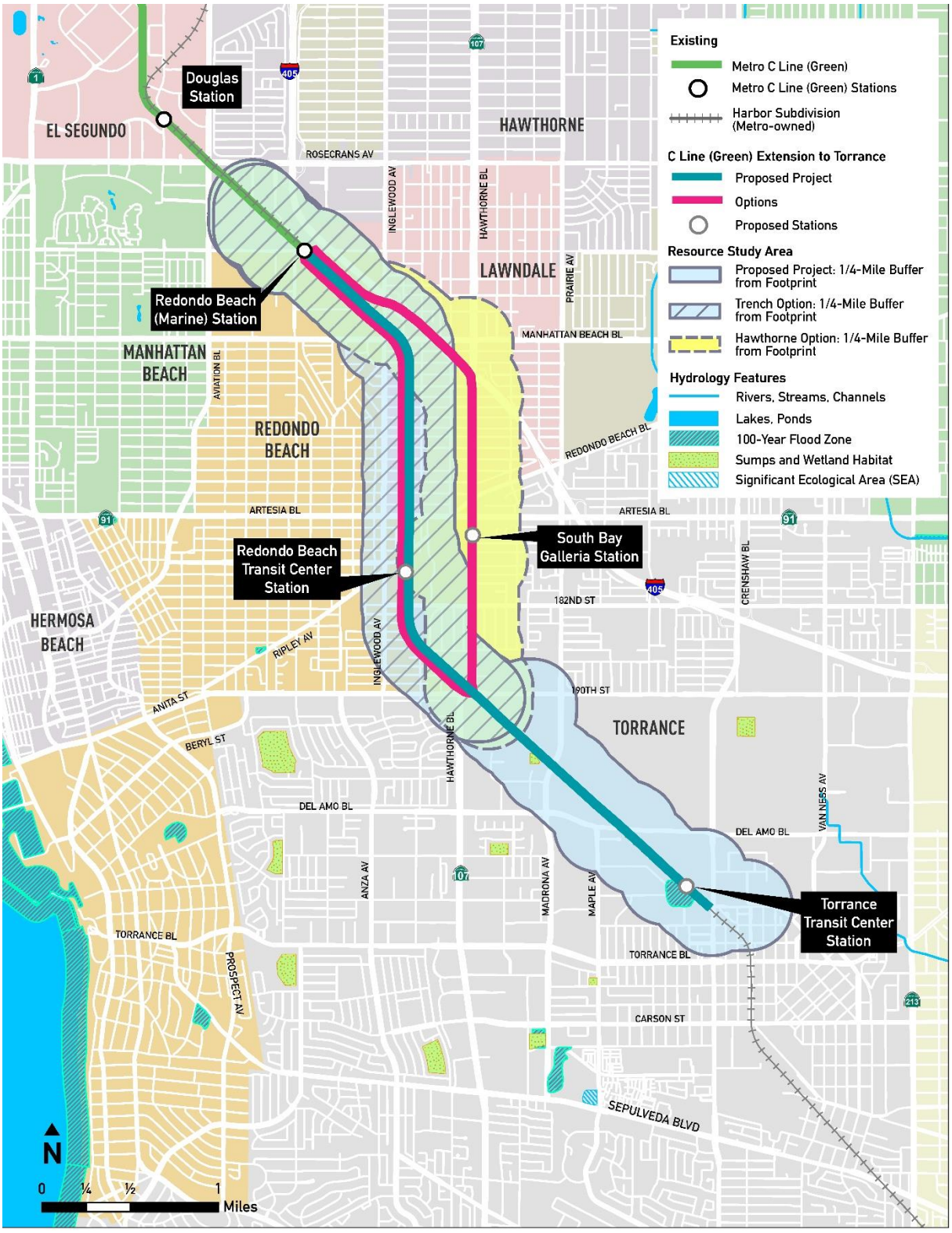
> El Dorado Basin (located west of Maple Avenue between Torrance Boulevard to the north and Carson Street to the south): This basin is not mapped as a wetland on NWI maps. A pumping station exists at this facility.

> Mobil Basin (located east of Crenshaw Boulevard, between 190th Street to the north and Del Amo Boulevard to the south): Identified on NWI maps as a palustrine wetland; although, it does not support high quality wetland habitat.

> Madrona Marsh (also known as SEA No. 36; bordered by Madrona Avenue to the west, Sepulveda Boulevard to the south, Maple Avenue to the east, and Carson Street to the north): A palustrine wetland area that is a regionally significant resource (and SEA) containing seasonal marshes and

vernal pools, which provide habitat for numerous native plants and wildlife species. The Federally listed Riverside Fairy Shrimp (*Streptocephanlus woottonii)* and the San Diego Fairy Shrimp (*Branchinecta sandiegonensis*) are potentially present at Madrona Marsh (City of Torrance, 2010a). According to the manager at Madrona Marsh Nature Reserve, only females of the two endangered fairy shrimp have been found at Madrona Marsh (Tracy Drake, personal communication 2010). These species, however, were not included in the results of the CNDDB search for the Torrance quadrangle (CDFW, 2020).

Figure 3.7-14. City of Torrance's Sumps and Wetland Habitats



Source: STV, 2022; AECOM, 2022

3.7-3.4 Sensitive Biological Resources Within the RSA

Special-Status Plant and Wildlife Species

Based on CNDDB results and review of applicable historic literature, a complete list of special-status plant and wildlife species that have potential to occur within the two 7.5-minute quadrangles associated with the RSA is presented in Table 3.7-4. In total, 10 special-status plant species and 10 special-status wildlife species were determined to have potential to occur. Of the 20 special-status plant and wildlife species included in Table 3.7-4, 18 were determined to have a low potential to occur due to a lack of suitable habitat present within the RSA and the largely urbanized and developed nature of the landscape resulting in unfavorable conditions for foraging and breeding. One plant species was determined to have a high potential to occur, and one additional wildlife species was determined to have a moderate potential to occur, each of which is further discussed in the subsequent paragraphs below.

One special-status plant species, southern tarplant, was determined to have a high potential to occur. The southern tarplant is the only species that has been previously documented within the RSA in the City of Torrance (DTSC, 2008), as discussed in Section 3.7-3.2, and is, therefore, the only species with a high potential of occurrence. Suitable habitat for this species is present within the RSA, immediately adjacent to the Proposed Project's parking lot located at the Torrance TC.

One bat species, Yuma myotis (*Myotis yumanensis*), was identified to have a moderate potential to occur based on the presence of suitable roosting habitat in the form of anthropogenic features, including bridges, and the close proximity of several open space recreational areas to one such potential roost. Neither of the other two bat species included in Table 3.7-4 are known to commonly roost under bridges or other man-made resources (H.T. Harvey & Associates, 2004) and instead rely heavily on the presence of natural rock and cliff features.

In addition to the special-status species provided in Table 3.7-4, numerous avian species protected under both the MBTA and CFGC have potential to occur within the RSA. Portions of the RSA provide both suitable breeding and foraging habitat in the form of trees, vegetation, and man-made structures.

Table 3.7-4. Special-Status Plant and Wildlife Species Potential for Occurrence within the RSA

Scientific Name	Common Name	Status	Potential for Occurrence (High/Moderate/Low)/ Comments
Invertebrates			
Euphilotes battoides allyni	El Segundo blue butterfly	FE[1]	Low[5] – No suitable habitat present.
Reptiles			
Phrynosoma coronatum blainvillii	Coast (San Diego) horned lizard	SSC[2]	Low – No suitable habitat present.
Birds			
Agelaius tricolor	Tricolored blackbird	ST	Low – No suitable habitat present.
Athene cunicularia	Burrowing owl	SSC	Low – Potential wintering habitat would be open space areas within the RSA, but none of the remaining open space area(s) potentially impacted are considered moderate or high quality habitat for the species due to a lack of burrows, lack of foraging opportunities, heavy disturbance, and fragmented condition. The existing conditions present, indicate no potential for breeding activity as a result of the factors listed above.
Polioptila californica	Coastal California gnatcatcher	FT / SSC	Low – No suitable habitat present.
Sternula antillarum browni	California least tern (foraging)	FE / SE	Low – No suitable habitat present.
Mammals			
Eumops perotis californicus	Western mastiff bat	SSC WBWG[3]: H	Low – Some suitable habitat present. This species does not commonly roost under bridges but has been known to occasionally roost on buildings. More commonly, roosting habitat consists of cliff faces or rocky crevices.
Nyctinomops femorosaccus	Pocketed free-tailed bat	SSC WBWG: M	Low – No suitable habitat present. This species does not commonly roost under bridges and instead roosts on cliff faces or rocky crevices.
Myotis yumanensis	Yuma myotis	WBWG: LM	Moderate – Commonly roosts under bridges and overhangs.
Perognathus longimembris pacificus	Pacific pocket mouse	FE / SSC	Low – No suitable habitat present.
Plants			
Astragalus tener var. titi	Coastal dunes milk-vetch	FE / SE 1B.1[4]	Low – No suitable habitat present.

Scientific Name	Common Name	Status	Potential for Occurrence (High/Moderate/Low)/ Comments
Atriplex pacifica	South coast saltscale	1B.2	Low – No suitable habitat present. This species has not been observed at the Torrance TC site in repeated site visits.
Centromadia parryi ssp. Australis	Southern tarplant	1B.1	High -This species is known to occur at the Torrance TC Site (Adjacent to the Metro ROW and surface parking lot).
Chaenactis glabriuscula var. orcuttiana	Orcutt's pincushion	1B.1	Low – No suitable habitat present.
Lasthenia glabrata ssp. Coulteri	Coulter's goldfields	1B.1	Low – No suitable habitat present.
Navarretia fossalis	Spreading navarretia	FT 1B.1	Low – No suitable habitat present.
Navarretia prostrata	Prostrate vernal pool navarretia	1B.1	Low – No suitable habitat present.
Pentachaeta lyonii	Lyon's pentachaeta	FE / SE 1B.1	Low – No suitable habitat present.
Phacelia stellaris	Brand's star phacelia	1B.1	Low – No suitable habitat present.
Symphyotrichum defoliatum	San Bernardino aster	1B.2	Low – No suitable habitat present.

Sources: AECOM, 2020; CDFW, 2020; CNPS, 2020.

[1]Federal Status Designations: FE – Federally Endangered; FT – Federally Threatened; FC – Federal Candidate Species for Listing

[2]State Status Designations: SC – State Candidate Species for Listing; SSC – California Department of Fish and Wildlife Species of Special Concern; SE – State Endangered; ST – State Threatened

[3]Other Special Status Designations: WBWG – Western Bat Working Group (H = High Conservation Priority; M = Medium Conservation Priority; LM = Low-Medium Conservation Priority)

[4]California Native Plant Society Codes: 1B – Rare or Endangered in California and elsewhere; 1B.1 – Seriously endangered in California (0ver 80% of occurrences threatened/high degree and immediacy of threat); 1B.2 – Fairly endangered in California (20 – 80% occurrences threatened).

[5]High = Suitable habitat of high quality is present in the RSA for this species and/or the species has been directly observed in the RSA; Moderate = Suitable habitat is present within the RSA for this species but is limited in capacity and/or of lesser quality; Low = Suitable habitat is of very poor quality or not present within the RSA for this species.

Riparian Habitat and Other Sensitive Natural Communities

Riparian habitat associated with riverine and depressional wetland resources are limited to the sumps located within the City of Torrance as described in Section 3.7-3.3. As discussed in Section 3.7-3.3, these sumps are created habitats which mainly exist for flood control purposes. No other naturally occurring or created riparian or sensitive natural communities exist within the RSA.

State and Federally Protected Wetlands

Riverine and depressional wetland resources are limited to the sumps located outside the RSA but within the City of Torrance as described in Section 3.7-3.3. Although several sumps are identified in NWI maps as palustrine wetlands, a delineation of the sumps' jurisdictional features, if any, has not been performed. The Pioneer Basin discussed in Section 3.7-3.3 is identified on NWI maps (USFWS, 2020) as a palustrine wetland and is located within the RSA as well. No naturally occurring or other wetlands exist within the RSA.

Wildlife Movement Corridors

Due to its urbanized nature and fragmentation of any remaining open space, no wildlife movement corridors are present within the RSA.

3.7-3.5 Local Policies and Ordinances; Protected and Non-Protected Trees

Site surveys consisted of visual observation and selected photographic documentation of all parks and open space areas within the RSAs. During the surveys, mature trees existing along the Proposed Project , Trench Option, and the Hawthorne Option were observed. During the site surveys, few native tree species were observed that had the potential to be affected, none of which are specifically-protected under local ordinances. Many non-native and ornamental tree species are present within the RSA that could support birds during nesting season and have potential to be affected.

For the Proposed Project and Trench Option, the main biological resources (in the form of ornamental trees) within the RSA are located within a north-south oriented section of the Metro ROW parallel to Condon Avenue, between West 159th Street to the north and Grant Avenue to the south (Cities of Redondo Beach and Lawndale, respectively). This area contains many non-native, ornamental tree species adjacent to the Metro ROW (and adjacent to nearby residences).

For the Hawthorne Option, the median of the north-south section of Hawthorne Boulevard, between 162nd Street to the north and West 182nd Street to the south (Cities of Torrance, Redondo Beach, and Lawndale, respectively) contains landscape trees and shrubs.

The City of Torrance has published a Street Tree Master Plan (City of Torrance, 2015f), which was created to enhance and preserve the City's trees by having a list of recommended trees that best fit each area of the city. Also, the city has a map called "Special Designated Areas for Tree Conservation and Protection" (eight locations). The identified eight designated areas are not located within the RSA but are instead located south of Proposed Project and Trench and Hawthorne Options. Therefore, no City ordinances require that the Proposed Project or Trench and Hawthorne Options replace impacted trees.

In October 2022, the Metro Board adopted a Metro Tree Policy which outlines Metro's commitment to protecting trees, when possible, or replacing trees removed as a result of Metro construction and maintenance. For non-heritage trees, the replacement ratio defined was two trees for every tree removed. This policy also prioritizes planting strategies that maximizes the use of native species.

3.7-3.6 Habitat Conservation Plans and Natural Community Conservation Plans

The RSA is not located within any areas designated within HCPs or NCCPs.

3.7-4 ENVIRONMENTAL IMPACTS

3.7-4.1 Would the Proposed Project 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 Wildlife or U.S. Fish and Wildlife Service?

3.7-4.1.1 Construction Impacts

Less than Significant Impact with Mitigation. Although the RSA is largely urbanized, construction of the Proposed Project could adversely impact special-status plant and wildlife species. The southern tarplant was previously detected during historic survey efforts at the Torrance TC site, which is adjacent to the Proposed Project's surface parking lot, and has potential to occur within areas of suitable habitat in the

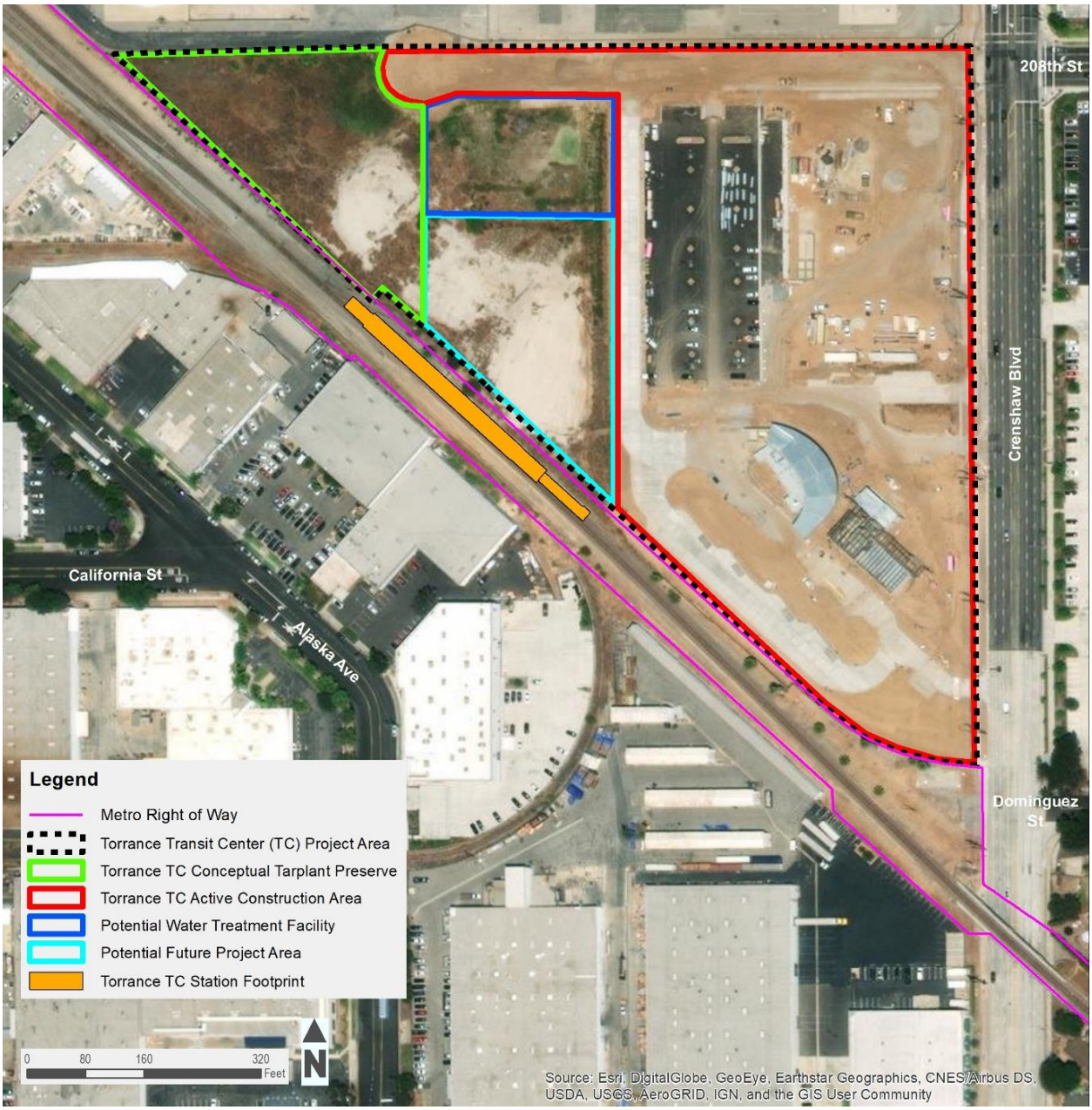
RSA located immediately adjacent to the established Open Space Preserve (Helix, 2014), shown in Figure 3.7-15. Potential direct impacts to the southern tarplant may include the loss of individual plants as a result of removal or crushing due to construction related activities (i.e., equipment or employees inadvertently working in an unauthorized area). Potential indirect impacts may include soil and contaminant runoff in the wet season, dust in the dry season during excavation, and the introduction of non-native/invasive species that have potential to degrade habitat and outcompete southern tarplant for critical resources. Construction of the Proposed Project would not disturb the Open Space Preserve that has been established adjacent to the Torrance TC, as this area has been designated as a protected space by the City of Torrance. Impacts to southern tarplant would be less than significant through implementation of mitigation measures (described in more detail in Section 3.7-5). MM-BIO-1, General Protection Measures to Avoid and Minimize Impacts on Sensitive Biological Resources, and MM-BIO-4, Pre-Construction Rare Plant Survey, would require the delineation of work limits and buffers, a pre-construction rare plant survey prior to ground disturbance, and on-site monitoring by a qualified botanist.

Direct impacts to special-status bird species are not likely to occur as moderate to high quality suitable habitat conducive to breeding and/or foraging activity specific to the species identified in was not identified within the RSA. While direct impacts to special-status bird species are unlikely to occur, potential direct impacts to breeding birds protected under the MBTA and CFGC Sections 3500 through 3705 such as the destruction of occupied nests during the breeding season (and thus loss of young) and loss of suitable nesting substrate may occur if construction related to the demolition of the bridges at Grant Avenue and Del Amo Boulevard or vegetation and tree removal occurs within the breeding season (generally defined as February 1 – September 15). Potential indirect impacts to breeding birds during the breeding season may include construction-related noise and light disturbance, the degradation of habitat related to dust settlement, nest abandonment, and an increase in opportunistic predators. Impacts to breeding birds would be less than significant through implementation of MM-BIO-2, Nesting Bird Season Restrictions and Pre-Construction Surveys which would require a pre-construction nesting bird survey during the breeding season, work/construction buffers around active nests, and the monitoring of nesting activity by qualified biologists.

Demolition of the existing freight bridge at Grant Avenue and roadway bridge at Del Amo Boulevard may also impact special-status bat species, as both structures have potential to support both day and night roosting activity for bridge roosting species; specifically, Yuma myotis. Potential direct impacts resulting from the demolition of the bridges may include a loss of roosting habitat and/or direct mortalities. Potential indirect impacts may include construction-related noise, vibration, and light disturbance; all of which could lead to colony/roost abandonment. In addition, human presence and subsequent construction activities could also alter the approach to a roost and force individuals to change their direction or pattern of egress and ingress to and from a roost. Impacts to special-status bat species would be less than significant through implementation of mitigation measure MM-BIO-3, Roosting Bat Restrictions and Survey Requirements which would require a bat roost habitat assessment and subsequent consultation with CDFW and preparation of a mitigation plan if presence is detected.

Through incorporation of MM-BIO-1, MM-BIO-2, MM-BIO-3, and MM-BIO-4, impacts to special-status plants, wildlife, and other birds protected under the MBTA and CFGC, associated with the construction of the Proposed Project would be **less than significant**.

Figure 3.7-15. Torrance TC Site



Source: STV, 2022; AECOM, 2022

TRENCH OPTION

Less than Significant Impact with Mitigation. The Trench Option is similar to the Proposed Project, following the same alignment, but with a lower profile in segments where the light rail would run below street level in an open air trench between Inglewood Ave and 170th Street, as well as under 182nd Street. Potential impacts associated with the Trench Option are similar to the Proposed Project due to their location and similarity in construction methods. With the exception of a few select areas along the alignment, the construction of the Trench Option would require approximately the same land area within the Metro ROW to construct and therefore would result in equivalent potential impacts to

special-status plant and wildlife species. The difference in excavation, structural reinforcement, and duration of construction would require a longer duration of mitigation, but otherwise would be similar in the context of protected habitat and species. The duration of construction of the Trench Option would be approximately two years longer than that of the Proposed Project, but the same mitigation measures taken to mitigate impacts would still be applicable. Therefore, through implementation of MM-BIO-1, MM-BIO-2, MM-BIO-3, and MM-BIO-4, impacts associated with construction of the Trench Option would be **less than significant**.

HAWTHORNE OPTION

Less than Significant Impact with Mitigation. Construction of the Hawthorne Option would take approximately the same amount of time as the Proposed Project. The footprint within the Hawthorne Option segment is a few acres larger than that of the Proposed Project, but it would still result in equivalent potential impacts to special-status plant and wildlife species. In contrast to both the Proposed Project and Trench Option, the Hawthorne Option does not intersect with open space and park areas containing trees or vegetation but does include areas of ornamental trees, though not special-status, located within the center median and east side of Hawthorne Boulevard. Through implementation of MM-BIO-1, MM-BIO-2, MM-BIO-3, and MM-BIO-4, impacts associated with construction of the Hawthorne Option would be **less than significant**.

3.7-4.1.2 Operational Impacts

Less than Significant Impact with Mitigation. Maintenance activities along the Metro ROW may potentially result in both temporary direct and indirect impacts to bird species protected under the MBTA and CFGC if trees and vegetation that have potential to support nesting birds during the breeding season were removed or disturbed during the breeding season. Potential direct impacts may subsequently cause nest abandonment (and thus loss of young), nest failure, or direct mortality of individuals. However, Metro routine maintenance during operation does not typically disturb vegetation or trees that supports nesting birds.

Potential indirect impacts to southern tarplant individuals present within the Open Space Preserve adjacent to the Torrance TC may occur as a result of oil and fluid run-off from the Proposed Project's surface parking lot degrading habitat and soil quality. However, although the Proposed Project parking lot would be impervious, it would not contribute to stormwater runoff, since the site would be designed with best management practices to retain stormwater on-site (see Section 3.10, Hydrology and Water Quality). This factor, and with implementation of MM-BIO-1, would result in **less than significant impacts** to southern tarplant.

TRENCH OPTION

Less than Significant Impact with Mitigation. Within the Trench Option segment, the potential impacts would be similar to the Proposed Project. Metro routine maintenance during operation does not typically disturb vegetation or trees that supports nesting birds

Like the Proposed Project, potential indirect impacts to southern tarplant individuals present within the Open Space Preserve adjacent to the Torrance TC may occur as a result of oil and fluid run-off from the Proposed Project surface parking lot degrading habitat and soil quality. However, the Proposed Project parking lot would be impervious, it would not contribute to stormwater runoff, since the site would be designed with best management practices to retain stormwater on-site (see Section 3.10, Hydrology and Water Quality). This factor, and with implementation of MM–BIO-1, would result in **less than significant impacts** to southern tarplant.

HAWTHORNE OPTION

Less than Significant Impact. Within the Hawthorne Option segment, the potential impacts would be similar to the Proposed Project. Metro routine maintenance during operation does not typically disturb vegetation or trees that supports nesting birds.

Like the Proposed Project, potential indirect impacts to southern tarplant individuals present within the Open Space Preserve adjacent to the Torrance TC may occur as a result of oil and fluid run-off from the Proposed Project surface parking lot degrading habitat and soil quality. However, the Proposed Project parking lot would be impervious. This factor, and with implementation of MM–BIO-1, would result in **less than significant impacts** to southern tarplant.

3.7-4.2 Would the Proposed Project 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 Wildlife or U.S. Fish and Wildlife Service?

3.7-4.2.1 Construction Impacts

No Impact. Construction of the Proposed Project is not expected to disturb any riparian habitat or sensitive natural community, as none occur within the Proposed Project footprint. The Pioneer Basin and associated wetland habitat is located within the RSA but would not be impacted by construction activities as it is situated on a bluff above (in elevation) the Metro ROW. Therefore, the Proposed Project would result in **no impact**.

TRENCH OPTION

No Impact. Construction of the Trench Option is not expected to disturb any riparian habitat or sensitive natural community, as none occur within the Trench Option footprint. The Pioneer Basin and associated wetland habitat is located within the RSA but would not be impacted by construction activities as it is situated on a bluff above (in elevation) the Metro ROW. Therefore, the Trench Option would result in **no impact.**

HAWTHORNE OPTION

No Impact. Construction of the Hawthorne Option is not expected to disturb any riparian habitat or sensitive natural community, as none occur within the Hawthorne Option footprint. The Pioneer Basin and associated wetland habitat is located within the RSA but would not be impacted by construction activities as it is situated on a bluff above (in elevation) the Hawthorne Option footprint. Therefore, the Hawthorne Option would result in **no impact.**

3.7-4.2.2 Operational Impacts

No Impact. Operational activities associated with the Proposed Project are not expected to impact any riparian habitat directly or indirectly or sensitive vegetation communities within or adjacent to the Proposed Project alignment. This is due to the absence of riparian and other sensitive vegetation communities within the Proposed Project footprint. Therefore, the Proposed Project would result in **no impact.**

TRENCH OPTION

No Impact. Operation of the Trench Option is not expected to directly or indirectly impact any riparian habitat or sensitive vegetation communities within or adjacent to the Trench Option alignment. This is due to the absence of riparian and other sensitive vegetation communities within the Trench Option footprint. Therefore, the Trench Option would result in **no impact.**

HAWTHORNE OPTION

No Impact. Operation of the Hawthorne Option is not expected to impact any riparian habitat or sensitive vegetation communities directly or indirectly within or adjacent to the Hawthorne Option alignment. This is due to the absence of riparian and other sensitive vegetation communities within the Hawthorne Option footprint. Therefore, the Hawthorne Option would result in **no impact.**

3.7-4.3 Would the Proposed Project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

3.7-4.3.1 Construction Impacts

No Impact. Construction of the Proposed Project is not expected to adversely impact state or federally protected wetlands through direct removal, filling, hydrological interruption, or other means. Wetland features previously identified at the Torrance TC site have since been disturbed by other projects, and mitigation by another project consisted of establishment of a two-acre Open Space Preserve that would support the on-site population of southern tarplant (see discussion in Section 3.7-3.3). The Pioneer Basin is located within the RSA but would not be impacted by construction activities as it is situated on a bluff well above (in elevation) the Metro ROW. In addition, no impacts are anticipated to the City of Torrance storm water retention basins (i.e., sumps) as these areas are located adjacent to, and outside of, the RSA. Therefore, construction of the Proposed Project would result in **no impact**.

TRENCH OPTION

No Impact. Similar to the Proposed Project, construction of the Trench Option is not expected to adversely impact any state or federally protected wetlands, as none occur within the Trench Option footprint. Therefore, construction of the Trench Option would result in **no impact.**

HAWTHORNE OPTION

No Impact. Similar to the Proposed Project, construction of the Hawthorne Option is not expected to adversely impact any state or federally protected wetlands, as none occur within the Hawthorne Option footprint. Therefore, construction of the Hawthorne Option would result in **no impact.**

3.7-4.3.2 Operational Impacts

No Impact. Similar to potential construction impacts to state or federally protected wetlands discussed above, operational activities associated with the Proposed Project are not expected to adversely impact any state or federally protected wetlands, as none occur within the Proposed Project footprint. Therefore, operation of the Proposed Project would result in **no impact**.

TRENCH OPTION

No Impact. Similar to potential construction impacts to state or federally protected wetlands discussed above, operational activities associated with the Trench Option are not expected to adversely impact any state or federally protected wetlands, as none are present within the Trench Option footprint. Therefore, operation of the Trench Option would result in **no impact.**

HAWTHORNE OPTION

No Impact. Similar to potential construction impacts to state or federally protected wetlands discussed above, operational activities associated with the Hawthorne Option are not expected to adversely

impact any state or federally protected wetlands, as none present within the Hawthorne Option footprint. Therefore, operation of the Hawthorne Option would result in **no impact.**

3.7-4.4 Would the Proposed Project 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?

3.7-4.4.1 Construction Impacts

No Impact. No wildlife movement corridors or nursery sites are found within the RSA of the Proposed Project. Therefore, construction of the Proposed Project would result in **no impact** to the movement of native resident or migratory fish or wildlife species, established native resident and/or migratory wildlife corridors, or wildlife nursery sites.

TRENCH OPTION

No Impact. No wildlife movement corridors or nursery sites are found within the RSA of the Trench Option. Therefore, construction of the Trench Option would result in **no impact** to the movement of native resident or migratory fish or wildlife species, established native resident and/or migratory wildlife corridors, or wildlife nursery sites.

HAWTHORNE OPTION

No Impact. No wildlife movement corridors or nursery sites are found within the RSA of the Hawthorne Option. Therefore, construction of the Hawthorne Option would result in **no impact** to the movement of native resident or migratory fish or wildlife species, established native resident and/or migratory wildlife corridors, or wildlife nursery sites.

3.7-4.4.2 Operational Impacts

No Impact. No wildlife movement corridors or nursery sites are found within the Proposed Project RSA. Therefore, operation of the Proposed Project would result in **no impact** to the movement of native resident or migratory fish or wildlife species, established native resident and/or migratory wildlife corridors, or wildlife nursery sites.

TRENCH OPTION

No Impact. No wildlife movement corridors or nursery sites are found within the Trench Option RSA. Therefore, operation of the Trench Option would result in **no impact** to the movement of native resident or migratory fish or wildlife species, established native resident and/or migratory wildlife corridors, or wildlife nursery sites.

HAWTHORNE OPTION

No Impact. No wildlife movement corridors or nursery sites are found within the Hawthorne Option RSA. Therefore, operation of the Hawthorne Option would result in **no impact** to the movement of native resident or migratory fish or wildlife species, established native resident and/or migratory wildlife corridors, or wildlife nursery sites.

3.7-4.5 Would the Proposed Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

3.7-4.5.1 Construction Impacts

No Impact. Construction of the Proposed Project is not expected to conflict with local policies or ordinances protecting biological resources. Relevant local objectives and policies are described in Section 3.7-1.3 (and include the City of Torrance General Plan's Open Space and Habitat Objectives and Policies, Dominguez WPPM, and the City of Torrance Street Tree Master Plan). As noted in Section 3.7-1.3, the City of Torrance has applicable open space objectives and policies, but construction of the Proposed Project would not infringe on key open space areas identified for protection and preservation by the City. The Open Space Preserve established for southern tarplant protection is located immediately adjacent to the Proposed Project footprint (specifically, the surface parking lot); however, construction related activities will not occur within the boundaries of the Open Space Preserve and no impacts are anticipated. The Dominguez WMMP was developed to manage and enhance water quality and habitats within the watershed, of which construction of the Proposed Project is not expected to significantly impact. The Street Tree Master Plan (City of Torrance, 2015f) was created to enhance and preserve the City's trees by having a set list of recommended trees that would best fit each area of the city. Although loss of non-native trees may occur within the Metro ROW as a result of construction, the Proposed Project alignment does not overlap with any of the eight Special Designated Areas for Tree Conservation and Protection, as designated by the City of Torrance. In addition, local regulations and ordinances do not apply to any existing Metro-owned property. Therefore, no City ordinances require that the Proposed Project replace impacted trees within the Metro ROW.

The Cities of Redondo Beach and Lawndale do not have applicable objectives and/or policies protecting biological resources, including tree preservation ordinances. Therefore, although the Proposed Project could cause a loss of some open space and the loss of some non-native, ornamental trees in the Cities of Redondo Beach and Lawndale, it would not conflict with any relevant policy adopted by those cities. Therefore, construction of the Proposed Project would result in **no impact**.

TRENCH OPTION

No Impact. Similar to the Proposed Project, construction of the Trench Option is not expected to conflict with local policies or ordinances, as it would be constructed in the same location. Therefore, construction of the Trench Option would result in **no impact**.

HAWTHORNE OPTION

No Impact. Similar to the Proposed Project, the Hawthorne Option is not expected to conflict with local policies or ordinances, as it would be constructed in the same cities and under the same local policies and ordinances. Therefore, construction of the Hawthorne Option would result in **no impact**.

3.7-4.5.2 Operational Impacts

No Impact. The operational activities associated with the Proposed Project are not expected to conflict with any of the local policies or ordinances discussed in Section 3.7-1.3. Operation of the Proposed Project is not expected to directly or indirectly impact protected trees, as the Proposed Project alignment does not occur within any of the eight Special Designated Areas for Tree Conservation and Protection, designated by the City of Torrance. In addition, local regulations and ordinances do not apply to the existing Metro-owned property. As a result, any tree trimming and thinning activities associated with operation of the Proposed Project would not need to comply with tree protection ordinances. Operation of the Proposed Project will not occur within open space areas established for protection by

the City of Torrance, including the two-acre Open Space Preserve for southern tarplant, and will not jeopardize water quality and habitats within the watershed of the overarching Dominguez WMMP. Therefore, the operation of the Proposed Project would result in **no impact**.

TRENCH OPTION

No Impact. Similar to the Proposed Project, operation of the Trench Option is not expected to conflict with local policies or ordinances, as it would operate along the same alignment in the same operating pattern. Therefore, operation of the Trench Option would result in **no impact**.

HAWTHORNE OPTION

No Impact. Similar to the Proposed Project, operation of the Hawthorne Option is not expected to conflict with local policies or ordinances, as it would be operated within the same policy context and with the same operating pattern. Therefore, operation of the Trench Option would result in **no impact**.

3.7-4.6 Would the Proposed Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

3.7-4.6.1 Construction Impacts

No Impact. The Proposed Project footprint is not included in any adopted HCPs, NCCPs, or other approved local, regional, or state HCPs. Therefore, construction of the Proposed Project would result in **no impact**.

TRENCH OPTION

No Impact. The Trench Option footprint is not included within any adopted HCPs, NCCPs, or other approved local, regional, or state HCPs. Therefore, construction of the Trench Option would result in **no impact.**

HAWTHORNE OPTION

No Impact. The Hawthorne Option footprint is not included within any adopted HCPs, NCCP, or other approved local, regional, or state HCPs. Therefore, construction of the Hawthorne Option would result in **no impact**.

3.7-4.6.2 Operational Impacts

No Impact. The Proposed Project footprint is not included within any adopted HCPs, NCCP, or other approved local, regional, or state HCPs. Therefore, operation of the Proposed Project would result in **no impact.**

TRENCH OPTION

No Impact. The Trench Option footprint is not included within any adopted HCPs, NCCP, or other approved local, regional, or state HCPs. Therefore, operation of the Trench Option would result in **no impact**.

HAWTHORNE OPTION

No Impact. The Hawthorne Option footprint is not included within any adopted HCPs, NCCP, or other approved local, regional, or state HCPs. Therefore, operation of the Trench Option would result in **no impact.**

3.7-5 MITIGATION MEASURES

MM-BIO-1. General Protection Measures to Avoid and Minimize Impacts on Sensitive Biological Resources

Prior to the initiation of construction activities, construction work limits shall be defined and marked (i.e., by caution tape, temporary fencing, etc.). All temporary fencing or other markers must be clearly visible to construction personnel.

Prior to and during construction, a qualified Biologist, selected by Metro, shall confirm that the outer perimeter of the construction work limits is not within 50 feet of any area where native vegetation and sensitive habitats occur, specifically, the Open Space Preserve established as part of the Torrance TC Project by the City of Torrance and adjacent to the Proposed Project's Torrance TC Station. No native vegetation removal or grading shall occur within areas designated for avoidance.

Fenced impact limits shall include erosion control measures to minimize erosion and siltation during initial vegetation clearing/removal and construction through the use of silt fencing, siltation basins, gravel bags, or other controls necessary to stabilize the soil in cleared or graded areas. Erosion control measures would be installed prior to the onset of vegetation clearing/removal. These measures would be maintained in good repair until the completion of construction. Vegetation clearing/removal during routine maintenance shall also include similar erosion control measures. Specific work areas within the Torrance TC station site, including the surface parking lot, adjacent to the Open Space Preserve shall include specific erosion and run-off control measures necessary to ensure no contaminants enter the Open Space Preserve and consequently degrade habitat for the southern tarplant. These erosion and run-off control measures shall be implemented long-term per Regional Requirements to ensure the continued protection of the Open Space Preserve and quality of habitat within.

MM-BIO-2. Nesting Bird Season Restrictions and Pre-Construction Surveys

The clearance of vegetation or demolition of nesting substrate (i.e., bridge features) during construction shall occur outside of the nesting bird season (nesting bird season defined herein as February 1 through September 15), if feasible. If vegetation removal and/or demolition outside this time period is not feasible, the following additional measures shall be employed to avoid impacts to nesting birds protected under the MBTA and CFGC.

A pre-construction nesting bird survey shall be conducted by a qualified biologist (i.e., a biologist familiar and experienced with the identification and life histories of wildlife and plant species in southern California) within 4 days (96 hours) prior to the start of construction activities to determine whether active nests are present within or directly adjacent to the construction zone. Nests found shall be recorded.

If construction activities must occur within 150 feet of an active nest of any passerine bird or within 300 feet of an active nest of any raptor, a qualified biologist shall monitor the nest on a bi-weekly (twice a week) basis, or at a frequency necessary to determine potential project impacts, and the construction activity shall be postponed until the biologist determines that the nest is no longer active.

If the recommended nest avoidance zone is not feasible, the qualified biologist shall provide justification on a case-by-case basis if a buffer reduction is possible, taking into consideration the location of work and type of activity, distance of nest from work area, surrounding vegetation, and line-of-sight between the nest and work areas, tolerance of species to disturbance, and observations of the nesting bird's reaction to construction activities (including light, noise, dust, and human presence). If the biologist

determines nesting activities may fail as a result of work activities, work activities shall be modified or shall temporarily cease (except access along established roadways) within the recommended no-disturbance buffer until the biologist determines the adults and young are no longer reliant on the nest site.

Buffers shall be delineated (by or under the supervision of the qualified biologist) on-site with bright flagging, for easy identification by staff and the construction team. The perimeter of the buffer (150 feet to 300 feet depending on the species) shall be flagged so as not to draw predator attention to the direct location of the nest itself and flagging will be minimized where feasible. The on-site construction supervisor and operator staff shall be notified of the nest and the buffer limits to ensure it is maintained.

The indirect impacts of night-time construction lighting on nesting birds outside the construction limits shall be reduced by shielding or directing construction lighting to avoid light encroachment into adjacent habitats.

A summary of preconstruction surveys, monitoring efforts, and any no-disturbance buffers that were installed shall be documented in a report by the qualified biologist at the conclusion of each nesting season.

MM-BIO-3. Roosting Bat Restrictions and Survey Requirements

Prior to demolition permit issuance and in preparation for demolition of both bridges at Grant Avenue and Del Amo Boulevard, a bat roost habitat assessment shall be performed by a qualified biologist (i.e., a biologist familiar with bat identification and ecology in southern California) at each location in order to identify both potential day time and nighttime roosting activity and maternity roosts, for bat species with potential to occur. The bat roost habitat assessment shall be conducted during the spring/summer months between April 1 through August 31 to most effectively identify maternity roost activity. Signs indicating active use by bat species may include guano, urine staining, and audible vocalizations; and shall be recorded upon observation for inclusion in a summary report.

If active maternity roosts are identified, consultation shall occur with CDFW and a bat mitigation plan shall be prepared in advance of construction that shall include measures to avoid, minimize, and mitigate project impacts to bat species per conversations with, and recommendations from, CDFW. The bat mitigation plan shall include bat exclusion measures to be implemented outside the California maternity season (the maternity season is defined as April 1 through August 31 in southern California) in order to prevent potential direct impacts to individuals. During the maternity season, a recommended buffer shall be implemented around any active maternity roosts, and no project related activities shall occur within the buffer until a biologist has determined that the roost is no longer in use. In addition, the bat mitigation plan shall require the replacement of lost habitat associated with demolition of the bridges and shall include mitigation addressing loss of roosts; this replacement should be on site when feasible and off site only when on site replacement is not feasible. The mitigation plan shall include required monitoring of mitigation to ensure the success of the proposed mitigation measures.

MM-BIO-4. Pre-Construction Rare Plant Survey

Prior to construction, suitable habitat in the portion of the RSA immediately adjacent to the Open Space Preserve shall be visually surveyed on foot by a qualified botanist (i.e., a botanist familiar with southern tarplant identification) in order to identify potential southern tarplant presence. Surveys should be conducted during the appropriate blooming period for optimal identification (defined as May – November).

If individuals are detected, individuals shall be flagged, and this area shall be clearly marked for avoidance through visible signage and fencing. A buffer zone shall be established of at least 50 feet from the outermost perimeter of the population in order to sufficiently eliminate potential disturbance to the plants from human activity and any other potential sources of disturbance including trampling, erosion, and dust. No vegetation removal, grading, or other earthwork shall occur within areas designated for avoidance.

A qualified botanist shall perform bi-weekly (twice per week) site visits, or at a frequency necessary to ensure protection of the Open Space Preserve, during all construction activities occurring immediately adjacent to the Open Space Preserve to ensure construction activities remain within the designated, and delineated, approved construction area; and that construction fencing, and other boundary demarcations remain in the appropriate condition.

3.7-6 PROJECT IMPACTS REMAINING AFTER MITIGATION

3.7-6.1 Proposed Project

With the incorporation of the mitigation measures described in Section 3.7-5, the Proposed Project would not result in any significant impacts related to biological resources. Therefore, impacts from Proposed Project construction and operation would be less than significant after mitigation.

3.7-6.2 Trench Option

With the incorporation of the mitigation measures described in Section 3.7-5, the Trench Option would not result in any significant impacts related to biological resources. Therefore, impacts from Trench Option construction and operation would be less than significant after mitigation.

3.7-6.3 Hawthorne Option

With the incorporation of the mitigation measures described in Section 3.7-5, the Hawthorne Option would not result in any significant impacts related to biological resources. Therefore, impacts from Hawthorne Option construction and operation would be less than significant after mitigation.

3.7-7 CUMULATIVE IMPACTS

The methodology for cumulative analysis and a description of relevant projects and projections are included in Section 3.0, Introduction.

The geographic scope of the cumulative analysis for biological resources is the RSA described in Section 3.7-2.1. Six of the identified projects described in the project list in Section 3.0 are located within the biological resources RSAs.

3.7-7.1 Proposed Project

Historically, development and rapid urbanization has been occurring in the surrounding region since the late 1800s. Continued development relating to infrastructure improvement, housing construction, and other community needs is regularly, and frequently, occurring. There is an existing cumulative impact related to biological resources as a result of the highly urbanized setting and both historic and present development throughout the region. Today, the region is an established metropolitan setting consisting of a mostly highly urbanized landscape including both industrial and residential communities, resulting in an existing impact to the biological setting of the RSA. The Proposed Project could contribute to the existing cumulative impact.

The analysis of biological resources in Section 3.7-4 identifies less than significant impacts after mitigation resulting from construction of the Proposed Project. Implementation of mitigation measures MM-BIO-1 through MM-BIO-4 would avoid impacts to southern tarplant, nesting birds, and bats. Operation of the Proposed Project would have less than significant impacts to biological resources. Therefore, the Proposed Project's incremental contribution to cumulatively significant impacts on biological resources would not be cumulatively considerable during construction or operation.

3.7-7.2 Trench Option

The Trench Option would be constructed in the same location as the Proposed Project using similar equipment, methods, and timeframe as the Proposed Project. While it would require deeper and more extensive excavation and construction of structures than the Proposed Project, with implementation of mitigation measures MM-BIO-1 through MM-BIO-4, these activities are not anticipated to cause a greater disturbance to biological resources than the Proposed Project. The Trench Option's potential for cumulative effects would largely be similar to that that of the Proposed Project. Similarly, the Trench Option would operate along the same alignment and in the same operating pattern as the Proposed Project. Therefore, the Trench Option's incremental contribution to cumulatively significant impacts on biological resources would not be cumulatively considerable during construction or operation.

3.7-7.3 Hawthorne Option

The Hawthorne Option would be constructed along Hawthorne Boulevard, a built-out major arterial largely devoid of any natural or biological resource, using similar equipment, methods, and timeframe as the Proposed Project. While it would require more construction of structures than the Proposed Project, with implementation of mitigation measures MM-BIO-1 through MM-BIO-4, these activities are not anticipated to cause a greater disturbance to biological resources than the Proposed Project. The Hawthorne Option would have the same operating pattern as the Proposed Project. The Hawthorne Option's potential for cumulative effects would largely be similar to that that of the Proposed Project. Therefore, the Hawthorne Option's incremental contribution to cumulatively significant impacts on biological resources would not be cumulatively considerable during construction or operation.

3.8 GEOLOGY, SOILS, AND PALEONTOLOGICAL RESOURCES

This section of the Draft EIR provides an analysis of the potential impacts on geology, soils, and paleontological resources.

3.8-1 Regulatory Framework

Federal, state, regional and local regulations concerning geology, soils, seismological hazards, and paleontological resources are described in the following section.

3.8-1.1 Federal Regulations

There are no federal regulations applicable to geology, soils, seismicity, or paleontology that apply to the Proposed Project and Options under CEQA's guidelines.

3.8-1.2 State and Regional Regulations

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo (AP) Geologic Hazards Zone Act was approved by the State of California in 1972 to reduce hazards related to surface faulting or fault rupture. The main purpose of the AP Earthquake Fault Zoning Act is to prevent the construction of structures used for human occupancy on the surface traces of active faults as documented in Special Publication 42 of the California Geological Survey (CGS, 2018). The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards.

Seismic Hazards Mapping Act of 1990

The Seismic Hazards Mapping Act of 1990 was enacted, in part, to address seismic hazards not included in the AP Earthquake Fault Zoning Act, including strong ground shaking, landslides, and liquefaction. Under the Seismic Hazards Mapping Act, the State Geologist is assigned the responsibility of identifying and mapping seismic hazards. CGS Special Publication 117A, adopted in 1999 and updated in 2008 by the California Mining and Geology Board, contains guidelines for evaluating seismic hazards other than surface fault rupture and for recommending mitigation measures as required by Public Resources Code Section 2695(a). In accordance with mapping criteria, the CGS Seismic Hazard Zone Maps use a ground shaking event that corresponds to a 10% probability of exceedance in 50 years. Seismic Hazard Zone Maps focus on hazards related to strong ground shaking, liquefaction, landslides, and similar hazards; in practice, the maps produced under this program delineate areas prone to earthquake-induced landslides and earthquake-induced liquefaction, which seldom coincide. Both AP Maps and Seismic Hazard Zone Maps are used by cities and counties in preparing general plans and land use policies.

California Building Code

The California Building Code (CBC) is based on the International Building Code, with the addition of necessary California amendments based on the American Society of Civil Engineers Minimum Design Standards. In accordance with Metro Rail Design Criteria (MRDC), Section 5.1.3, the CBC must be followed for building structures, other than guideways and bridges, and underground structures that are subject to railroad or highway loading.

The CBC's earthquake design requirements are based on the occupancy category of a structure, site class, soil classifications, and various seismic coefficients, which are used to determine the appropriate Seismic Design Category for a project. The Seismic Design Category is a classification system that combines occupancy categories with the level of expected ground motions at the site and ranges from Seismic Design Category A (very small seismic vulnerability) to Seismic Design Category E/F (very high

seismic vulnerability and near a major fault). Design specifications for the structures are then determined according to the applicable Seismic Design Category.

Public Resources Code Section 5097.5

California Public Resources Code Section 5097.5 prohibits excavation or removal of any:

> …vertebrate paleontological site, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands and specifies that state agencies may undertake surveys, excavations, or other operations as necessary on publicly owned lands to preserve or record paleontological resources.

Public lands include those owned by or under the jurisdiction of the State or any city, county, district, authority, or public corporation or any agency thereof. Section 5097.5 states that any unauthorized disturbance or removal of archaeological, historical, or paleontological materials or sites on public lands is a misdemeanor.

California Department of Transportation

The California Department of Transportation (Caltrans) requires that its standards be used for projects in Caltrans right-of-way and projects with funding from Caltrans. Caltrans seismic design criteria (SDC) specifies the minimum seismic design requirements for newly designed standard concrete bridges. Non-standard bridges would require project-specific seismic design criteria (PSDC) in addition to SDC. A seismic safety peer review team would be established for prominent or unusually complex bridges requiring a PSDC. The SDC is intended for use on new bridges designed for the California State Highway System. New bridges may be constructed by using either cast-in-place or precast methods. The American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA) design criteria are the basis of most Caltrans Standards. The AASHTO load and resistance factor design (LRFD) Bridge Design Specification has been amended by Caltrans for foundation design. This document would be used as appropriate for the project.

Metro Rail Design Criteria

The MRDC Section 5.6 would be used as the primary design criteria for majority of the proposed improvements planned for the Proposed Project and Options. Per MRDC, Section 5.5.1, the criteria and codes specified in MRDC shall govern all matters pertaining to the design of Metro owned facilities including bridges, elevated rail guideways, underground structures, trenches, stations, earth-retaining structures, surface buildings, miscellaneous structures such as culverts, sound walls, and equipment enclosures, and other non-structural and operationally critical components and facilities supported on or inside Metro structures. These criteria also establish the design parameters for temporary structures.

The Metro Supplemental Seismic Design Criteria (SSDC) outlined in the MRDC Section 5 appendix (Metro, 2017) provides seismic design guidelines for structures including aerial guideways and bridges, underground structures, tunnels, and surface structures. The Metro SSDC follows a two-level ground motion approach for the seismic design of structures: Operating Design Earthquake (ODE) and Maximum Design Earthquake (MDE). The ODE is defined as an earthquake event likely to occur only once in the design life where structures are designed to respond without significant damage, and MDE is defined as an earthquake event with a low probability of occurring in the design life where structures are designed to respond with repairable damage and to maintain a life-safety-performance level (no collapse) of structural elements (Metro, 2017). Current Metro design criteria is based on probabilistic seismic ground motion criteria; the design earthquake motions are defined as:

> ODE: 50% probability of exceedance in 100 years, design return period of 150 years.

> MDE: 4% probability of exceedance in 100 years, design return period of 2,500 years.

Seismic design of aerial and surface structures is based on site-specific ODE and MDE horizontal ground surface 5% damped acceleration response spectra developed using the USGS Unified Hazard Tool (USGS, 2022). Based on the Metro SSDC, acceleration response spectrum (ARS) for rail transit structures should not result in less performance capability than that required by Caltrans ARS. The Metro SSDC also considers seismic design based on Caltrans SDC (Caltrans, 2019) for rail transit structures. The seismic design of surface structures and aboveground structures not subject to rail transit loading should comply with the requirements of the CBC and the site-specific ODE and MDE horizontal ground motions per Metro's SSDC (2017).

SSDC outlined in the MRDC Section 5 appendix (Metro, 2017) provides seismic design for ground and embankment stability. The appendix recommends the seismic stability and potential permanent deformation of sloping ground or embankments supporting aerial guideway and bridges along proposed alignments be investigated. The appendix also provides guidance for liquefaction studies to assess the potential for liquefaction. Both are discussed as project features in Section 3.8-2.5.

County of Los Angeles

The County of Los Angeles General Plan contains goals and policies that focus on geology, soils, and seismicity, described in Table 3.8-1below.

Table 3.8-1. County of Los Angeles – Relevant Regulations

Departments/General Plans	Description
County of Los Angeles General Plan	
County of Los Angeles General Plan – Chapter 12 Safety Element	The purpose of the safety element is to reduce the potential risk of death, injuries, and economic damage resulting from natural and man-made hazards. The California Government Code requires that the General Plan address "the protection of the community from any unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; and subsidence, liquefaction, and other seismic hazards."

Source: County of Los Angeles 2015b; 2021

3.8-1.3 Local Regulations

The local jurisdictions, departments, and documents that regulate and oversee issues related to geology, soils, and seismicity within the RSA are listed below. There are no specific regulations or guidelines regarding paleontological resources in the Cities of Hawthorne, Lawndale, Redondo Beach, or Torrance.

City of Lawndale

The City of Lawndale Departments and General Plan contains goals and policies that focus on geology, soils, and seismicity, described in Table 3.8-2 below.

Table 3.8-2. City of Lawndale – Relevant Regulations

Departments/General Plans	Description
City of Lawndale General Plan Safety Element	
City of Lawndale General Plan – Safety Element	The Safety Element describes the natural and human-induced health and safety hazards that exist within the City of Lawndale and the measures to be taken to reduce the potential risk of death, injuries, property damage, and economic and social dislocation. The Safety Element establishes preventative and responsive policies and programs to mitigate the potential impacts associated with hazards that may affect the City of Lawndale.

Source: City of Lawndale, 2015

City of Redondo Beach

The City of Redondo Beach General Plan contains goals and policies that focus on geology, soils, and seismicity, described in Table 3.8-3 below.

Table 3.8-3. City of Redondo Beach – Relevant Regulations

Departments/General Plans	Description
City of Redondo Beach General Plan	
City of Redondo Beach General Plan	The General Plan is a comprehensive planning document that serves as "the officially adopted statement of local policy regarding each individual community's development." The preparation and adoption of a "comprehensive, long-term general plan for physical development of the county or city" is mandated, by California Government Code, Section 65300, for all cities and counties within the State of California.

Source: City of Redondo Beach, 1993c

City of Torrance

The City of Torrance General Plan contains goals and policies that focus on geology, soils, and seismicity, described in Table 3.8-4 below**.**

Table 3.8-4. City of Torrance – Relevant Regulations

Departments/General Plans	Description
City of Torrance General Plan	
City of Torrance General Plan – Chapter 4 Safety Element	The Safety Element sets forth policies designed to minimize threats from natural and human-caused hazards.

Source: City of Torrance, 2010f

3.8-2 Methodology

3.8-2.1 Geology and Soils

The methodology for assessing impacts involves examining the Proposed Project for known geologic hazards. This includes a review of published maps, professional publications, and technical reports pertaining to the geology, soils, and seismicity of the RSA. The analysis focuses on the potential of the Proposed Project to increase the risk of personal injury, loss of life, and damage to property as a result of existing geologic conditions in the RSA. If stations or structures are located within or directly adjacent

to geologic hazard areas, there would be a potential for an impact, which may require enhanced design to eliminate or mitigate the potential impact.

3.8-2.2 Paleontological Resources

The methodology for the paleontological resources study consisted of archival research and geologic analysis. This was done through a records search of the RSA conducted by the Vertebrate Paleontology Section of the Natural History Museum of Los Angeles County on June 9, 2020. This included a review of existing museum collections to identify vertebrate fossil localities within one mile of the Proposed Project. This record search also included a review of geologic units within and adjacent to the RSA. The results of the Natural History Museum records search are included as Appendix 3.8-A, Natural History Museum Records Search. Geologic maps indexed in the National Geologic Maps Database were also consulted separately to identify geologic units that might be impacted by the Proposed Project and to evaluate their paleontological sensitivity. The RSA surface is largely obscured by urbanization and a comprehensive field survey was not warranted.

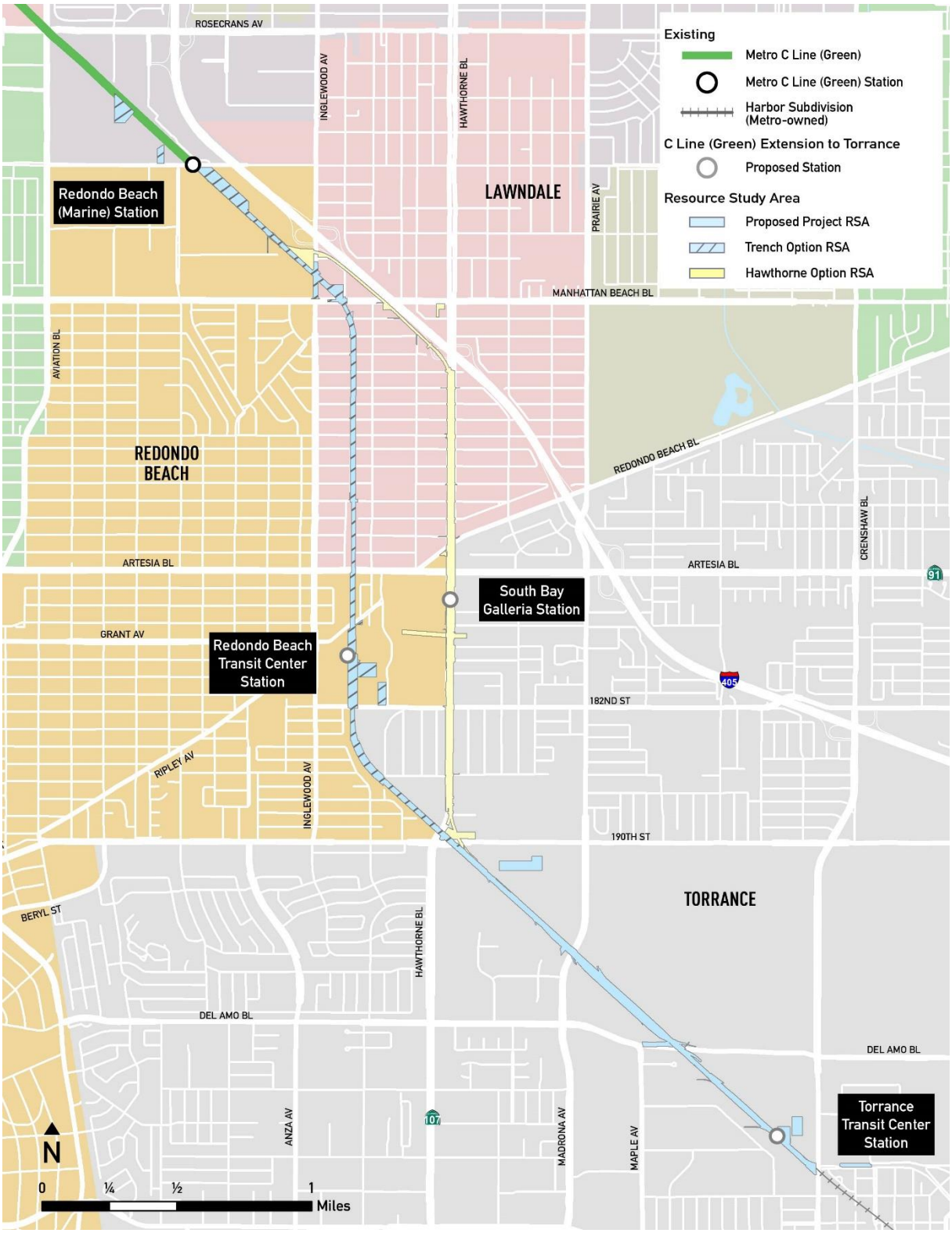
Paleontological sensitivity is defined as the potential for a geologic unit to produce scientifically significant fossils. This is determined by rock type, past history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit. Paleontological sensitivity is derived from the known fossil data collected from the entire geologic unit, not just from a specific survey. In its "Standard Guidelines for the Assessment and Mitigation of Adverse Impacts to Nonrenewable Palaeontologic Resources," the Society of Vertebrate Paleontology (SVP) (1995:23) defines three categories of paleontological sensitivity (potential) for sedimentary rock units:

- High Potential – Rock units from which vertebrate or significant invertebrate fossils or suites of plant fossils have been recovered are considered to have a high potential for containing significant nonrenewable fossiliferous resources. These units include, but are not limited to, sedimentary formations and some volcanic formations that contain significant nonrenewable palaeontologic resources anywhere within their geographical extent and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. Sensitivity comprises both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate or botanical, and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, ecologic, or stratigraphic data. Areas that contain potentially datable organic remains older than recent (present day), including deposits associated with nests or middens and areas that may contain new vertebrate deposits, traces or trackways are also classified as significant.
- Low Potential – Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow determination that some areas or units have low potentials for yielding significant fossils. Such units will be poorly represented by specimens in institutional collections.
- Undetermined Potential – Specific areas underlain by sedimentary rock units for which little information is available are considered to have undetermined fossiliferous potential.

3.8-2.3 Resource Study Areas

The RSAs for geology, soils, and paleontological resources are the footprints of the Proposed Project, Trench, and Hawthorne Options, as shown on Figure 3.8-1. The Proposed Project footprint is defined as the area necessary to construct, operate, and maintain the Proposed Project and Options.

Figure 3.8-1. Geology, Soils, and Paleontological Resources Resource Study Area



Source: STV, 2022

3.8-2.4 Significance Thresholds

Based upon the thresholds of significance contained in Appendix G of the CEQA Guidelines, implementation of the Proposed Project would result in a significant impact if the Proposed Project would result in any of the following:

a. Expose people or structures to adverse effects, including the risk of loss, injury, or death involving:
    i. Rupture of known earthquake fault, as delineated on the most recent AP Earthquake Fault Zoning map issued by the State Geologist for the area or based on other substantial evidence of a known fault.
    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 Section 1803.5.3 of the California Building Code (CBC, 2019) creating substantial risks to life or property.
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.
f. Directly or indirectly destroy a unique paleontological resource or site or unique geological feature.

3.8-2.5 Project Features

As described in Chapter 2, Project Description, a number of features have been incorporated into the project in order to ensure compliance with the laws, guidelines, and best practices of regulatory agencies. The following Project Features would be implemented for geological hazards.

PF-GEO-1. Metro Geotechnical Design Standards

The Proposed Project shall be designed and constructed per the MRDC. Key compliance sections of the MRDC relative to geology and soils are Section 5.3, Section 5.4, Section 5.6, and MRDC Section 5 Appendix, Metro SSDC. Section 5.6 of the MRDC provides detailed requirements for planning and conducting a geotechnical investigation, geotechnical design methodologies, and reporting. In accordance with the MRDC, geotechnical report recommendations shall be incorporated into the project plans and specifications. These recommendations shall be a product of final design and shall address potential subsurface hazards. In addition, Caltrans and the CBC have independent design criteria for bridges, aerial structures and building structures, which shall be followed.

As noted in Section 3.8-1.2, SSDC outlined in the MRDC Section 5 appendix (Metro, 2017) recommends the seismic stability and potential permanent deformation of sloping ground or embankments supporting aerial guideway and bridges along proposed alignments be investigated. Investigations should include evaluation of the potential for ground liquefaction and related deformations. The

evaluations and associated analyses shall be displacement-based leading to the determinations of potential lateral deformations of slopes or embankments and ground settlement. It is recommended that the total settlement and lateral ground deformations under ODE seismic events shall not be allowed to exceed two inches to allow for track re-leveling or re-alignment. Larger deformations may be allowed for MDE events on a case-by-case basis on approval by Metro.

The MRDC section also provides details on how the stability analysis of the slopes and embankments is to be performed. Two options are provided: (1) seismic coefficient approach for pseudo-static case or (2) slope displacement method. If the factor of safety is less than 1.1, then slope performance shall be evaluated using Method (2) where displacements are computed using Newmark time-history analyses.

SSDC outlined in the MRDC Section 5 appendix provides guidance for liquefaction studies. If potentially liquefiable soils are identified along proposed alignments, liquefaction susceptibility shall be determined using the procedures documented in the AASHTO-CA LRFD BDS. The liquefaction potential assessment should consider the impact of the following effects where liquefaction is judged to occur:

> Loss of strength of liquefied layers (post liquefaction residual strength)

> Flow failures, slope deformations

> Post liquefaction ground settlement

According to the SSDC, the displacement performance of slopes and embankments underlain by liquefied soils may be evaluated in a similar manner to non-liquefiable cases, except residual strengths of liquefied soils are used in analyses. The post-liquefaction settlement of liquefied soil layers may be determined using procedures documented by Tokimatsu and Seed (1987). The bridge and elevated rail structures located in liquefaction sites should be analyzed for non-liquefiable and liquefiable soil configurations. For the liquefiable condition, residual strengths of liquefied soil layers are used for lateral and axial deep foundation response analyses. For those sites where liquefaction related permanent lateral ground displacements are determined to occur, the effects on pile performance shall be evaluated. Down drag forces on piles due to post liquefaction settlement shall also be evaluated. If the above impact assessments yield unacceptable performance of the structures, appropriate measures shall be incorporated into the design.

As outlined in the MRDC Section 5.6, the geotechnical investigation should evaluate impacts related to potential settlement due to lowering of the groundwater table or excavation instability due to draining of perched groundwater during construction activities. Specific topics to be considered in the geotechnical investigation include the following:

> Selection of appropriate construction methodology that minimizes permanent changes to sub-surface drainage conditions or groundwater pressures.

> Installation of dewatering wells outside trench walls, sump pumps within the trench, deep secant pile walls to minimize excavation base instability, heaving of soils on the upgradient side of the trench, fluidization, and erosion.

> Identification of zones of relatively high permeability strata with high potential to excessive groundwater influx and recommend construction methodology and design technologies such as keying secant pile walls into lower permeability strata.

3.8-3 Affected Environment/Existing Conditions

This section describes existing geologic and geotechnical issues within the RSAs. Geology, soils, and seismicity are factors that often determine design criteria for the development of transit improvements, particularly when grade separation structures are involved. This section summarizes the geologic materials, faults, seismic characteristics, and other subsurface conditions, including the potential for paleontological resources, within the RSAs.

3.8-3.1 Regional Geology

The RSAs are in the western part of the Torrance Plain and the eastern part of the El Segundo Sand Hills on the west side of the Los Angeles Basin. The Los Angeles Basin lies at the northwest end of the Peninsular Ranges physiographic province of Southern California. The Peninsular Ranges consist of a series of northwest-southeast-trending mountain ranges with intervening valleys largely controlled by a series of regional strike-slip faults (faults on which the primary movement is in a horizontal direction), of which the most important in the immediate area is the Newport-Inglewood Fault. The Los Angeles Basin is a broad structural depression bounded by the Santa Monica Mountains to the north, the Puente Hills to the east, the Santa Ana Mountains to the southeast and the San Joaquin Hills to the south.

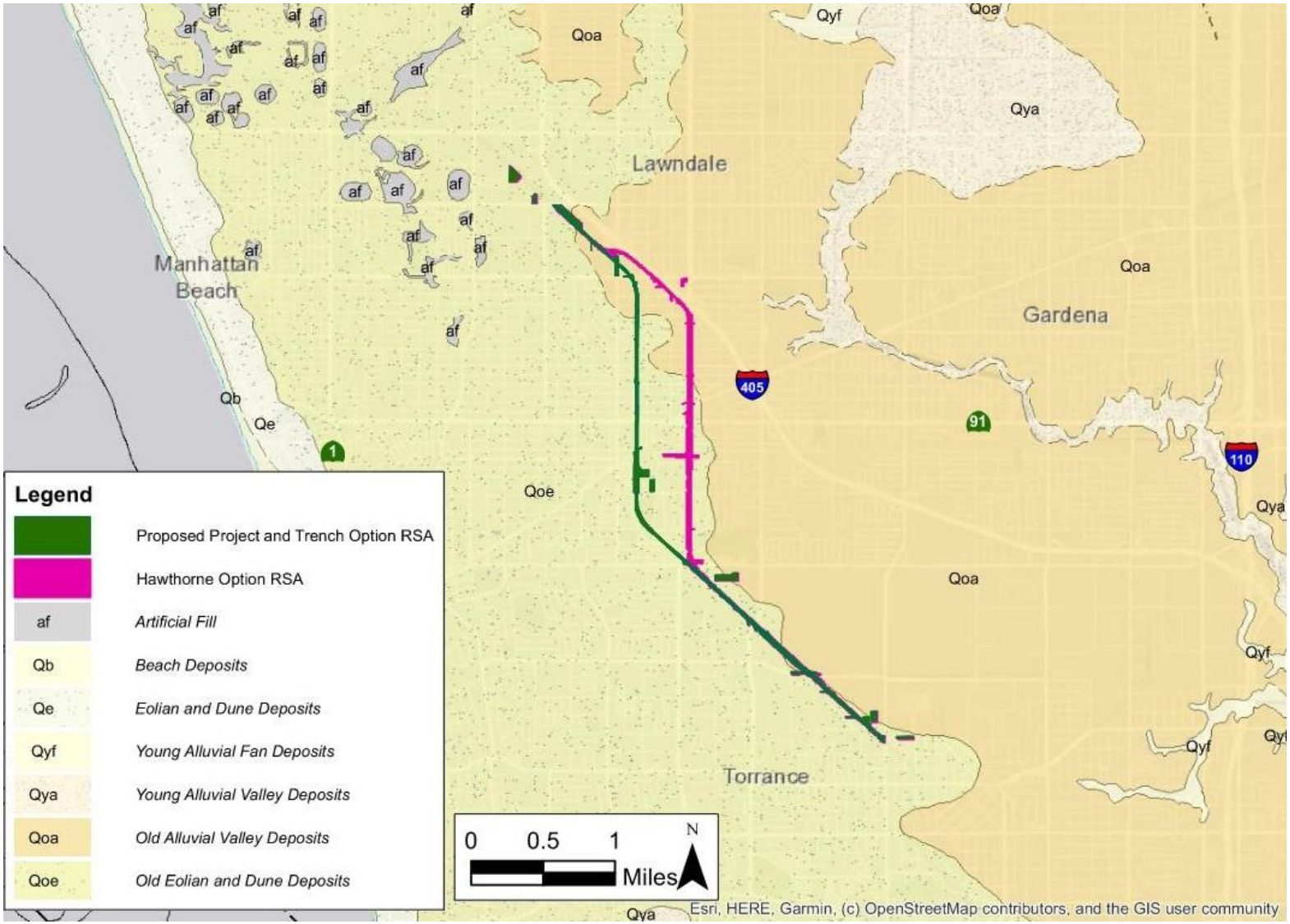
Basement rocks (crystalline rocks that underlie more recent sedimentary deposits) in the Los Angeles Basin consist of Mesozoic metamorphic rocks that were exposed during the Middle Miocene extension and rifting caused by the clockwise rotation and northwest movement of the western Transverse Ranges structural block (Crouch and Suppe, 1993). The basement complex (lying at approximately 4,500 to 8,000 feet below the surface) is overlain by Tertiary marine sedimentary rocks of the Puente and Fernando formations.

3.8-3.2 Local Geology

Geologic units underlying the RSAs consist of Quaternary deposits composed (from the bottom to the surface) of the 1,400-foot-thick early Pleistocene-aged San Pedro formation, the 1,000-foot-thick late Pleistocene Lakewood formation and older sand dunes, and approximately 300 feet of Holocene-aged alluvium, which is capped by aeolian (i.e., wind-blown) deposits (Saucedo et al., 2016).

The San Pedro formation is primarily stiff clay with interbedded sand and gravel. The Lakewood formation is dense to very dense sand, clayey sand, silty sand (interbedded with very stiff to hard silty to sandy clay), and clayey silt. The Pleistocene old alluvium (map symbol Qoa) moderately consolidated, moderately dissected clay, silt, sand and gravel, and sand dune (eolian) deposits (Qoe) are primarily composed of medium-dense to very dense, well-sorted, medium- to coarse-grained sand with some silt and silty sand (Saucedo et al., 2016). These two Pleistocene deposits are the surface geologic units underlying the Proposed Project and Options; see Figure 3.8-2.

Figure 3.8-2. Geology Map



Source: Roffers and Bedrossian, 2012; Diaz Yourman Associates, 2022; STV, 2022

3.8-3.3 Groundwater

The RSA sites lie entirely over the West Coast Groundwater Basin, an 800- to 2,000-foot-thick aquifer system composed of up to 180 feet of alluvium, 320 feet of the Lakewood formation, and 1,050 feet of the San Pedro formation (MWD, 2007). The Charnock and Newport-Inglewood Faults act as partial groundwater barriers; the Newport-Inglewood fault zone forms the east boundary of the West Coast basin. Groundwater within the basin is generally confined, with an unconfined Holocene- and Pleistocene-aged semi-perched aquifer near the surface and a maximum thickness of 60 feet (CA DWR, 2004; MWD, 2007). Groundwater contour maps created in the fall of 2006 show groundwater elevations under the Proposed Project extent to be approximately five to 10 feet below mean sea level, which corresponds to approximately 105 to 110 feet below ground surface (Water Replenishment District of Southern California, 2008). Generally, the groundwater flows from the west to the east (MWD, 2007).

The northern portion of the Proposed Project vicinity (north of Artesia Boulevard) is mapped by CGS for historically highest groundwater contours for the Inglewood Quadrangle (1999a) and Torrance Quadrangle (1999b). The mapped historically highest groundwater depth ranges from 30 to 50 feet bgs, as shown on Figure 3.8-3. South of Artesia Boulevard, CGS has not mapped the site for historically highest groundwater contours.

Perched groundwater has been found in several areas, including the ExxonMobil Torrance Refinery. Perched groundwater refers to groundwater that becomes trapped above impervious layers that obstruct the downward percolation of water through the vadose (unsaturated) zone. Perched groundwater is typically seasonal/temporary and not in hydraulic contact with the underlying beneficial-use aquifers. In some cases, it may be difficult to distinguish perched zones from the underlying true (water table) aquifers without detailed hydrogeological studies. In the Proposed Project vicinity, perched groundwater has been found at depths as shallow as 20 feet bgs.

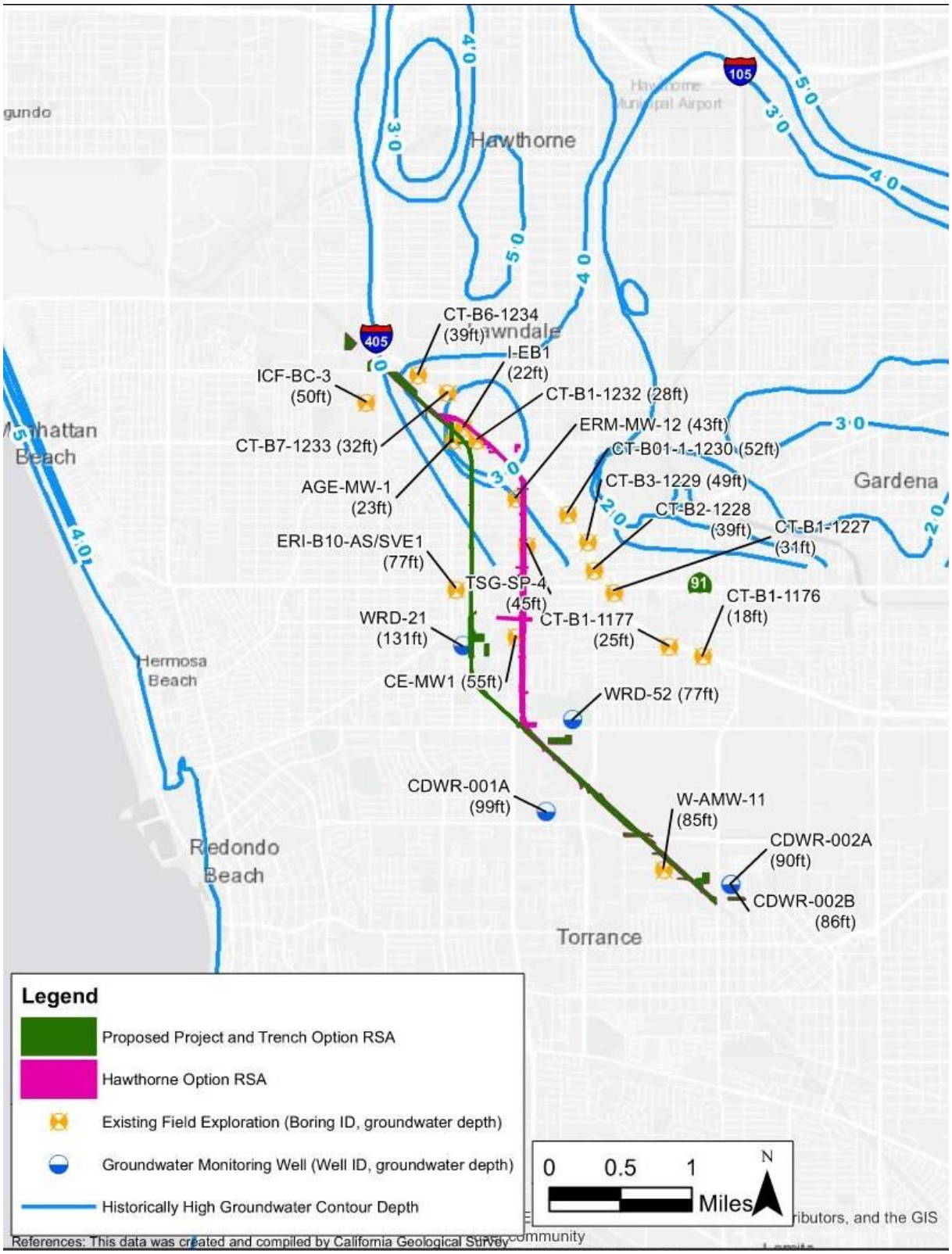
Table 3.8-5 presents a summary of the recorded groundwater data based on the existing geotechnical data and groundwater monitoring wells within the RSAs. In addition, Figure 3.8-3 presents the mapped CGS historically highest groundwater contours and locations of the existing geotechnical data and groundwater monitoring wells that are summarized in Table 3.8-5.

Table 3.8-5. Groundwater Data Summary – North to South

Source/Firm	Boring ID/ Well ID	Figure 3.8-3 Boring/Well ID	Ground Elevation[1] (feet)	Approximate Groundwater Depth (feet)	Approximate Groundwater Elevation (feet)	Date Measured
Caltrans	B-6	CT-B6-1234	61.2	39	22	1960
Caltrans	B-7	CT-B7-1233	59.3	32	27	1960
ICF	BC-3	ICF-BC-3	70	50	20	1987
Impact	EB1	I-EB1	60	22	38	1995
Caltrans	B-1	CT-B1-1232	57.7	28	30	1989
Advanced Geo Environmental	MW-1	AGE-MW-1	62	23	39	2018
ERM	MW-12	ERM-MW-12	66	43	23	2017
Caltrans	B-01	CT-B01-1230	83.3	52	31	2001
Caltrans	B-3	CT-B3-1229	65.5	49	17	1988
The Source Group, Inc.	SP-4	TSG-SP-4	78	45	33	2005
Caltrans	B-2	CT-B2-1228	64.1	39	25	1972
ERI	B10-AS/SVE1	ERI-B10-AS/SVE1	118	77	41	2007
Caltrans	B-1	CT-B1-1227	64.7	31	34	1958
CE	Log of Boring 3 (MW1)	CE-MW1	95	55	40	1996
Caltrans	B-1	CT-B1-1177	60.7	25	36	1972
Caltrans	B-1	CT-B1-1176	57.6	18	40	1958
Weston	AMW-11	W-AMW-11	80	85	-5	2007
CDWR – Water Data Library	338498N1183497W001[2]	CDWR-001	100	99	1	1998 to 2020
CDWR – Water Data Library	338425N1183271W001[2]	CDWR-002A	67	90	-23	1995 to 1999
CDWR – Water Data Library	338425N1183271W002[2]	CDWR-002B	67	86	-19	1995 to 1998
Water Replenishment District	200521[2]	WRD-21	121	131	-10	1949 to 2013
Water Replenishment District	102052[2]	WRD-52	79	77	2	2009 to 2020

[1]If ground elevation was not provided in the boring log, then it was assumed based on Google Earth.
[2]The groundwater depths and elevations are based on an average throughout the dates measured.

Figure 3.8-3. Groundwater Map



Source: CGS, 1998a and b; Diaz Yourman Associates, 2022; STV, 2022

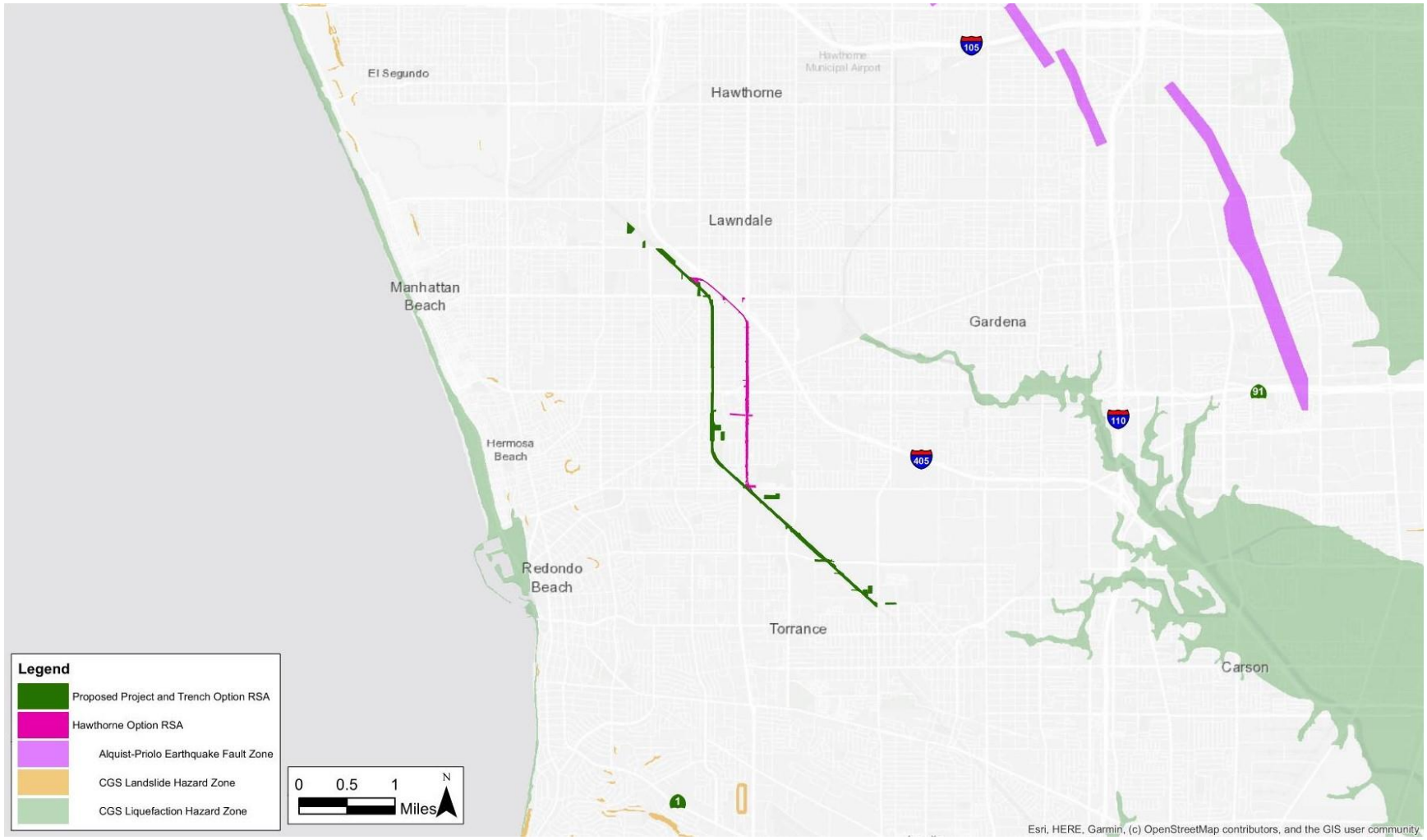
3.8-3.4 Geologic Hazards

Fault Rupture

Structures crossing active or potentially active faults may be subjected to surface fault rupture and ground displacement during or immediately following an earthquake. Surface fault rupture can cause large deformations in structures depending on the type of fault, total displacement, and angle of incidence of the fault-rupture offset relative to the structure.

Outside Zone: The Proposed Project and Options' structure locations would not be within an Alquist-Priolo Earthquake Fault Zone (APEFZ) (CGS, 1986), and no part of the proposed structures would fall within 1,000 feet of any Holocene or young-age faults; see Figure 3.8-4. Therefore, a fault-rupture study is not required for the Proposed Project and Options (Caltrans, 2013b).

Figure 3.8-4. Seismic Hazards Map



Source: California Geological Survey, 1986

Regional Faults

Southern California is a geologically complex and diverse area, dominated by the compressional forces created as the North American and Pacific tectonic plates slide past one another along a transform fault known as the San Andreas. Regional tectonic compressional forces shorten and thicken the earth's crust, creating and uplifting the local transverse mountain ranges, including the Santa Susana, Santa Monica, and San Gabriel Mountains (CGS, 2010). Several fault types are expressed, including lateral or strike-slip faults; dip-slip faults (with vertical relative movement, referred to as normal or reverse faults); low-angle (surface or buried/blind thrust) faults; and oblique faults accommodating both lateral and vertical offset. Earthquakes are the result of sudden movements along faults, generating mild to very strong ground motion released as waves of seismic energy.

Faults are classified as active (Holocene movement) or potentially active (pre-Holocene or poorly expressed movement). Active surface faults are most likely to experience surface ground rupture. The locations of the faults in the vicinities of the Proposed Project and Options can be seen on Figure 3.8-5 and the characteristics of these nearby faults are summarized in Table 3.8-6.

Known faults in the Los Angeles Basin and in the vicinity of the RSAs, classified as either active or potentially active, are listed in Table 3.8-6. No AP fault traces pass through or near the RSAs of the Proposed Project and Options (CGS, 2020). Major active strike-slip faults with surface expression near the RSAs are the northwest-trending Newport-Inglewood Fault Zone and the Palos Verdes Fault, located approximately 4.3 miles to the northeast and 3.3 miles to the southwest, respectively (USGS, 2008). A surface projection (no surface expression) of the active Compton thrust is 2.3-miles to the southwest and the potentially active Charnock fault is 2.2 miles to the north. The distances to these faults are based on the closest distance to either the Proposed Project, Trench Option or Hawthorne Option.

Figure 3.8-5. Fault Locations Map

Source: USGS, 2008; Diaz Yourman Associates, 2022; STV, 2022

Table 3.8-6. Known Faults in the Vicinities of the Resource Study Area

Name[1]	Approximate Distance[2] (miles)	Fault Mechanism[1]	Preferred Dip[1] (degrees)	Dip Direction[1]	$M_w$max[1]
Charnock	2.2	Oblique/Strike slip	28-72	SW	6.5
Compton Thrust Fault	2.3	Thrust	20	NE	6.9
Palos Verdes	3.3	Strike slip	90	V	7.7
Newport-Inglewood	4.3	Strike slip	88 to 90	--	7.2 to 7.5

[1]Fault characterization based on USGS database (2008), Buika and Teng (1979), and City of Los Angeles (2010).
[2]Distance based on approximate closest portion of either the Proposed Project, Trench Option or Hawthorne Option.
V = Vertical; NE = Northeast; SW = Southwest

The Charnock fault was formerly listed as potentially active with Quaternary-aged movement (Jennings, 1994); however, the USGS did not list this fault as a potential seismic source in its databases (USGS, 2008). A seismicity study (Buika and Teng, 1979) suggests that the Charnock fault is an active fault that is within the Newport-Inglewood fault zone. The fault mechanism, dip angle, and dip direction from Buika and Teng are approximate and are based on earthquake event analysis with no surface exposures of the fault. An environmental impact report geology analysis for the Loyola Marymount University (City of Los Angeles, 2010; Table IV.E-3) states that the Charnock fault is an oblique/strike-slip fault with a potential maximum earthquake magnitude of 6.5.

3.8-3.5 Strong Ground Motion

Ground shaking intensity is influenced by several factors, including, but not limited to, the distance of the epicenter from the site and the depth at which the earthquake occurred, the magnitude of the earthquake, subsurface geologic structures, surface topography, depth to groundwater, and strength of the underlying earth materials.

An earthquake's intensity is the effect the ground shaking has on the earth's surface. Earthquake-induced ground shaking is a seismic hazard that can result in liquefaction, lurching, and lateral spreading of soils and landslide of soil and rock as well as dynamic oscillation of man-made structures. Differential settlements can occur at the ground surface due to subsurface liquefaction and densification caused by strong ground shaking.

3.8-3.6 Liquefaction and Related Ground Failures

Liquefaction occurs when saturated, low relative density, low-plastic materials are transformed from a solid to a near-liquid state. This phenomenon occurs when moderate to severe ground shaking causes pore-water pressure to increase. Site susceptibility to liquefaction is a function of the depth, density, soil type, and water content of granular sediments, along with the magnitude and frequency of earthquakes in the surrounding region. Generally, saturated sands, silty sands, and unconsolidated silts within 50 feet of the ground surface are most susceptible to liquefaction. Liquefaction-related phenomena include lateral spreading, ground oscillation, flow failures, loss of bearing strength, subsidence, and buoyancy effects.

Outside Zone: According to the zones of required investigation for the Inglewood and Torrance Quadrangles (CGS, 1999a and b), the RSAs of Proposed Project and Options are not within a liquefaction zone; see Figure 3.8-6.

3.8-3.7 Landslides and Slope Failures

Landslides are the result of the force of gravity exceeding the resistive forces of rock and soils, generally on slopes that are inclined more than 10 degrees. Surficial and gross slope failures can be triggered by extended ground shaking and high ground accelerations generated during an earthquake and, for this reason, the delineation and mapping of landslide-prone areas falls under the Seismic Hazards Zone Mapping Program.

Outside Zone: According to the zones of required investigation for the Inglewood and Torrance Quadrangles (CGS, 1999a and b), the RSAs of the Proposed Project and Options are not within any earthquake-induced landslide zones; see Figure 3.8-6.

3.8-3.8 Earthquake-Induced Flooding

The RSAs are in an area considered low risk for earthquake-induced flooding, which can be caused by dam, levee, or other water structures that may be damaged during ground-shaking events. No such structures are within the vicinity of the RSAs.

As the RSAs overlap slightly the City of Hawthorne, the existing data and information from the City of Hawthorne Safety Element was reviewed. According to the City of Hawthorne Safety Element (1989), the city was removed from the Federal Insurance Rate Map in 1980 because it was determined that a majority of the city buildings were built above the base-flood elevation.

According to the City of Lawndale Safety Element (2015), the city is not located in a 100-year flood zone, nor is it located in a dam inundation area.

According to the City of Torrance Safety Element (2010f) Floods Hazards Figure S-3, no part of the RSAs are located within a flood inundation zone.

According to the Los Angeles County Safety Element (2015), the Flood Hazard Zones Policy Map, Figure 12.2, a sliver of the RSA is located within a 100- or 500-year floodplain near the Torrance TC.

The RSAs of the Proposed Project and Options have a small overlap with an area that would be impacted by earthquake-induced floods.

3.8-3.9 Seiches, Tsunamis, and Dam Failures

Tsunamis are large waves triggered by sea floor disturbances such as underwater landslides or seafloor displacement due to earthquakes. Seiches are large waves produced by enclosed bodies of water, such as reservoirs and lakes, caused by earthquakes.

According to the Tsunami Inundation Map for Emergency Planning for the Torrance Quadrangle (CGS, 2009), the RSAs are unlikely to be impacted by tsunamis. The northern portion of the RSAs is located in the Inglewood quadrangle, which has not been mapped for tsunamis by CGS.

As the RSAs slightly overlap with the City of Hawthorne, the existing data and information from the City of Hawthorne Safety Element was reviewed. According to the City of Hawthorne Safety Element (1989b), the city is at a low risk of tsunamis, seiches, and dam failures.

According to the City of Lawndale Safety Element (2015), the city is at a low risk of seismic seiches, and no part of the city is in a tsunami- or dam-inundation area.

According to the City of Redondo Beach Environmental and Geological Hazards section of the General Plan (1993), portions of the city near the coast are subject to waves that are generated from a tsunami.

These waves can reach up to between six to nine feet high. It is unlikely that the City of Redondo Beach would be impacted by seiches and dam failures because there are no dams nearby.

According to the City of Torrance Safety Element (2010f) Floods Hazards Figure S-3, no parts of the RSAs are located within a flood-inundation zone. In addition, the City of Torrance has two enclosed water reservoirs (Walteria and Ben Haggot) located in the southern part of the city, but the RSAs would not be affected by the failure and consequent flooding of these dams.

According to the Los Angeles County Safety Element (2015), the Tsunami Hazard Areas figure shows that the RSAs are not located within a tsunami-inundation area. In addition, it is unlikely that the RSAs would be impacted by dam failures or seiches.

Outside Area: The RSAs of the Proposed Project and Options do not lie in areas that would be prone to tsunamis, seiches, or dam failures. In addition, sea level rise is not anticipated to exacerbate the tsunami risk within the RSAs.

3.8-3.10 Soil Erosion

Erosion is the movement of rock and soil from place to place in a downhill direction. It occurs naturally through the action of flowing water or wind. Ordinarily, erosion proceeds so slowly as to be imperceptible; however, erosion can be greatly accelerated by human activities if it is not controlled. This can create aesthetic as well as engineering impacts. Accelerated erosion within an urban area can cause damage by undermining structures, blocking storm drains, and depositing silt, sand, or mud on roads. Eroded materials are eventually deposited into coastal waters where the transported fine particulates (silt and clay) remain suspended for some time, constituting a pollutant and impacting plant and animal life. Erosion is most likely to occur in areas of substantial topographic relief, which tend to accelerate the velocity of flowing water.

No maps of soil susceptible to erosion could be found in any of the cities or Los Angeles County safety elements plans, but a Revised Universal Soil Loss Equation (RUSLE) K Values map prepared by the United States Department of Agriculture and State Water Resources Control Board (2016) shows that the surface soils located within the RSAs of the Proposed Project and Options have a low to moderate potential to be susceptible to soil erosion.

3.8-3.11 Expansive Soils

Expansive soils contain significant amounts of clay particles that can give up water (shrink) or take on water (swell). Buildings, utilities, and roads can be damaged by clay-rich soils, which can swell each winter and shrink each summer depending upon rainfall. When these soils swell, the change in volume can exert significant pressures on loads such as buildings that are placed on them and can result in gradual structural distress, cracking, settling, and/or damage. The type and amount of the silt and clay content in the soil would determine the amount of shrinkage or swelling associated with the various levels of water content.

According to the City of Lawndale Safety Element (2015), the expansive soils present a low risk. In addition, based on existing geotechnical exploration around the RSAs, the upper 20 feet of soil have a low to moderate expansion potential. The expansive potential of the on-site soils should be assessed on a site-specific basis during the final design.

3.8-3.12 Subsidence and Settlement

Subsidence (other than that caused by liquefaction) may occur due to earthquake shaking, removal of groundwater, and/or removal of hydrocarbons from the underlying soil material.

Subsidence may occur in unconsolidated soils during earthquake shaking as the result of a more efficient rearrangement of existing individual soil particles. Subsidence of sufficient magnitude to cause significant structural damage is normally associated with rapidly deposited alluvial materials or improperly compacted fill.

According to the City of Redondo Beach Geological Hazards section of the General Plan (1993f), no areas were identified as being prone to subsidence. In addition, subsidence occurring from withdrawal of hydrocarbons in the City of Redondo Beach is nonexistent.

According to the City of Lawndale Safety Element (2015), the city does not contain areas of rapidly deposited alluvial material, and therefore the risk for subsidence is low.

3.8-3.13 Paleontological Resources

A paleontological collections records search was conducted by the Vertebrate Paleontology Section of the National History Museum of Los Angeles (NHMLA). A detailed review of museum collections records was performed to identify any known vertebrate fossil localities within at least one mile of the Proposed Project, and to identify the geologic units within the RSA and vicinity. In addition, the following published geologic maps were reviewed:

- Geologic map of the Venice and Inglewood quadrangles, Los Angeles County, California. Dibblee Geology Center Map #DF-322 (Dibblee, 2007); and
- Geologic map of the Long Beach 30’ x 60’ quadrangle, California, a digital database, Southern California Areal Mapping Project, Regional Geologic Map No. 5, scale 1:100,000 (Saucedo et al., 2003).

Geologic Setting

The RSA is situated in the southwestern block of the Los Angeles basin. The Los Angeles basin is one of many basins of the Neogene continental borderland of Southern California. It extends from the Santa Ana Mountains in the north to the San Joaquin Hills to the south and includes the southern foothills of the San Gabriel Mountains, the Puente Hills, and the Palos Verdes Hills. The southwestern block is mostly submerged by the Pacific Ocean but is exposed in the low plain extending from Santa Monica southeast to Long Beach (Yerkes et al., 1965).

The Los Angeles basin is a structural depression that has been the site of discontinuous deposition since the Late Cretaceous and of continuous subsidence and primarily marine deposition since the middle Miocene. This and other sedimentary basins formed during the Miocene and Pliocene as a result of an early San Andreas-type phase of transform motion along the western margin of North America.

At least three cycles of shallow marine transgression and regression created embayments (a shape resembling a bay) and floodplains along the ancient coastline. During much of the middle Miocene, a northwest-trending marine embayment covered the site of the Los Angeles basin. Rivers that drained the highlands to the north and east transported and deposited huge volumes of coarse-grained sandstone and sandy cobble-boulder conglomerate into the embayment (Yerkes et al., 1965).

Deposition continued until the end of the Pliocene, at which time the Palos Verdes Hills were an island, and large parts of the Santa Monica Mountains, the Puente Hills, the Santa Ana Mountains and much of

the southwest portions of the basin were exposed. In the early Pleistocene, the Palos Verdes Hills and southwestern areas again subsided and marine deposition resumed (Yerkes, et al., 1965).

Site-Specific Geology and Paleontology

According to published geologic mapping by Dibblee (2007) and Saucedo et al. (2003), the RSA is underlain by the two following geologic units as shown in Figure 3.8-6.

> Quaternary older alluvial deposits of Pleistocene age (2.6 million years ago to 10,000 years before present) mapped as “Qae” and “Qoa”; and

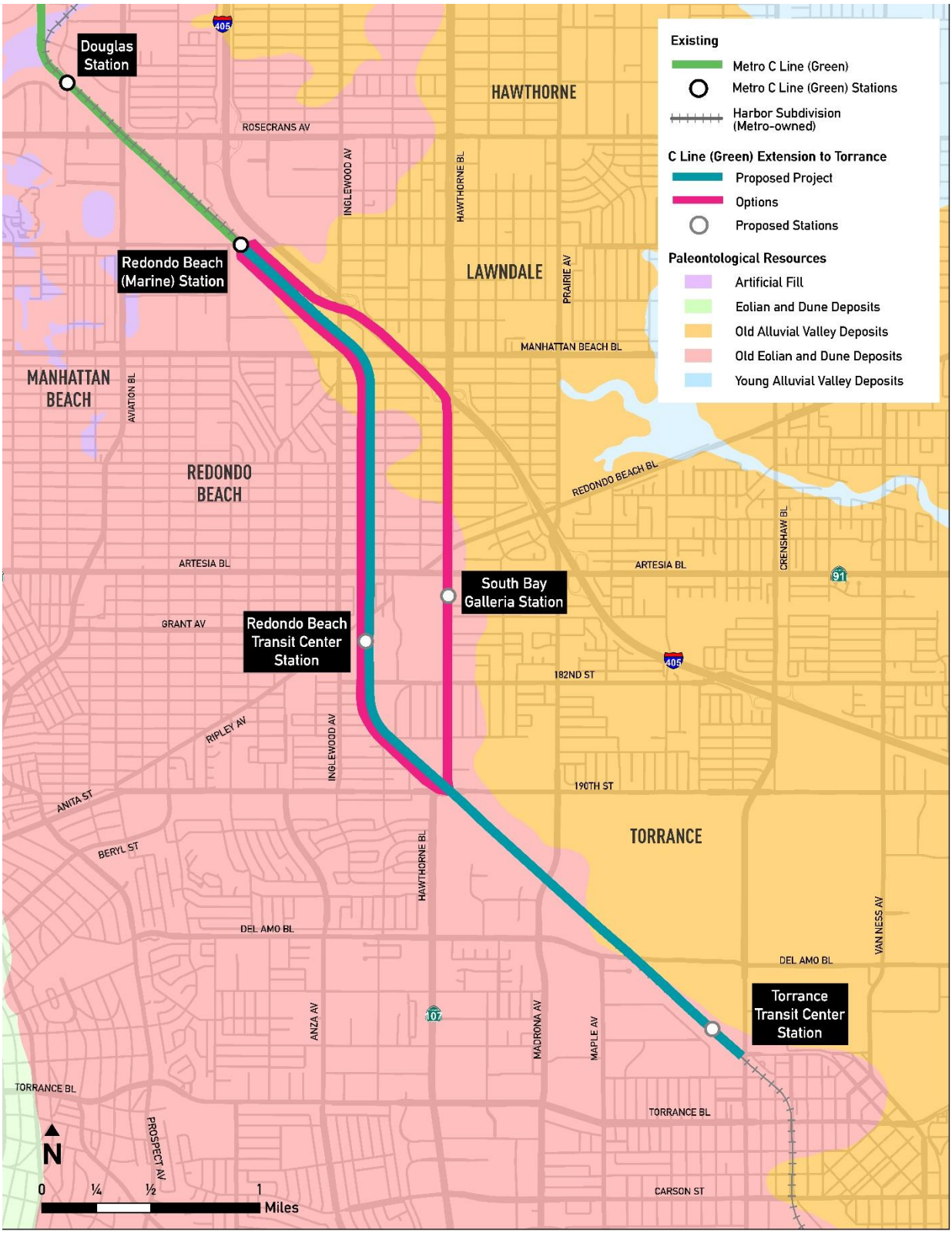
> Quaternary older sand dune and Eolian deposits, also of Pleistocene age, mapped as “Qos” and “Qoe.”

These older surficial (i.e., near the ground surface) deposits are unconsolidated to weakly consolidated and locally dissected where elevated. The alluvium consists of gray to light brown pebble-gravel, sand, and silty clay (Dibblee, 2007). On the margins of the RSAs, particularly in the northern portion from 164th Street to the northern terminus, the Proposed Project may also traverse both marine and non-marine older terrace deposits of Quaternary age (McLeod, 2010).

Throughout Southern California, older non-marine alluvium and terrace deposits have produced Pleistocene-age fossils from numerous localities. Sixty Pleistocene localities, exclusive of Rancho La Brea, were reviewed by Miller (1971), and many additional localities have been discovered since then. Pleistocene taxa from alluvial and terrace deposits include amphibians (toad, frog, newt); reptiles (pond turtle, desert tortoise, fence lizard, alligator lizard, rattlesnake, gopher snake); birds (duck, hawk, burrowing owl, quail, coot, sparrow); and mammals (shrew, ground sloth, jack rabbit, cottontail rabbit, ground squirrel, pocket gopher, pocket mouse, kangaroo rat, deer mouse, mouse, wood rat, vole, muskrat, coyote, dire wolf, weasel, saber-toothed cat, mammoth, mastodon, horse, camel, antelope, deer, bison) (Miller, 1971). Figure 3.8-6 and Figure 3.8-7 show the geology and paleontological sensitivity for the RSAs, respectively.

Per Figure 3.8-6 and Figure 3.8-7, the Proposed Project and Trench Option RSA overlays approximately 20 acres of highly paleontologically sensitive older alluvial deposits of the Pleistocene age and 59 acres of moderate to highly palynologically sensitive sand dune and Eolian deposits of the Pleistocene age. The Hawthorne Option overlays approximately 28 acres of highly paleontologically sensitive older alluvial deposits of the Pleistocene age and 56 acres of moderate to highly palynologically sensitive sand dune and Eolian deposits of the Pleistocene age.

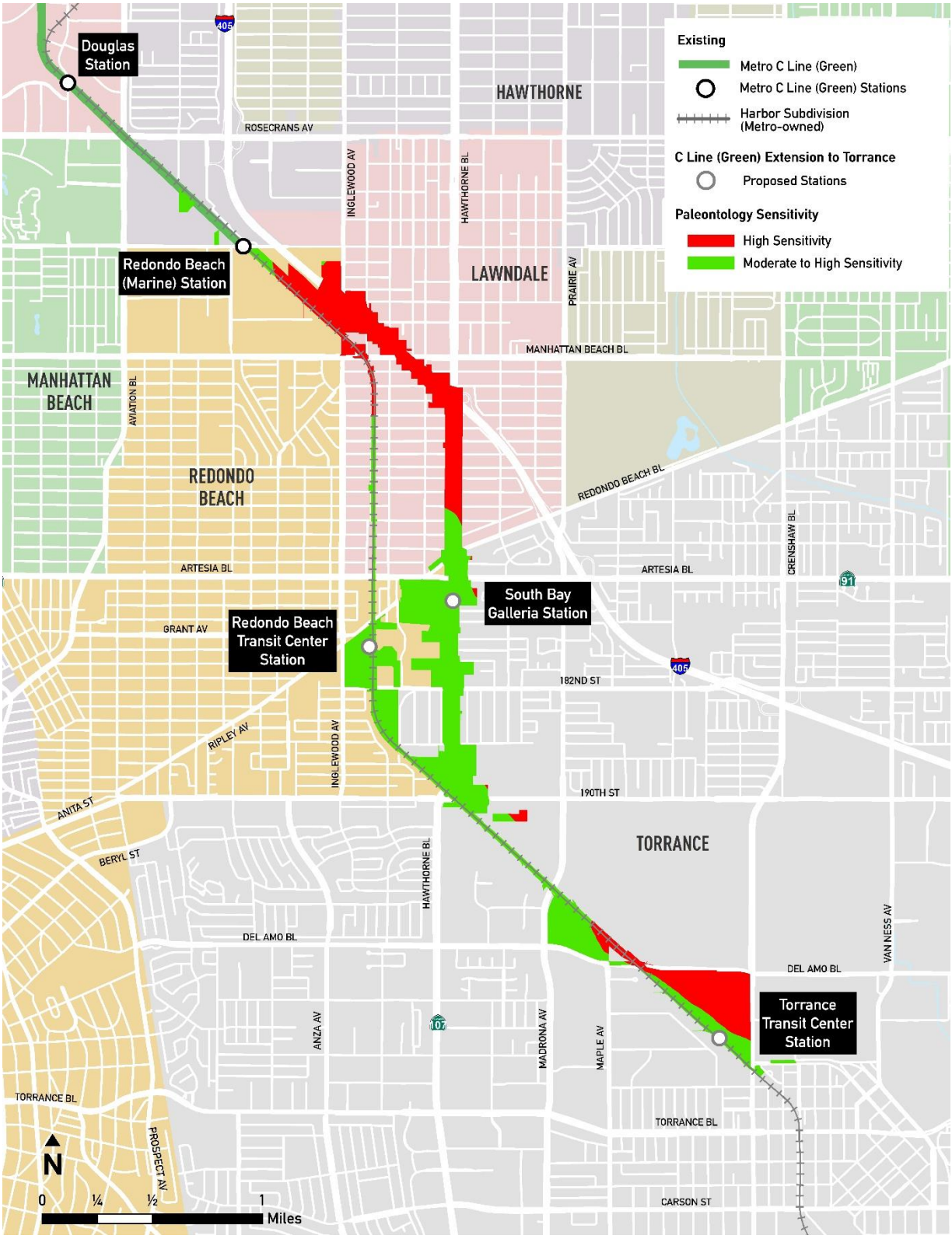
Figure 3.8-6. Paleontological – Geology Map



Source: AECOM, 2020; STV, 2022

Metro

Figure 3.8-7. Paleontological Sensitivity Map



Source: AECOM, 2020; STV, 2022

Museum Records Search Summary

Museum collections records maintained by the NHMLA were searched, with the results collected in Appendix 3.8-A, Natural History Museum Records Search. No localities are documented within the RSA.

Ten previously recorded vertebrate fossil localities are documented within older Quaternary alluvium in the immediate and general vicinity of the RSAs, as shown in Table 3.8-7. These vertebrate fossil localities were discovered within the same geologic sediments that are present within the RSAs, and yielded fossil specimens of horse, bison, mammoth, proboscidean (elephant), rodent, rabbit, whale, and sanddab (a fish). The depth at which these localities were discovered ranged from 13 to 40 feet below the surface (McLeod, 2010).

A field reconnaissance survey was performed on June 23, 2010, to examine the RSAs for any rock outcrops or surface exposures. A windshield survey was conducted in all areas accessible by automobile. The reconnaissance survey confirmed that the RSA is highly disturbed by the existing Metro ROW and no surficial exposure of Quaternary alluvium was visible. The Hawthorne Option RSA, which primarily overlaps with I-405 and Hawthorne Boulevard, with their surrounding highly developed areas, are similarly highly disturbed and built out.

Table 3.8-7. Previously Discovered Resources in the Paleontological RSA and Vicinity

NHMLA Locality Number(s) and Approximate Location	Geologic Formation	Age	Taxa
Los Angeles County Museum (LACM) 1839; south-southwest of the proposed Torrance Transit Park and Ride Regional Terminal (Torrance TC) near the Crenshaw Boulevard/236th Street intersection	Quaternary deposits	Pleistocene	*Equus* (horse)
LACM 4444; northeast of LACM 1839 at the ExxonMobil Oil Refinery property just west of Crenshaw Boulevard and just south of 190th Street	Quaternary deposits	Pleistocene	*Equus* (horse), *Cetacea* (whale)
LACM 2035; farther north of LACM 4444 and east of the Paleontological Study Area near the intersection of Prairie Avenue/139th Street intersection	Quaternary deposits	Pleistocene	*Mammuthus* (mammoth)
LACM 3264; in or around LAX, south of Century Boulevard, and west of Sepulveda Boulevard	Quaternary deposits	Pleistocene	*Proboscidea* (proboscidean)
LACM 7332; east of LACM 3264 at the northwest side of West Century Boulevard and Bellanca Avenue	Quaternary deposits	Pleistocene	*Mammuthus* (mammoth)
LACM 3789; farther north of LACM 7332 at Bellanca Avenue south of Manchester Avenue	Quaternary deposits	Pleistocene	*Mammuthus* (mammoth), *Rodentia* (rodent), *Citharichthys Stigmaeus* (speckled sanddab)

NHMLA Locality Number(s) and Approximate Location	Geologic Formation	Age	Taxa
LACM 1180 and LACM 4942; immediately northwest of LACM 3789 on the northeast and southeast sides, respectively, of Airport Boulevard at the intersection with Manchester Avenue	Quaternary deposits	Pleistocene	*Equus* (horse), *Mammuthus* (mammoth), *Bison* (bison), *Lepus* (rabbit)
LACM 1643; east of the southern portion of the Proposed Project Area near the intersection of 190th Street and Annalee Avenue	Quaternary deposits	Pleistocene	*Mammuthus* (mammoth)
LACM 3823; east of the Harbor Freeway (I-110) and south of Sepulveda Boulevard near the intersection with Figueroa Street	Quaternary deposits	Pleistocene	*Camelops* (camel)

Source: AECOM 2022; SWCA, 2010

3.8-4 Environmental Impacts

3.8-4.1 Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo (AP) Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

3.8-4.1.1 Construction Impacts

No Impact. The construction for the Proposed Project would not result in an increased risk of loss, injury, or death due to fault rupture because the footprint of the Proposed Project does not traverse any known fault zones or the nearest CGS mapped AP Earthquake Fault Zone. The nearest AP zone is over four miles east of the Proposed Project's RSA. Therefore, the Proposed Project would have **no impact** related to fault rupture during construction.

TRENCH OPTION

No Impact. For the same reason as the Proposed Project, the Trench Option would have **no impact** related to fault rupture during construction.

HAWTHORNE OPTION

No Impact. For the same reason as the Proposed Project, the Hawthorne Option would have **no impact** related to fault rupture during construction.

3.8-4.1.2 Operational Impacts

No Impact. The Proposed Project would not involve any type of operational activities that would result in an increased risk of loss, injury, or death due to fault rupture, because the footprint does not traverse any known fault zones and the nearest CGS mapped AP Earthquake Fault Zone is approximately four miles east of the RSA. Therefore, the Proposed Project would have **no impact** during operation due to fault rupture.

TRENCH OPTION

No Impact. For the same reason as the Proposed Project, the Trench Option would have no impact related to fault rupture during operation.

HAWTHORNE OPTION

No Impact. For the same reason as the Proposed Project, the Hawthorne Option would have no impact related to fault rupture during operation.

3.8-4.2 Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

3.8-4.2.1 Construction Impacts

Less Than Significant Impact. Faults, such as the Palos Verdes and Newport-Inglewood Faults, that are the closest to the RSA as described in Section 3.8-3.4 and Table 3.8-6 are capable of producing earthquakes with magnitudes up to 7.7 and high ground accelerations. The Proposed Project's RSA is approximately four miles east of the Palos Verdes and Newport-Inglewood Fault Zone. These faults are capable of causing strong ground shaking during a seismic event at the construction sites.

The construction of the Proposed Project would involve the presence of construction workers at the site, thus increasing the potential risk of loss, injury, or death during a strong seismic event. However, given the intermittent and temporary nature of construction work and the relative rarity of strong seismic events in the region, the occurrence of strong seismic ground shaking during construction of the Proposed Project is unlikely. Therefore, construction of the Proposed Project would have **less than significant impact** related to risk of loss, injury, or death involving strong seismic ground shaking.

TRENCH OPTION

Less Than Significant Impact. The construction of a trench requires deeper excavations which, during a seismic event, could potentially increase the risk of loss, injury, or death as a result of trench collapses or cave-ins. The potential for strong seismic ground shaking would exacerbate these risks. Generally, to prevent these issues, sloping or benching the excavation, shoring the trench walls with support would be implemented. Three types of walls for the proposed Trench Option are proposed: U walls, secant pile walls without struts, and secant pile walls with struts. U walls may be constructed using bottom-up construction with excavating the soil behind the walls. The other two types of secant pile walls would be constructed using top-down construction method. The secant pile wall would have series of closely spaced cast-in-drilled-hole piles with overlapping soil-cement piles. This secant pile wall system would first be constructed (using top-down construction technique) and then the trench excavations would be performed. This would provide a safe working environment to construction workers. The U walls can be constructed with proper back-sloping to avoid any slope failures due to seismic ground shaking. The Trench Option would comply with PF-GEO-1, Metro Geotechnical Design Standards which would ensure that during the design phase, seismically induced earth pressures would be incorporated in the design to prevent the failures due to seismic ground shaking. For these reasons and the intermittent and temporary nature of construction work and the relative rarity of strong seismic events, Trench Option would have a **less than significant impact** related to risk of loss, injury, or death involving strong seismic ground shaking.

HAWTHORNE OPTION

Less Than Significant Impact. The construction of the Hawthorne Option would consist of longer and taller elevated structures founded on deeper and large diameter pile foundations, but would be located in the same seismic setting as that of Proposed Project. Based on the proposed structure types, the exposure to ground shaking to the construction workers would be higher than that of Proposed Project as the duration of construction would be longer. However, because of the intermittent and temporary nature of construction work and the relative rarity of seismic events, the Hawthorne Option would have

a **less than significant impact** related to risk of loss, injury, or death involving strong seismic ground shaking.

3.8-4.2.2 Operational Impacts

Less Than Significant Impact. The Proposed Project would be designed to accommodate the high seismic ground motion and associated consequences (such as liquefaction induced vertical settlements/lateral spreading if any), and the structures would perform in accordance with the MRDC MDE, and ODE thresholds discussed as part of PF-GEO-1. Also, as part of PF-GEO-1, site-specific geotechnical investigations would be performed in accordance with the MRDC Section 5.6 to incorporate seismic demands and provide engineering solutions. These solutions could include deep foundations and/or soil ground improvements that are appropriate for the subsurface conditions, site conditions/restraints and other environmental restrictions for the Proposed Project site. Also, the Proposed Project would comply with the latest versions of local and state building codes and regulations. Therefore, there would be a **less than significant impact** related to the risk of loss, injury, or death involving strong seismic ground shaking for the Proposed Project during operations.

TRENCH OPTION

Less Than Significant Impact. The trench wall collapsing during strong seismic ground shaking is one of the major concerns during the operation, however, similar to the Proposed Project, final design for the Trench Option would implement PF-GEO-1. As noted above and in Section 3.8-2.5, during the final design phase, seismically induced earth pressures would be incorporated in the design to prevent failures due to seismic ground shaking. Therefore, similar to the Proposed Project, the Trench Option would have a **less than significant impact** related to strong seismic ground shaking during operation.

HAWTHORNE OPTION

Less Than Significant Impact. Similar to the Proposed Project, final design for the Hawthorne Option would implement PF-GEO-1, which would prevent failures due to seismically induced shaking. Therefore, the Hawthorne Option would have a **less than significant impact** related to strong seismic ground shaking during operation.

3.8-4.3 Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

3.8-4.3.1 Construction Impacts

Less Than Significant Impact. The components planned for the Proposed Project such as elevated guideways, bridges, retaining walls, at-grade crossings, station platforms, and traction power substation (TPSS) sites would be affected by seismic-related ground failures such as liquefaction during a seismic event. The CGS liquefaction maps were reviewed as a screening-level evaluation to determine the liquefaction potential. Based on a review of these maps, the Proposed Project footprint is not located within a CGS mapped liquefaction zone, as shown in Figure 3.8-4. However, shallow groundwater was recorded in the northern area of the Proposed Project footprint based on the existing geotechnical data (see Figure 3.8-3). The shallow groundwater level has, in general, potential for liquefaction. Based on review of the historically highest groundwater levels at the site, the groundwater depth will be at 30 feet bgs or deeper. Therefore, as part of PF-GEO-1, site-specific geotechnical investigations would be performed to verify the potential for liquefaction during the final design phase. Where warranted by site-specific subsurface conditions identified during final design, design enhancements such as ground improvement or combination of ground improvement and structure solutions could be implemented

that would reduce the potential impacts to acceptable levels for the structure. However, given the intermittent and temporary nature of construction work and the relative rarity of seismic events, the occurrence of seismic ground shaking resulting in liquefaction during construction of the Proposed Project is unlikely. Therefore, risk of loss, injury, or death involving seismic-related ground failure, including liquefaction as a result of the construction of the Proposed Project is **less than significant**.

TRENCH OPTION

Less Than Significant Impact. The trench components of the Trench Option would be constructed with U walls and a secant pile wall system, which would help protect those present were ground shaking caused by ground failure due to liquefaction to occur. Per PF-GEO-1, site specific investigation would determine liquefaction-induced settlements along the trench alignment, and the settlement profile will be evaluated in detail during the final design. The settlements on the top of the trench wall and invert would also be considered. Where warranted by site-specific subsurface conditions identified during final design, per PF-GEO-1, design enhancements such as ground improvement or combination of ground improvement and structural solutions could be implemented that would reduce the potential impacts to acceptable levels for the structure. However, given the intermittent and temporary nature of construction work and the relative rarity of seismic events, the occurrence of seismic ground shaking resulting in liquefaction during construction of the Trench Option is unlikely. Therefore, risk of loss, injury, or death involving seismic-related ground failure, including liquefaction as a result of the construction of the Trench Option is **less than significant**.

HAWTHORNE OPTION

Less Than Significant Impact. The construction of the Hawthorne Option would consist of longer and taller elevated structures founded on deeper and large diameter pile foundations but would be located in the same seismic settings as that of Proposed Project. Per PF-GEO-1, where warranted by site-specific subsurface conditions identified during final design, design enhancements such as ground improvement or combination of ground improvement and structure solutions could be implemented that would reduce the potential impacts to acceptable levels for the structure. Therefore, the Hawthorne Option would have a **less than significant impact** due to seismic-related ground failure, including liquefaction, as a result of construction.

3.8-4.3.2 Operational Impacts

Less Than Significant Impact. The Proposed Project would not involve any type of operational activities that would result in seismic-related ground failure, including liquefaction during operation. The Proposed Project design would incorporate PF-GEO-1 to ensure structures are seismically resistant and can withstand liquefaction and its effects during operation. For example, the liquefaction-induced down drag forces on the deep pile foundation would be incorporated with the other structural loads when determining size and depth of piles. Therefore, the Proposed Project would have a **less than significant impact** related to seismic related failures, including liquefaction during operation.

TRENCH OPTION

Less Than Significant Impact. The Trench Option would not involve any type of operational activities that would result in seismic-related ground failure, including liquefaction. Similar to the Proposed Project, the Trench Option would incorporate PF-GEO-1 to ensure structures are seismically resistant and can withstand liquefaction and its effects during operation. For example, recommendation for ground improvement will be incorporated in the design. Therefore, the Trench Option would have a **less**

than significant impact related to seismic-related ground failure, including liquefaction during operation.

HAWTHORNE OPTION

Less Than Significant Impact. The Hawthorne Option would not involve any type of operational activities that would result in seismic-related ground failure, including liquefaction. Similar to the Proposed Project, the Hawthorne Option would incorporate PF-GEO-1 to ensure structures are seismically resistant and can withstand liquefaction and its effects during operation. Therefore, the Hawthorne Option would have a **less than significant impact** related to seismic-related ground failure, including liquefaction during operation.

3.8-4.4 Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

3.8-4.4.1 Construction Impacts

Less Than Significant Impact. The Proposed Project RSA, in general, is in a relatively low relief area, and the nearest CGS mapped landslide zone is over 1.5 miles west and south; see Figure 3.8-4. Therefore, there is no landslide potential for the Proposed Project. However, construction activities for embankments and retaining walls have the potential to destabilize the soils surrounding the Proposed Project RSA and could result in seismically induced slope failures. As part of PF-GEO-1, any permanent unretained and retained sloped areas within the Proposed Project's RSA would be evaluated for geotechnical global stability for static and seismic loading events according to MRDC guidelines. Given the intermittent and temporary nature of construction work and the relative rarity of seismic events, the occurrence of seismic ground shaking resulting in slope failure during construction of the Proposed Project is unlikely. Therefore, the risk of loss, injury, or death due to landslides or seismically induced slope failures as a result of construction of the Proposed Project would be a **less than significant impact**.

TRENCH OPTION

Less Than Significant Impact. Similar to the Proposed Project, the Trench Option is located in an area where there is no potential for landslides, based on CGS potential landslide map. However, construction activities for the Trench Option have the potential to destabilize the soils surrounding the Trench Option RSA and could result in seismically induced slope failures. The major activities during the construction of the Trench Option would be excavations for construction of walls. As part of the Trench Option, three types of walls are proposed: U walls, secant pile walls without struts, and secant pile walls and with struts. U walls may be constructed using bottom-up construction with excavating the soil behind the walls. The other two types of secant pile walls will be constructed using top-down construction method. The recommended back slopes for the U wall construction would be determined based on static and seismic slope stabilities which is considered part of the final design process. The secant pile wall system would be designed such that no global stability failures can occur. The U walls are planned where the invert of U wall would not interfere with groundwater levels. By incorporating PF-GEO-1, the bottom of the trench section and the groundwater levels would be carefully evaluated during the final design and appropriate measures, such as dewatering, would be implemented as needed during construction. Therefore, the risk of loss, injury, or death due to landslides or seismically induced slope failures as a result of the construction of the Trench Option would be a **less than significant impact**.

Hawthorne Option

Less Than Significant Impact. Similar to the Proposed Project, the Hawthorne Option is located in an area where there is no potential for landslides, based on CGS landslide data. However, construction

activities for the Hawthorne Option have the potential to destabilize the soils surrounding the Hawthorne Option RSA and could result in seismically induced slope failures. Similar to the Proposed Project, the Hawthorne Option would incorporate PF-GEO-1, which would require a geotechnical investigation during final design that includes slope stability analyses and account for any instability. Therefore, the risk of loss, injury, or death due to landslides or seismically induced slope failures as a result of the construction of the Hawthorne Option would be a **less than significant impact**.

3.8-4.4.2 Operational Impacts

Less Than Significant Impact. The Proposed Project would not include any operational activities that would directly or indirectly cause potential substantial adverse effects related to the risk of loss, injury, or death involving landslides. The slope stability analyses for the operational configuration of the Proposed Project is incorporated as part of PF-GEO-1 and would include all the potential loading cases such as light train loading and earth pressures. Therefore, risk of loss, injury, or death involving landslides or seismically-induced slope failures as a result of the operation of the Proposed Project would be a **less than significant impact**.

TRENCH OPTION

Less Than Significant Impact. The Trench Option would not include any operational activities that would directly or indirectly cause potential substantial adverse effects related to the risk of loss, injury, or death involving landslides. As part of PF-GEO-1, the design would account for all potential loading cases to ensure none would result in a landslide. Therefore, the Trench Option would have **less than significant impact** related to landslides or seismically induced slope failures during operation.

HAWTHORNE OPTION

Less Than Significant Impact. Similar to the Proposed Project, the Hawthorne Option would not include any operational activities that would directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. As part of PF-GEO-1, the design would account for all potential loading cases to ensure none would result in a landslide. Therefore, the Hawthorne Option would have a **less than significant impact** on landslides or seismically induced slope failures during operation.

3.8-4.5 Would the Project result in substantial soil erosion or the loss of topsoil?

3.8-4.5.1 Construction Impacts

Less Than Significant Impact. Based on previous geotechnical data in the vicinity of the Proposed Project RSA, the surficial soils mainly consist of cohesionless coarse-grained soils that can be susceptible to erosion. Construction activities for embankments, retaining walls, aerial guideways, at-grade crossings, and station platforms would disturb topsoil and therefore, could result in topsoil erosion. However, all construction work would take place with erosion control measures as described in PF-GEO-1 and PF-HWQ-1, SWPPP Implementation per Construction General Permit in Section 3.10, Hydrology and Water Quality. BMPs designated for soil stabilization and sediment control include, but are not limited to, temporary measures like construction entrances, a move-in/move-out, silt fences, hydraulic mulch, concrete washouts, fiber rolls, and inlet protection measures. Therefore, substantial soil erosion and loss of topsoil for the Proposed Project as a result of construction would be **less than significant**.

TRENCH OPTION

Less Than Significant Impact. Construction activities pertinent to the Trench Option is also considered less than significant because of implementation of the soil erosion controls, including PF-GEO-1 and PF-

HWQ-1, described under the Proposed Project, would greatly reduce the occurrence of soil erosion for this option. Therefore, the activities pertinent to the Trench Option would have a **less than significant impact** on substantial soil erosion or loss of topsoil during construction.

HAWTHORNE OPTION

Less Than Significant Impact. Similar to the Proposed Project, construction of the Hawthorne Option would disturb the topsoil and therefore, could result in topsoil erosion. However, similar to the Proposed Project, all construction work would include PF-GEO-1 and PF-HWQ-1. Therefore, the Hawthorne Option would have a **less than significant impact** on substantial soil erosion and loss of topsoil during construction.

3.8-4.5.2 Operational Impacts

No Impact. The operation of the Proposed Project would not involve any activities that have the potential to result in substantial soil erosion or loss of topsoil. Therefore, the Proposed Project would have **no impact** to related to soil erosion or loss of topsoil during operations.

TRENCH OPTION

No Impact. Because the trench component of the Trench Option would be lined with concrete, or a similar material, and soil would not be exposed there is little risk of erosion. Therefore, for the same reasons described under the Proposed Project, the Trench Option would have **no impact** related to soil erosion or loss of topsoil during operations.

HAWTHORNE OPTION

No Impact. As the Hawthorne Option would operate on an existing paved roadway there is little exposed soil that could lead to erosion. Therefore, for the same reason described under the Proposed Project, the Hawthorne Option would have **no impact** related to soil erosion or loss of topsoil during operations.

3.8-4.6 Would the Project 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?

3.8-4.6.1 Construction Impacts

Less Than Significant Impact. As previously discussed, the Proposed Project footprint is not located within a CGS mapped liquefaction zone. Therefore, impacts associated with unstable soils and their consequences are considered minimal. However, previously performed geotechnical investigation indicated shallow groundwater (this could be perched water) was recorded in the northern area of the Proposed Project footprint, which would be further evaluated during the design phase with incorporation of PF-GEO-1. In addition, the Proposed Project footprint, in general, is in a relatively low relief area and the nearest CGS mapped landslide zone is over 1.5 miles west and south; see Figure 3.8-4. Given the intermittent and temporary nature of construction work and the relative rarity of seismic events, the occurrence of seismic ground shaking resulting in liquefaction, lateral spreading, landslides, or seismically induced slope failures during construction of the Proposed Project is unlikely. In addition, there is no evidence of groundwater pumping within or around the Proposed Project footprint that can cause ground subsidence, although this will be confirmed and evaluated during the final design phase.

Based on shallow groundwater recorded in the northern area of the Proposed Project footprint, the coarse-grained soils may be susceptible to liquefaction. PF-GEO-1 would require a site-specific geotechnical investigation to assess the subsurface conditions and current groundwater depth to conclude the landslide, lateral spreading, subsidence, liquefaction, and collapse risk, as well as seismic risk solutions such as deep foundations and ground improvements. Therefore, the construction impacts for Proposed Project would be **less than significant** on unstable soils as a result of landslides, lateral spreading, subsidence, liquefaction, or collapse.

TRENCH OPTION

Less Than Significant Impact. The construction of the Trench Option would be in the same location as the Proposed Project and similar in method to that of the Proposed Project, except excavations and potentially dewatering operations are required for the trench. Portions of the trench invert would be constructed below existing groundwater level. Therefore, dewatering may be necessary, and potential settlement from lowering of the groundwater table may occur. During the final design, as part of PF-GEO-1, a detailed geotechnical site-investigation would assess the subsurface soil conditions and groundwater depth along the trench, and evaluate the potential impacts related to dewatering, such as ground settlement, landslide, heaving, damage to structures, flooding, erosion, excavation instability, lateral spreading, subsidence, liquefaction, and collapse potential. The detailed geotechnical site investigation will consider construction methods that minimize permanent changes to sub-surface drainage or groundwater level to address potential impacts. Therefore, the construction impacts for the Trench Option would have a **less than significant impact** on unstable soils as a result of landslides, lateral spreading, subsidence, liquefaction, or collapse.

HAWTHORNE OPTION

Less Than Significant Impact. As with the Proposed Project, due to the presence of coarse-grained material and shallow groundwater, there would be potential for liquefaction. However, by incorporating PF-GEO-1 the Hawthorne Option the potential liquefaction effects would be considered in the design calculations. Therefore, the Hawthorne Option would have a **less than significant impact** on unstable soils as a result of landslides, lateral spreading, subsidence, liquefaction, or collapse.

3.8-4.6.2 Operational Impacts

Less Than Significant Impact. The Proposed Project would not include any activities during operation that would result in landslides, lateral spreading, subsidence, liquefaction, or collapse. Per PF-GEO-1, landslide, lateral spreading, subsidence, liquefaction, or collapse would be carefully evaluated during the final design phase and stabilized as necessary during the construction phase, resulting in a stable operating condition. Therefore, landslides, lateral spreading, subsidence, liquefaction, or collapse would result in operational impacts for the Proposed Project that are **less than significant**.

TRENCH OPTION

Less Than Significant Impact. As the Trench Option is at the same location as the Proposed Project and would incorporate PF-GEO-1 during design and construction to result in a stable operating condition, the Trench Option would have **less than significant impact** related to landslides, lateral spreading, subsidence, liquefaction, or collapse during operation.

HAWTHORNE OPTION

Less Than Significant Impact. As the Hawthorne Option is at the same geological setting as the Proposed Project and would incorporate PF-GEO-1 during design and construction to result in a stable operating

condition, the Hawthorne Option would have **less than significant impact** related to landslides, lateral spreading, subsidence, liquefaction, or collapse during operation.

3.8-4.7 Would the Project be located on expansive soil, as defined in Section 1803.5.3 of the California Building Code[1], creating substantial direct or indirect risks to life or property?

3.8-4.7.1 Construction Impacts

Less Than Significant Impact. Based on available geotechnical data from previous geotechnical investigations in the vicinity of the Proposed Project RSA, the upper approximately 10 feet of soils along the entire alignment consist mainly of cohesionless coarse-grained soils. These coarse-grained soils have low expansion potential. However, there is potential to encounter expansive soil layers during construction activities that require deeper excavations (e.g., construction of retaining walls and station platforms) where existing geotechnical data suggests fine-grained soil may be encountered. Therefore, per PF-GEO-1, site-specific geotechnical investigations would be performed to verify the potential expansive soils and, if necessary, the remediation steps, such as removal and replacement and/or lime or cement treatment activities, that would be incorporated into the Proposed Project's construction. Therefore, the risk to life or property due to expansive soils during construction of the Proposed Project is **less than significant**.

TRENCH OPTION

Less Than Significant Impact. The construction of the Trench Option would be similar to that of the Proposed Project except deeper excavation is required for the Trench Option. The deeper excavation would induce heaving (expansion), that must be addressed with soil treatment and/or a structural solution such as post tension slabs. In addition to this, if the soils at the proposed invert have expansion potential, then these soils could be replaced with non-expansive soils. Therefore, per PF-GEO-1, site-specific geotechnical investigations would be performed to verify the soil types near the elevation of the bottom of the trench. Based on the site-specific geotechnical investigation during design phase, appropriate design recommendation would be provided to safely design and construct the trench. Therefore, the Trench Option would have a **less than significant impact** due to expansive soils during construction.

HAWTHORNE OPTION

Less Than Significant Impact. The Hawthorne Option would be constructed in the same geological context and use similar construction methods as the Proposed Project, though it would involve more excavation (due to the need for piles) with the potential to encounter expansive soils. However, the measures taken under PF-GEO-1 would protect against impacts caused by expansive soils. Therefore, for similar reasons as the Proposed Project, the Hawthorne Option would have **less than significant impact** related to expansive soil during construction.

[1] Appendix G of the CEQA Guidelines refers to Table 18-1-B of the Uniform Building Code. That provision no longer exists. Section 1803.5.3 of the California Building Codes describes the criteria for analyzing expansive soils.

3.8-4.7.2 Operational Impacts

Less Than Significant Impact. Operation of the Proposed Project would be secured from the impacts of expansive soils by being underlain by non-expansive engineered soil fills and/or treated on-site fill soils, per PF-GEO-1, and the design would comply with MRDC and the latest state and local building codes. Therefore, the Proposed Project would result in **less than significant impact** as a result of operational activities.

TRENCH OPTION

Less Than Significant Impact. Operation of the Trench Option would be secured from the impacts of expansive soils by being underlain by non-expansive engineered fills and/or treated on-site fills. In addition to this geotechnical solution, structural solutions, such as post-tension slabs, would also avoid the expansion/heaving issues related to trench construction. Per PF-GEO-1 the final design would be conducted in accordance with MRDC and the latest state and local building codes. Therefore, the Trench Option would result in **less than significant impact** as a result of operational activities.

HAWTHORNE OPTION

Less Than Significant Impact. Operation of the Hawthorne Option would occur in the same geological context as the Proposed Project and the design dictated by PF-GEO-1 would provide the same protection from the impacts of expansive soils. Therefore, for the same reason as the Proposed Project, the Hawthorne Option would have **less than significant impact** related to expansive soil during operation.

3.8-4.8 Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. The Proposed Project would be located in an area with fully developed public infrastructure, including sewer lines. Neither the construction nor operation of the Proposed Project would require the use of a septic tank or alternative wastewater disposal systems. Therefore, the Proposed Project would have **no impact** related to the use of septic tanks or alternative wastewater disposal systems.

TRENCH OPTION

No Impact. For the same reason as the Proposed Project, the Trench Option would have **no impact** related to waste water.

HAWTHORNE OPTION

No Impact. For the same reason as the Proposed Project, the Hawthorne Option would have **no impact** related to waste water.

3.8-4.9 Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

3.8-4.9.1 Construction Impacts

Less than Significant with Mitigation. Because paleontological resources are typically buried and are, therefore, not apparent until revealed by excavation, the potential for significant impacts to paleontological resources is often determined based on the geologic formations that would be disturbed and the potential for those geologic formations to contain fossils.

As described in Section 3.8-3.2, the northern section of the RSA is underlain by an older Quaternary alluvium geologic unit (Qoa) that has high paleontological sensitivity. Grading and excavation activities within this formation could cause potentially significant impacts to paleontological resources should they be encountered and destroyed without intervention. For these locations, mitigation measure MM-GEO-1, Engage a Qualified Paleontological Resources Specialist described in Section 3.8-5 would be implemented, which would require hiring a qualified paleontologist to monitor grading and excavation within highly sensitive geologic formations (or direct subsurface microfossil testing when subsurface soil observation is not possible). In the event of a discovery, MM-GEO-1 would require temporary halting of activities, examination of the discovery, and documentation and treatment of finds, as determined by the qualified paleontologist. Therefore, with implementation of MMGEO-1, impacts would be reduced to **less than significant**.

TRENCH OPTION

Less than Significant with Mitigation. Construction of the Trench Option has a similar potential to affect unique paleontological resources or sites or unique geologic features as the Proposed Project, though the additional excavation required by the Trench Option increases the likelihood of encountering these resources. For these locations, MM-GEO-1 would be implemented, which would require hiring a qualified paleontologist to monitor grading and excavation within highly sensitive geologic formations (direct subsurface microfossil testing when subsurface soil observation is not possible). In the event of a discovery, MM-GEO-1 would require temporary halting of activities, examination of the discovery, and documentation and treatment of finds, as determined by the qualified paleontologist. Therefore, with implementation of MM-GEO-1, impacts would be reduced to **less than significant**.

HAWTHORNE OPTION

Less than Significant with Mitigation. Construction of the Hawthorne Option would affect unique paleontological resources or sites or unique geologic features similarly to the Proposed Project. For these impacted locations, MM-GEO-1 would be implemented, which would require hiring a qualified paleontologist to monitor grading and excavation within highly sensitive geologic formations (or direct subsurface microfossil testing when subsurface soil observation is not possible). In the event of a discovery, MM-GEO-1 would require temporary halting of activities, examination of the discovery, and documentation and treatment of finds, as determined by the qualified paleontologist. Therefore, with implementation of MM-GEO-1, impacts would be reduced to **less than significant**.

3.8-4.9.2 Operational Impacts

No Impact. Project activities during operation of the Proposed Project would largely be limited to light rail operations on established tracks or facilities constructed as a part of the Proposed Project. These types of operational impacts would not destroy any paleontological resources. Therefore, the operation of the Proposed Project would have **no impact**.

TRENCH OPTION

No Impact. The Trench Option would operate in the same manner as the Proposed Project. Project activities during operation of the Trench Option would largely be limited to light rail operations on established tracks or facilities constructed as a part of the Proposed Project. These types of operational impacts would not destroy any paleontological resources. Therefore, the operation of the Trench Option would have **no impact**.

HAWTHORNE OPTION

No Impact. The Hawthorne Option would operate in the same manner as the Proposed Project. Project activities during operation of the Hawthorne Option would largely be limited to light rail operations on established tracks or facilities constructed as a part of the Proposed Project. These types of operational impacts would not destroy any paleontological resources. Therefore, the operation of the Hawthorne Option would have **no impact**.

3.8-5 Mitigation Measures

MM-GEO-1. Engage a Qualified Paleontological Resources Specialist

Grading and excavation equating to 1,000 cubic yards or more at depths of 13 feet or greater within highly sensitive Qoa geologic formation shall require monitoring by a qualified paleontologist, including the following measures:

> Prior to beginning any work that requires paleontological monitoring:

- Metro shall retain the services of a qualified paleontologist meeting the standards of the SVP to compose a paleontological resources monitoring and mitigation plan identifying the steps to be taken in the event of the inadvertent discovery of paleontological resources.
- A preconstruction meeting will be held that includes the qualified paleontologist, Construction Manager and/or Grading Contractor, and other appropriate personnel so the qualified paleontologist can make comments and/or suggestions concerning the monitoring program to the Construction Manager and/or Grading Contractor.
- The qualified paleontologist will (at that meeting or subsequently) submit to the Project Manager a copy of the site/grading plan (reduced to 11 x 17 inches) that identifies areas to be monitored as well as areas that may require delineation of grading limits.
- The qualified paleontologist will also coordinate with the Project Manager on the construction schedule to identify when and where monitoring is to begin and to specify the start date for monitoring.

> The qualified paleontologist will document monitoring activity on a standardized form. A record of daily activity will be sent to Metro and the Project Manager each month.

> The qualified paleontologist will be present initially during all earth-moving activities. After 50 percent of the excavations are complete within the unit, if no significant fossils have been recovered, the level of monitoring may be reduced or suspended entirely at the qualified paleontologist's discretion and in consultation with Metro.

> At locations where sensitive subsurface soils cannot be observed during ground disturbing activities, such as driving of piles, a subsurface investigation to test for the presence or absence of microfossils should be implemented under the direction of a qualified paleontologist following SVP guidelines. Prior to the start of ground disturbance, mechanical coring, or other methods determined appropriate by the paleontologist, will be used to collect a test sample of 600 lbs (0.4 cubic yards) to be wet screened. In the event fossil remains are identified, two standard samples of 6,000 lbs each (4.0 cubic yards) shall be collected for processing following SVP guidelines for microfossil salvage.

> Discoveries

- Discovery Process – In the event of a discovery, and when requested by the qualified paleontologist, the Project Manager will be contacted and will divert, direct, or temporarily halt ground-disturbing activities in the area of discovery to allow for preliminary evaluation of potentially significant paleontological resources. The paleontologist will also immediately notify Metro of such findings at the time of discovery.
- Determination of Significance – The significance of the discovered resources will be determined by the paleontologist in consultation with the Project Manager and Metro, who must concur with the evaluation before grading activities will be allowed to resume.
- Documentation and Treatment of Finds – Based on the scientific value and/or uniqueness of the find, the qualified paleontologist may record the find and allow work to continue, or recommend salvage and recovery of the fossil. If treatment and salvage are required, recommendations will be consistent with SVP 2015 guidelines and currently accepted scientific practice. Work in the affected area may resume once the fossil has been assessed and/or salvaged and a paleontological monitor is present.

> Notification of Completion – The paleontologist will notify Metro in writing of the end date of monitoring.

> Handling and Curation of Significant Paleontological Specimens and Letter of Acceptance – The paleontologist will ensure that all significant fossils collected are appropriately prepared and permanently curated with an appropriate institution, and that a letter of acceptance from the curation institution has been submitted to Metro.

> Final Results Reports (Monitoring and Research Design and Recovery Program) – Prior to completion of the Proposed Project, two copies of the Final Results Report (even if no significant resources were found) and/or evaluation report, if applicable, which describe the results, analysis, and conclusions of the Paleontological Monitoring Program (with appropriate graphics) will be submitted to Metro for approval.

3.8-6 Project Impacts Remaining After Mitigation

3.8-6.1 Proposed Project

With the incorporation of mitigation measures described in Section 3.8-5, the Proposed Project would not result in significant impacts related to geology, soils, and paleontology after mitigation. Therefore, impacts of the Proposed Project would be **less than significant.**

3.8-6.2 Trench Option

With the incorporation of mitigation measures described in Section 3.8-5, the Trench Option would not result in significant impacts related to geology, soils, and paleontology after mitigation. Therefore, impacts of the Trench Option would be **less than significant.**

3.8-6.3 Hawthorne Option

With the incorporation of mitigation measures described in Section 3.8-5, the Hawthorne Option would not result in significant impacts related to geology, soils, and paleontology after mitigation. Therefore, impacts of the Hawthorne Option would be **less than significant.**

3.8-7 Cumulative Impacts

The methodology for cumulative analysis and a description of the relevant projects and demographic and economic projections are included in Section 3.0, Introduction.

The geographic scope of the cumulative analysis for geology and soils is the RSA described in Section 3.8-2.3

3.8-7.1 Proposed Project

During both construction and operation, the Proposed Project would not expose people or structures to adverse effects, including the risk of loss, injury, or death involving fault rupture or seismic hazards including liquefaction or landslides. The Proposed Project would also not result in impacts related to soil erosion, unstable or expansive soils, or adequacy of soils to support septic tanks. The Proposed Project would comply with all applicable state and local guidelines and mandatory design requirements related to geologic, subsurface, and seismic hazards. Projected future projects would also be required to comply with all prescribed standards, requirements, and guidance hazards, and implement mitigation measures as necessary.

While the Proposed Project would result in significant impacts on unknown paleontological resources during construction, with MM-GEO-1, impacts would be less than significant. Other projects disturbing ground and subsurface areas would similarly be required to mitigate potential impacts to paleontological resources in highly sensitive paleontological areas. Therefore, the Proposed Project in combination with projected future projects would not result in a cumulatively significant impact related to geology, soils, seismic hazards, and paleontological resources during construction and operation.

3.8-7.2 Trench Option

For the same reason provided for the Proposed Project, Trench Option also would not result in a cumulatively significant impact related to geology, soils, seismic hazards, and palynological resources during construction and operation.

3.8-7.3 Hawthorne Option

For the same reason provided for the Proposed Project, Hawthorne Option also would not result in a cumulatively significant impact related to geology, soils, seismic hazards, and palynological resources during construction and operation.

3.9 HAZARDS AND HAZARDOUS MATERIALS

This section of the Draft EIR provides an analysis on potential impacts related to hazardous materials.

3.9-1 Regulatory Framework

Federal, state, regional, and local regulations concerning hazards and hazardous materials are described in the following sections.

3.9-1.1 Federal Regulations

Resource Conservation and Recovery Act (42 United States Code Section 6901 et seq.)

The Resource Conservation and Recovery Act (RCRA) regulates hazardous wastes from the time the waste is generated through its management, storage, transport, and treatment until its final disposal. The United States Environmental Protection Agency (USEPA) authorized the California Department of Toxic Substances Control (DTSC) to administer the RCRA in California.

Comprehensive Environmental Response, Compensation, and Liability Act (42 United States Code Section 9601 et seq.)

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was designed to clean up abandoned hazardous waste sites that may endanger public health or the environment. The law authorized the USEPA to identify parties responsible for contamination of sites and compel the parties to clean up the sites. Where responsible parties cannot be found, the USEPA is authorized to perform the cleanup using a special trust fund. This law outlines the potential liability related to the cleanup of hazardous substances, available defenses to such liability, appropriate inquiry into site status under Superfund, and statutory definitions of hazardous substances and petroleum products.

Clean Air Act (42 United States Code Section 7401 et seq.)

The Clean Air Act protects the public from exposure to airborne contaminants that are known to be hazardous to human health. Under the Clean Air Act, the USEPA established National Emissions Standards for Hazardous Air Pollutants, which are emissions standards for air pollutants, including asbestos.

Clean Water Act (33 United States Code Section 1342[p])

The Clean Water Act – National Pollutant Discharge Elimination System (Section 402[p]) regulates discharges and spills of pollutants, including hazardous materials, to surface waters and groundwater.

Toxic Substances Control Act (15 United States Code Section 2601 et seq.)

The Toxic Substances Control Act addresses the production, importation, use, and disposal of specific chemicals including polychlorinated biphenyls (PCB), asbestos containing materials (ACMs), and lead based paint (LBP). Certain substances are generally excluded from the act including, but not limited to, food, drugs, cosmetics, and pesticides. The Toxic Substances Control Act gives the USEPA the authority to require reporting, recordkeeping, testing, and restrictions relating to chemical substances and/or mixtures.

Occupational Safety and Health Act of 1970

The Occupational Safety and Health Act (OSHA) requires training handlers of hazardous materials, notifying employees who work in the vicinity of hazardous materials, acquiring material safety data

sheets that describe the proper use of hazardous materials, and training employees to remediate any accidental releases of hazardous material. It also regulates lead and asbestos as it related to employee safety to reduce potential exposure. Additionally, it requires contractors conducting LBP and ACM surveys and removal to be certified by the California OSHA.

Federal Insecticide, Fungicide, and Rodenticide Act (7 United States Code Section 136 and 40 Code of Federal Regulations Parts 152.1 to 171)

The Federal Insecticide, Fungicide, and Rodenticide Act regulates the distribution, sale, and use of pesticides. All pesticides distributed or sold in the United States must be registered with the USEPA. When used according to specifications, the pesticide must demonstrate that it "…will not generally cause unreasonable adverse impacts on the environment.''

Hazardous Materials Transportation Act (49 United States Code Section 5101 et seq. and 49 Code of Federal Regulations Parts 101, 106, 107, and 171-180)

The Hazardous Materials Transportation Act regulates the transportation of hazardous materials. The objective is to provide adequate protection against the risks to life and property inherent in the transportation of hazardous materials in commerce, by improving the regulatory and enforcement authority of the Secretary of Transportation.

3.9-1.2 State and Regional Regulations

At the State level, California has developed hazardous waste regulations that are similar to the federal laws, but that are more stringent in their application. The basic law established in California, similar to RCRA, is the Hazardous Waste Control Law. More detailed information concerning the implementation of these requirements is given in Title 22 of California Code of Regulations (CCR), Chapter 30. The Hazardous Waste Control Law empowers the California DTSC, a division of the California Environmental Protection Agency (Cal EPA) (formerly part of the Department of Health Services), to administer the State's hazardous waste program and implement the federal program in California. This law includes underground storage tank (UST) regulations.

Other relevant state laws are described in the following sections.

Department of Toxic Substances Control

Authority for the statewide administration and enforcement of RCRA rests with the DTSC of CalEPA. While the DTSC has primary state responsibility in regulating the generation, storage, and disposal of hazardous materials, DTSC may further delegate enforcement authority to local jurisdictions. In addition, the DTSC is responsible for and/or provides oversight for contamination cleanup and administers statewide hazardous waste reduction programs. DTSC operates programs to (1) deal with the aftermath of improper hazardous waste management by overseeing site cleanups; (2) prevent releases of hazardous waste by ensuring that those who generate, handle, transport, store, and dispose of wastes do so properly; and (3) evaluate soil, water, and air samples taken at sites.

California Code of Regulations, Title 27, Division 2, Chapter 3, Subchapter 4, Gas Monitoring and Control at Active and Closed Disposal Sites

The regulations within Article 6 set forth the performance standards and the minimum substantive requirements for landfill gas monitoring and control as they relate to active solid waste disposal sites and to proper closure, post-closure maintenance, and ultimate reuse of solid-waste disposal sites to ensure that public health and safety and the environment are protected from pollution caused by the disposal of solid waste.

California Code of Regulations, Title 14, Section 1724.3, Well Safety Devices for Critical Wells

This regulation governs safety devices required on "critical wells" located within 100 feet of an operating railway.

California Code of Regulations, Title 27, Division 2, Chapter 3, Subchapter 5, Closure and Postclosure Maintenance of Landfills (California Code of Regulations, Title 27, Subchapter 5)

This code provides postclosure maintenance guidelines, including requirements for an emergency response plan and site security, and regulates post-closure land use, requiring protection of public health and safety and the built environment, as well as the prevention of gas explosions. Construction on the site must maintain the integrity of the final cover, drainage, and erosion control systems, and gas monitoring and control systems. All postclosure land use within 1,000 feet of a landfill site must be approved by the local enforcement agency.

California Public Resources Code Section 21151.4

This code requires the lead agency to consult with any school district with jurisdiction over a school within a quarter mile of the project about potential impacts on the school if the project might reasonably be anticipated to emit hazardous air emissions or handle an extremely hazardous substance or a mixture containing an extremely hazardous substance.

Porter-Cologne Water Quality Control Act (California Water Code Section 13000 et seq.)

The Porter-Cologne Water Quality Control Act of 1969, codified as Division 7 (Water Quality) of the State Water Code, established the responsibilities and authorities of the California State Water Resources Control Board (SWRCB) and the nine California Regional Water Quality Control Boards (RWQCB). According to Section 13001 of the Porter-Cologne Water Quality Control Act, these RWQCBs are to be "... the principal state agencies with primary responsibility for the coordination and control of water quality." The RWQCBs issue National Pollutant Discharge Elimination System (NPDES) permits for discharges into surface waters. Section 13050 directs each RWQCB to "...formulate and adopt water quality control plans (Basin Plans) for all areas within the region."

The RWQCBs implement the Basin Plans by issuing and enforcing waste discharge requirements (WDR) to individuals, communities, or businesses whose discharges can affect water quality. These regulations can be either WDRs for discharges onto land or NPDES permits for discharges into surface water. For surface waters that are not within federal jurisdiction (i.e., not considered waters of the U.S.), the same new procedures as mentioned in Section 2.1.1 above apply here as well (SWRCB 2019a, b).

Hazardous Materials Release Response Plans and Inventory Law (California Health and Safety Code Section 25500 et seq.)

The Hazardous Materials Release Response Plans and Inventory Act, also known as the Business Plan Act, requires businesses using hazardous materials to prepare a hazardous materials business plan that describes their facilities, inventories, emergency response plans, and training programs. Disclosure of hazardous materials inventories is required. Under the Business Plan Act, hazardous materials are defined as raw or unused materials that are part of a process or manufacturing step. They are not considered hazardous waste, although the health concerns pertaining to the release or inappropriate disposal of these materials are similar to those relating to hazardous waste. Statewide, DTSC has the primary regulatory responsibility for management of hazardous materials, with delegation of authority to local jurisdictions that enter into agreements with the State (California Health and Safety Code, Division 20, Chapter 6.95, Article 1).

Safe Drinking Water and Toxic Enforcement Act (Proposition 65, California Health and Safety Code, § 25249.5 et seq.)

The Safe Drinking Water and Toxic Enforcement Act, also known as Proposition 65, has been in effect since 1986 to promote clean drinking water and keep toxic substances that cause cancer or birth defects out of consumer products. Proposition 65 prohibits persons, in the course of doing business, from knowingly discharging listed chemicals known to have these toxic characteristics into any source of drinking water or onto land in which the material may come into contact with drinking water. Proposition 65 also requires businesses to warn any person exposed to chemicals known to cause cancer or reproductive toxicity. Furthermore, no persons, in the course of doing business, shall purposefully expose anybody to chemicals known to cause cancer or reproductive toxicity without clear and full disclosure (California Office of Environmental Health Hazard Assessment, 2003).

Cortese List Statute (California Government Code Section 65962.5)

California Government Code Section 65962.5 requires the DTSC to compile and maintain a list of potentially contaminated sites located throughout California. Commonly referred to as the Cortese List, the Hazardous Waste and Substances Sites List is a planning document used by the state, local agencies, and developers to comply with CEQA requirements in providing information about the location of hazardous materials release sites. DTSC is responsible for a portion of the information contained in the Cortese List. Other state and local government agencies are required to provide additional hazardous materials release information for the Cortese List. The DTSC Site Mitigation and Brownfields Reuse Program EnviroStor database provides the DTSC component of the Cortese List data by identifying the Annual Workplan (now referred to as State Response and/or Federal Superfund) and backlog sites listed under the California Health and Safety Code Section 25356 (DTSC, 2007).

California Occupational Safety and Health Act

The OSHA regulates worker safety in a manner similar to that used by federal administration. It also requires preparation of an Injury and Illness Prevention Program, which is an employee safety program that includes inspections, procedures to correct unsafe conditions, employee training, and occupational safety communication. In addition, the regulations associated with this act indirectly protect the public by requiring construction managers to post warnings signs, limit public access to construction areas, and obtain permits for work considered to present a significant risk of injury, such as excavations five feet deep or greater.

California Code of Regulations, Title 5, Division 1, Chapter 13, Subchapter 1, School Facilities Construction

This code provides general standards for the planning and construction of new educational facilities. Article 1 provides minimum standards for the facility's site location, design, and educational program requirements provided by the school district's educational goals. Article 2 provides further requirements for the facility's site selection, procedures for site acquisition for state and locally funded school districts, and standards for development of plans for the design and construction of school facilities.

Hazardous Waste Control Act (California Health and Safety Code, Section 25100 et seq.)

The Hazardous Waste Control Act is similar to the RCRA on the federal level in regulating the identification, generation, transportation, storage, and disposal of materials deemed hazardous by the State of California.

Asbestos (California Code of Regulations, Title 8, Section 5208, Division of Occupational Safety and Health)

This code regulates asbestos exposure for workers including demolition or salvage of structures where asbestos is present; removal or encapsulation of materials containing asbestos; construction, alteration, repair, maintenance, or renovation of structures, substrates, or portions thereof that contain asbestos; installation of products containing asbestos; asbestos spill/emergency cleanup; transportation, disposal, storage, containment of and housekeeping activities involving asbestos or products containing asbestos on the site or location at which construction activities are performed; and excavation that may involve exposure to asbestos as a natural constituent that is not related to asbestos mining and milling activities.

Lead-Based Paint (California Code of Regulations, Title 17, Section 35033)

Because of its toxic properties, lead is regulated as a hazardous material. Lead is also regulated as a toxic air contaminant. State-certified contractors must perform inspection, testing, and removal (abatement) of lead-containing building materials in compliance with applicable health and safety and hazardous materials regulations.

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Senate Bill 1082)

The Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program) consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of six environmental and emergency response programs. The California Environmental Protection Agency and other state agencies set the standards for their programs, while local governments implement the standards. These local implementing agencies are called Certified Unified Program Agencies (CUPA). For each county, the CUPA regulates/oversees:

- Hazardous materials business plans
- California accidental release prevention plans or federal risk management plans
- The operation of UST and aboveground storage tanks
- Universal waste and hazardous waste generators/handlers
- On-site hazardous waste treatment
- Inspections, permitting, and enforcement
- Proposition 65 reporting
- Emergency response

Beyond the statewide regulations, CUPAs administer policies and regulations found in a number of local and regional plans (including general plans and municipal codes) that address hazardous materials and wastes. Policies and regulations are intended as guides for the appropriate use of potentially hazardous materials, the cleanup of contaminated sites, and the preparation of emergency response plans.

Los Angeles County Certified Unified Program Agency

CUPAs in Los Angeles County have adopted standards that include hazardous waste inspection and enforcement, hazardous materials disclosure, California Accidental Release Prevention, aboveground storage tanks, USTs, and hazardous waste generator registration and reporting. The local CUPAs and/or

participating agencies that implement the Unified Program elements in the project area are the Los Angeles County Public Works for the cites of Redondo Beach and Lawndale, and the City of Torrance Fire Department for the City of Torrance.

County Office of Emergency Services

The Los Angeles County Office of Emergency Services coordinates the overall county response to disasters and is responsible for alerting and notifying appropriate agencies when disaster takes place; coordinating agencies that respond; ensuring resources are available in times of disaster; developing plans and procedures for response and recovery from disasters; and providing preparedness materials for the public.

County Department of Public Health, Division of Environmental Health, Emergency Response Team

The purpose of the Emergency Preparedness and Response Unit is to ensure that the division of Environmental Health is able to protect the public from health hazards that occur after emergencies or disasters. The division of Environmental Health develops plans and establishes procedures to coordinate their response with partner agencies. They provide training and conduct drills and exercises to create a workforce that is able to manage the health effects of any emergency.

County Local Enforcement Agency for Solid Waste

The County of Los Angeles Solid Waste Management Program is the Local Enforcement Agency authorized by the California Public Resources Code to conduct inspections of any solid waste facility within its jurisdiction. In conjunction with this inspection, the Local Enforcement Agency is authorized to inspect all aspects of facility operation, including physical plant, equipment, and vehicles. The main goal of the Local Enforcement Agency is to ensure correct operation, closure of solid waste facilities, and guarantee the proper storage and transportation of solid wastes.

County of Los Angeles Health Hazardous Materials Division

The County of Los Angeles Health Hazardous Materials Division serves area residents by responding to emergencies and monitoring hazardous materials. The County of Los Angeles Health Hazardous Materials Division administers programs intended to protect public health and the environment throughout the County of Los Angeles from accidental releases and improper handling, storage, transportation, and disposal of hazardous materials and wastes through coordinated efforts of inspections, emergency response, enforcement, and site mitigation oversight. It also provides support for hazardous materials management in the County of Los Angeles through coordination of data management, business plans, and facility inspections.

South Coast Air Quality Management District

The South Coast Air Quality Management District (SCAQMD) regulates asbestos through Rule 1403, Asbestos Emissions from Renovation/Demolition Activities. Rule 1403 regulates asbestos as a toxic material and controls the emissions of asbestos from demolition and renovation activities by specifying agency notifications, appropriate removal procedures and handling and cleanup procedures. Rule 1403 applies to owners and operators involved in the demolition or renovation of asbestos-containing structures, asbestos storage facilities, and waste disposal sites. SCAQMD also regulates volatile organic compounds (VOC) emissions from contaminated soil through Rule 1166, Volatile Organic Compound Emissions from Decontamination of Soil. Rule 1166 sets requirements to control the emission of VOCs from excavating, grading, handling, and treating soil contaminated with VOCs as a result of leakage from storage or transfer operations, accidental spillage, or other deposition.

Los Angeles Regional Water Quality Control Board

Surface water discharge resulting from construction dewatering activities is regulated under Los Angeles RWQCB Order No. R4-2003-0108 NPDES No. CAG994004. Effluent limits are also established by this permit.

The Los Angeles RWQCB (also referred to as RWQCB in the report) is also responsible for identifying the Section 303(d) impaired waterbodies and establishing a total maximum daily load (TMDL) for those waterbodies. The TMDLs are achieved on the local and regional levels through the NPDES construction permitting process and the implementation of regional and local watershed management plans and Standard Urban Stormwater Mitigation Plans.

The Los Angeles RWQCB implements the Section 402 program regulates construction activities and groundwater dewatering. This agency promulgates policies to protect surface waters (e.g., hydromodification), and protects surface and groundwater through implementation of the Basin Plan.

3.9-1.3 Local Regulations

City of Lawndale

The City of Lawndale General Plan's Safety Element (2015) discusses hazardous materials, their source, and transportation. The Plan states general guidelines and regulations to be followed in the event hazardous materials are released into the environment. The goal and policies related to hazardous materials are outlined in the Safety Element. These policies will ensure a community protected from the harmful effects of hazardous materials, hazardous waste, and environmental contamination.

City of Redondo Beach

The City of Redondo Beach General Plan's Environmental Hazards/Natural Hazards Element (1993c) discusses goals, objectives, and policies that relate to toxic waste and hazardous materials. Section 4.4.3 of the plan outlines the specific goal to protect the public health, safety, and welfare and the overall environment of the city through proper planning for the management, handling, and transportation of toxic and hazardous waste and materials. To help meet the goal, specific objectives and policies are outlined. The implementation of the policies will help protect the community and the environment.

City of Torrance

The City of Torrance General Plan (2010f) discusses several objectives and policies that relate to hazardous waste. The City follows federal, state, and county regulations to provide a high degree of protection for the community and the environment. Section 2.4 of the Chapter 4 Safety Element discusses the general issues associated with the storage, use, and disposal of hazardous materials because the City of Torrance has a varied industrial base. The plan also discusses the strategies and policies in place that help the City monitor hazardous materials to help reduce adverse impacts hazardous waste.

3.9-2 Methodology

This report discusses the potential for hazardous materials and wastes or other existing recognized environmental conditions (REC) to affect construction and operation of the Proposed Project and options. The analysis was based on a review of regulatory agency database searches of the resource study area (RSA), and applicable federal, state, and local regulations related to hazardous wastes and materials.

RECs are defined using the definitions for hazardous waste, material, and substances provided in the ASTM Designation E1527, "Standard Practice for Environmental Project Site Assessments: Phase I Environmental Property Assessment Process." RECs, per ASTM, are defined as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property due to any release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment. A general search radius of a quarter- to one-mile beyond the RSA was used in identifying nearby sites registered under hazardous materials/wastes databases that could potentially impact the project. Environmental Data Resources, LLC (EDR) - generated environmental database sites were reviewed with the standard search distances within federal, state, and local environmental databases per ASTM International E1527-21. The review pertains to the objective of evaluating the potential impacts of hazardous materials/wastes that might be encountered in the soil and/or groundwater during the construction and operation of the project.

Hazardous waste has complex state and federal legal definitions. In general, a solid waste is defined as hazardous waste when it qualifies as "waste" (i.e., is no longer of use and will be disposed) and when it exhibits a hazardous waste characteristic (toxicity, ignitability, reactivity, and/or corrosivity) or when it has been specifically listed as hazardous in federal or state law or regulation. Hazardous waste is regulated by the USEPA under RCRA. Federal hazardous wastes are often referred to as RCRA wastes. California hazardous waste laws and regulations are in some cases more stringent than the federal law and, as a result, wastes may be defined as California hazardous wastes.

3.9-2.1 Resource Study Area

The RSA is the geographic extent in which this assessment was conducted. The RSA for the hazardous materials is the project footprint. The project footprint is defined as the area necessary to construct, operate, and maintain the Proposed Project. Figure 3.9-1 shows the RSAs for the Proposed Project, Trench Option, and Hawthorne Option. In addition, a general search radius of a quarter- to one-mile beyond the project footprint was used in identifying nearby sites registered under hazardous materials/wastes databases that could potentially impact the Proposed Project. Impacts to schools within a quarter-mile radius of the project footprint were also evaluated.

Figure 3.9-1. Proposed Project – Hazardous Materials Resource Study Area

Source: STV, 2022

3.9-2.2 Significance Thresholds

Based upon the thresholds of significance in Appendix G of the CEQA Guidelines, implementation of the Proposed Project would result in a significant impact related to hazardous materials if it would:

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 a quarter-mile of an existing or proposed school.

d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment.

e. Be 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, as a result, create a significant safety hazard for people residing or working in the Project area.

f. Be located within the vicinity of a private airstrip, as a result, create 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 wildfires, including where wildland fires are adjacent to urbanized areas or where residences are intermixed with wildlands.

3.9-2.3 Project Features

As described in Chapter 2, Project Description, a number of features have been incorporated into the project in order to ensure compliance with the laws, guidelines, and best practices of regulatory agencies. The following project features have been developed for hazards and hazardous materials.

PF-HHM-1. Handling, Storage, and Transport of Hazardous Materials and Wastes

Prior to the start of construction, the contractor would provide Metro with a hazardous waste and hazardous materials management plan, such as a plan defined in Title 19 CCR, or a Spill Prevention, Control, and Countermeasure Plan. The plan will be completed to Metro contractor specifications and will comply with the SWRCB Construction Clean Water Act Section 402 General Permit conditions and requirements for transport, labeling, containment, cover, and storage of hazardous materials during construction and operation. The plan will identify the responsible parties and outline procedures for hazardous waste and hazardous materials handling, storage, and transport. The excavation and transport of soils contaminated by heavy metals (e.g., lead) would be managed according to SCAQMD Rule 1466 (Control of Particulate Emissions from Soils with Toxic Air Contaminants) and SCAQMD Rule 1166 (VOC emissions from Decontamination of Soil). The plan would also prescribe best management practices (BMP) to follow to prevent hazardous material releases and for cleanup of any hazardous material releases that may occur.

Additionally, the contractor would comply with applicable federal and state regulations regarding hazardous material handling and storage practices, such as the RCRA, CERCLA, the Hazardous Materials Release Response Plans and Inventory Law, and the Hazardous Waste Control Act.

PF-HHM-2. Demolition Plans

Prior to the start of construction, the contractor would prepare demolition plans for the safe dismantling and removal of building components and debris. The demolition plans would also include plans for testing and abatement procedures for ACM, LBP, and PCB, as well as handling and disposal of treated wood waste (TWW) and universal waste in accordance with federal and state regulations, including the 1994 Federal Occupational Exposure to Asbestos Standards, SCAQMD Rule 1403 (Asbestos Emissions from Demolition/Renovation Activities), Title 22 of the CCR Division 4.5 (Hazardous Waste), the U.S. Department of Housing and Urban Development Lead-Based Paint Guidelines, and Title 40 of the CFR Part 761.

PF-HHM-3. Property Acquisition Phase II Site Investigation

Consistent with Metro's standards, a Phase II site investigation would be conducted during the preliminary engineering phase on sites that would be acquired/utilized for the project to determine whether the suspected contamination had resulted in soil, groundwater, or soil vapor contamination exceeding regulatory action levels. Aerially deposited lead (ADL) testing would be included as part of the Phase II site investigation. If the Phase II site investigation concludes that the site is contaminated, remediation or corrective action (e.g., removal of contamination, in-situ treatment, capping) would be conducted prior to or during construction under the oversight of federal, state, and/or local agencies (e.g., USEPA, DTSC, RWQCB, Los Angeles County) and in full compliance with current and applicable federal and state laws and regulations. Additionally, Voluntary Cleanup Agreements may be used for parcels where remediation or long-term monitoring is necessary. Generally, REC, also known as sites of concern as identified in the Phase I Environmental Site Assessment (ESA) (DYA, 2022a; 2022b), Appendix 3.9-A, Phase I ESA - ROW and Appendix 3.9-B, Phase I ESA - Hawthorne of this Draft EIR, would be remediated by the property owner prior to acquisition of the property and construction on the site, depending on the arrangement negotiated during property acquisition.

PF-HHM-4. Soil, Soil Vapor, and Groundwater Management Plans

Prior to the start of construction, the contractor would retain a qualified environmental consultant to prepare a Soil Management Plan, Soil Reuse Management Plan, and/or a Soil, Soil Vapor, and Groundwater Management Plan. These plans would be completed to Metro's contractor specifications and submitted to Metro prior to any ground-disturbing activities for the project.

The Soil and Soil Vapor Management Plan would establish provisions for the disturbance of contaminated materials (known and undocumented). Proper management and disposition of contaminated soils and gases would be determined in consultation with appropriate regulatory agencies and in accordance with applicable federal and/or state guidance (USEPA, DTSC, RWQCB, and other local agencies). The Soil Reuse Management Plan would establish provisions for the reuse of contaminated known or undocumented soils. Proper management and disposition of contaminated soils would be determined in consultation with appropriate regulatory agencies and in accordance with applicable federal and/or state guidance (USEPA, DTSC, RWQCB, and other local agencies). Contaminated soil shall be disposed of at a permitted landfill per the specifications of DTSC or RWQCB or other agencies overseeing the project construction.

The Groundwater Management Plan would establish provisions for encountering and managing contaminated groundwater (known and undocumented). Proper disposal of contaminated groundwater would be determined in consultation with appropriate regulatory agencies and in accordance with applicable federal and/or state guidance (USEPA, DTSC, RWQCB, and other local agencies).

Where open or closed regulatory release cases are already managed by a regulatory agency (e.g., USEPA, DTSC, RWQCB) and construction involves plans to alter the use of the site and/or disturb contaminated soil and/or groundwater onsite, Metro would notify the regulatory agency of the planned land use changes prior to ground-disturbing activities at the location of the open or closed regulatory release site. The regulatory agency would determine the level of investigation and/or remediation (performance standards) necessary on a case-by-case basis. A closure or no further action determination letter from the regulatory agency would be obtained when investigation and/or remediation is complete.

PF-HHM-5. Disposal of Groundwater

If disposal of contaminated groundwater is required during construction, Metro would consult with the RWQCB, and the Project would comply with permits required by the RWQCB. The RWQCB may require an NPDES permit and/or WDR permit for dewatering and discharge activities. The County of Los Angeles Department of Public Works would be contacted prior to discharging groundwater into their sewer or stormwater systems. The groundwater discharge and disposal requirements vary by agency, location, concentration, and contaminants of concern and are therefore developed in consultation with the agencies.

PF-HHM-6. Oil and Gas Wells

Prior to ground-disturbing activities, all oil wells (including abandoned or suspected wells) within 200 feet of the project would be identified, inspected, and addressed in accordance with the California Department of Conservation, California Geologic Energy Management Division (CalGEM) standards and in coordination with the well owners. Where the alignment cannot be adjusted to avoid well casings, CalGEM and a re-abandonment specialty contractor would be contacted to determine the appropriate method of re-abandoning the well. Oil well abandonment must proceed in accordance with California Laws for Conservation of Petroleum and Gas (1997), Division 3. Oil and Gas, Chapter 1. Oil and Gas Conservation, Article 4, Sections 3228, 3229, 3230, and 3232. The requirements include written notification to CalGEM, protection of adjacent property, and before commencing any work to abandon any well, obtaining approval by CalGEM. Abandonment work, including sealing off oil and gas bearing units, pressure grouting, etc., must be performed by a state-licensed contractor under the regulatory oversight and approval of CalGEM. If an unknown well is encountered during Project construction, the contractor will notify Metro, California OSHA, and CalGEM, and proceed in accordance with state requirements.

3.9-3 Affected Environment / Existing Conditions

This section is based on the Phase I ESA for the Proposed Project and Options (DYA, 2022a; 2022b) and included in Appendix 3.9-A and Appendix 3.9-B. The assessment was performed to evaluate the potential impacts of hazardous substances within the RSA that might be encountered in the soil and/or groundwater during the construction and operation of the project. The ESA was prepared in general accordance with the guidelines set forth in ASTM D1527-21, with the exception that project site reconnaissance was not performed at the time this report was generated. The ESA included a search of government records to obtain a listing of properties or known incidents for hazardous waste sites from within a quarter- to one-mile radius around the RSA based on standard search distances set forth for pertaining database in ASTM D1527-21 guidelines. The minimum search distance for each database is detailed in the EDR Records search presented in Appendix 3.9-A, Phase I ESA- ROW and Appendix 3.9-B Phase I ESA – Hawthorne.

Historical records that were reviewed include aerial photographs, topographic maps, and Sanborn Maps. Environmental database records generated by EDR were obtained and reviewed to identify RECs that might impact the project activities. Additional online databases reviewed included California Water Resources Control Board GeoTracker, California DTSC EnviroStor, California Department of Conservation, CalGEM (formerly the Division of Oil, Gas and Geothermal Resources (DOGGR)), and California EPA website.

3.9-3.1 Hazardous Materials

Based on the ESA and online data review, the following hazardous materials are expected to be encountered within the Project RSA.

3.9-3.1.1 Lead-Based Paint

LBP was banned circa 1978 due to the toxicity of lead, which is particularly harmful if inhaled as dust or ingested. Lead has a range of adverse neurotoxic health effects, which put children at special risk. Some lead-containing chemicals cause cancer in animals. LBP could potentially be present on the existing bridge structures within the RSA. Lead and other heavy metals, such as chromium, may be present in yellow thermoplastic paint markings on pavement within the RSA. Graffiti on the existing bridge structures and walls along the RSA may contain LBP. Structures located within areas of proposed property acquisitions may also have the potential to contain LBP.

3.9-3.1.2 Asbestos-Containing Materials

Asbestos was formerly used in a variety of building materials due to its fire-retardant properties. Exposure to asbestos has been linked to numerous serious health problems and diseases, including asbestosis, lung cancer, and mesothelioma. The association of asbestos fiber inhalation with certain types of lung cancer led to the banning of most types of ACM circa 1980. Structures built before 1980 (as well as structures built for several years thereafter because the usage of ACMs in inventory was allowed) are therefore suspect. ACM could potentially be present in the existing bearing pads of the bridge structures within the RSA and in the brake pads of rail cars, which can be deposited in the near-surface soils within and adjacent to the existing Metro-owned right-of-way (Metro ROW). In addition, structures built prior to 1989 including, but not limited to, the existing bridges, overpasses and underpasses, interchanges, and on- and off- ramps of the I-405, and structures located within areas of proposed property acquisitions may also have the potential to contain ACM.

3.9-3.1.3 Polychlorinated Biphenyls

PCBs are chemicals that are resistant to extreme temperature and weather and have been found to be toxic and potentially carcinogenic. Older electric transformers may contain PCBs in their dielectric fluids. PCBs are considered hazardous materials because of their toxicity and shown to cause cancer in animals, along with effects on immune, reproductive, nervous, and endocrine systems, and similar effects in humans (USEPA, 2013).

3.9-3.1.4 Heavy Metals including Aerially Deposited Lead

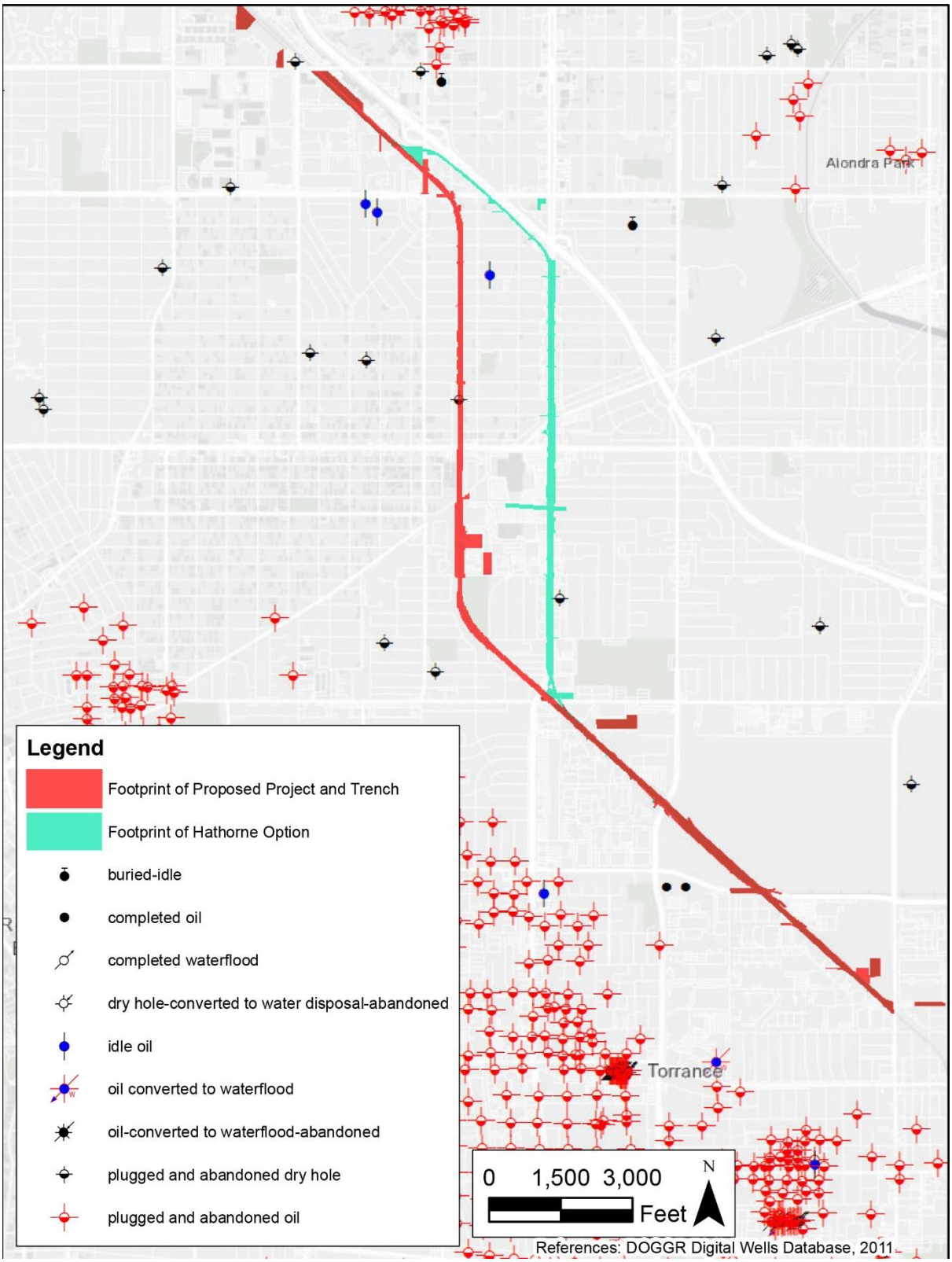
Heavy metals (particularly, arsenic, lead, and chromium, but including other metals such as cobalt, nickel, etc.) have been found to be associated with historical railroad operations in many cases. Releases can result from spills of transported materials or from railroad equipment wear. Accumulations of heavy metals are typically concentrated in the shallowest surface layers of soil or roadbed. The roads in the RSA have been in use for many years, including the period when leaded gasoline was in use (from the early 1920s until it began to be phased out in 1973). Combustion of leaded gasoline results in particulate emissions containing lead atoms, which tend to settle out of the air quite rapidly, potentially resulting in the development of elevated levels of lead in surface soils along roadways. Caltrans has documented the presence of ADL along many freeways in California. In some cases, the lead-impacted soil may qualify as hazardous waste if excavated for disposal. If left in place, it may pose a human health hazard through the exposure routes of dermal exposure or inhalation (for example, of dust). Lead exposure can lead to cardiovascular effects, increased blood pressure and incidence of hypertension, reproduction problems, and decreased kidney function.

3.9-3.1.5 Hazardous Gases

The presence of oil fields and oil refineries in the general vicinity of the RSA pose an environmental concern. Common problems associated with oil field properties include methane and hydrogen sulfide soil gas, oil seepage, contaminated soils and groundwater, leaking wells, and wells not plugged and abandoned to current standards. According to CalGEM Maps, small portions of the RSA pass through mapped Lawndale and Torrance oil field boundaries in Los Angeles County. There are no active oil wells located within the Proposed Project and Trench Option's RSA, but two active oil and gas wells are within a quarter-mile of the RSA located southeast of the intersection of Del Amo Boulevard and Madrona Avenue. There is one plugged and abandoned dry hole well within the RSA as shown in Figure 3.9-2. There are a few plugged and abandoned oil wells, oil field water wells, abandoned test borings (dry holes), and undocumented well casings near the RSA. Typically, abandoned wells are permanently sealed using cement. If a well is not sealed properly, it may provide a pathway for hydrocarbons or other contaminants to migrate to the surface.

Potential effects associated with abandoned oil/gas wells include the release of methane and/or hydrogen sulfide gas into the subsurface, posing a potential fire and explosion hazard during construction. In addition, accumulation of methane gas could displace oxygen in the breathing zone, resulting in high concentrations of hydrogen sulfide, which would be highly toxic when inhaled and create a health hazard during construction. Hydrocarbon contamination associated with oil fields can be non-point source, originating from bulk storage facilities, pipelines, sumps, and other operational features. Rails in general transport hazardous materials containing hydrocarbons and heavy metals, and the potential exists for spills and leaks to occur and contaminate shallow surface soils.

Figure 3.9-2. CalGEM Map



Source: CalGEM, 2011; Diaz Yourman & Associates, 2022

3.9-3.1.6 Petroleum Hydrocarbons

The term petroleum hydrocarbons is a general designation for a variety of compounds of various uses, origins, and hazardous characteristics. Types of petroleum hydrocarbons include gasoline and diesel (flammable fuels), crude oil, motor oil, waste oil, lubricating oil, hydraulic oil, hydrocarbon gases and others. Petroleum hydrocarbon mixtures, such as gasoline, can also contain other chemicals (such as benzene) that pose environmental concerns. Health effects associated with swallowing or inhaling hydrocarbons include lung irritation, with coughing, choking, shortness of breath, neurologic problems, irregular heartbeats, rapid heart rate, or sudden death, particularly after exertion or stress. Of the major types of hydrocarbons noted above, gasoline and diesel would be associated with petroleum pipelines, underground (or aboveground) storage tanks and leaking tanks; motor oil, waste oil, and hydraulic oil would be associated with auto repair shops and similar facilities. Releases of these materials, which are typically point source locations, are typically straightforward to identify and remediate.

Several oil and gas pipelines run within the Metro ROW including a 10-inch Shell crude oil, 8-inch ExxonMobil jet fuel, and 20-inch Chevron gas lines. Due to various reasons, the subsurface utility lines could potentially leak and contaminate the subsurface. Therefore, it is possible to encounter hydrocarbon contamination during construction that can be a potential concern, particularly if swallowed or inhaled. As noted in PF-US-1 in Section 3.11, Utilities and Service Systems, prior to ground-disturbing activities, all oil and gas pipelines within the Project ROW would be identified and marked onsite in coordination with the well owners to avoid damaging the pipelines.

3.9-3.1.7 Other Hazardous Materials or Waste

Railroad operations have historically been known to use various substances for weed control along existing or historical railroad corridors. Surface soils within the Metro ROW may contain hazardous materials from the use of weed control, including herbicides and arsenic. Acute health effects associated with exposure to such weed control substances can include stinging eyes, rashes, blisters, blindness, nausea, dizziness, diarrhea, and death. Chronic effects can include cancers, birth defects, reproductive harm, immunotoxicity, neurological and developmental toxicity, and disruption of the endocrine system. In addition, railroad ties that are in place or that may be salvaged during construction of the Proposed Project may contain semivolatile organic compounds due to creosote preservation treatment. Health related effects associated with semivolatile organic compounds include cancer, reproductive disorders, nervous system damage, and immune system disruption.

3.9-3.1.8 Recognized Environmental Conditions

Upon review of environmental database records obtained for the Proposed Project and options, the following sites were identified as potential RECs based on the history of activities of past releases at the site and their potential to impact the project (refer to Appendix 3.9-A, Phase I ESA – ROW and Appendix 3.9-B, Phase I ESA – Hawthorne for the full list of database records). While some sites may have low levels of contamination, they are still relevant to the Proposed Project and Options based on their proximity and types of construction activity that would occur on or near the site. Table 3.9-1 lists a summary of the sites, and Figure 3.9-3 through Figure 3.9-6 show their locations.

Table 3.9-1. Sites of Concern (RECs)

Map ID[1]	Site Name	Site Address	Potential Impact to	Distance from Project (In Feet)	Discussion
1	Voi-Shan Aerospace, Inc. (former)	4001 Inglewood Avenue, Redondo Beach	Proposed Project, Trench Option, Hawthorne Option	875 feet, north	This site is a former Voi-Shan Aerospace Fastener manufacturing facility, constructed in 1970 and occupied until 1991. The 8-acre site was redeveloped as commercial property in 1993. Depth of shallow groundwater is approximately 25 to 30 feet below ground surface (bgs) and estimated to be flowing northwest, which is generally parallel to the Proposed Project. (Waterstone, 2018.) Deep groundwater zone is encountered at 175 to 200 feet bgs and estimated to be flowing easterly, in opposite direction to the shallow zone. (Waterstone, 2019.) Site assessment began in 1986 when a leaking underground solvent storage tank was removed. Previous assessments identified that the groundwater beneath the site was contaminated with VOCs including 1,1,1-trichloroethane (TCA), trichloroethene (TCE), 1,2-dichloroethane (DCE) and tetrachloroethylene (PCE). 6,000 cubic feet of contaminated soil was removed from the site in 1993 (Envirosolve, 2008). Remediation actions including soil vapor extraction and groundwater pump-and-treat was conducted from 1992 to 1996 and again from 2011 to 2008. Groundwater contamination plume was shown to be generally following the shallow groundwater direction. (Waterstone, 2018). Onsite and offsite groundwater monitoring is ongoing to observe contamination levels (Waterstone, 2022).
2	Mobil Oil Corp (former)	3705 Inglewood Avenue, Redondo Beach	Hawthorne Option	Directly under alignment	The site is a former Mobile service station and currently occupied by a Chevron gas station. In 2003, three USTs and associated piping were removed. Groundwater at the site ranged from approximately 20 to 26 feet bgs and estimated to flow west-northwest (Kleinfelder, 2009) which is towards and parallel to the Metro ROW. There were past releases that contaminated soil and groundwater beneath the site. The existing total petroleum hydrocarbon contamination was delineated to approximately 20 feet south of the building and vertically extend to 15 feet bgs. Quarterly groundwater monitoring began in October 1990 and continued through April 2009. The contaminant concentrations found in groundwater beneath the site showed to decrease over the time. RWQCB stated that the residual hydrocarbon concentrations in the soil beneath the site do not cause direct contact concerns as all soil sample results are below their respective USEPA screening levels. RWQCB issued case closure as there is no threat to groundwater and stated monitoring wells and vapor extraction wells from within the site can be abandoned (RWQCB, 2009). The onsite wells were properly abandoned in 2010. The site would be acquired for the Hawthorne Option.

Map ID[1]	Site Name	Site Address	Potential Impact to	Distance from Project (In Feet)	Discussion
3	Electra Media Inc.,	4737 W 156th Street, Redondo Beach	Hawthorne Option	Directly adjacent, south	This site was listed on ERNS for an incident of release of motor oil and chemicals. There are no available records indicating the amount of spill or clean-up actions conducted. The site has been developed since the 1970s and is currently occupied by a building with paved surface for parking. A portion of the site would be acquired for the Hawthorne Option.
4	Merrell Paint Co., Inc.	15624 Inglewood Avenue, Lawndale	Proposed Project, Trench Option, Hawthorne Option	150 feet, north	This site is currently occupied by Eyedeal Interiors and used as a warehouse for flooring materials. The site was used as a paint storage facility from 1970s until the late 1990s. A UST was removed from the site in 1988. Site investigation conducted in circa 1989 indicated the presence of hydrocarbon contamination in soil and groundwater, likely released into the subsurface from a 4000-gallon UST that was used to store paint thinner (GCI, 1989). In October 1989, three groundwater monitoring wells were installed to remove any free product and monitor the contamination levels. RWQCB indicated that historical remediation at the site and apparent attenuation over the past three decades has resulted in the cleanup or abatement of the waste and there are no contaminants remaining in soil that pose a threat to the groundwater and to the public or the environment. Therefore, RWQCB issued no further requirements for onsite soil contamination and a covenant and environmental restrictions limiting the site use to commercial applications. Onsite groundwater monitoring is ongoing at the time of this assessment (RWQCB, 2022b).

Map ID[1]	Site Name	Site Address	Potential Impact to	Distance from Project (In Feet)	Discussion
5	Westwood Building Materials	15708 Inglewood Avenue, Lawndale	Proposed Project and Trench Option	Directly adjacent, south	This site is currently used as construction material supply warehouse with its own fueling system for onsite equipment and delivery trucks. Groundwater at the site is estimated to range from approximately 18 to 25 feet bgs with variable flow direction. Based on the recent field data, the net groundwater flow direction is easterly, and also flows to the northeast and southeast (AGE, 2021) which is towards the Project footprint. The site had release associated with the UST located near the southwest portion of the property and was previously assessed/ remediated. RWQCB issued case closure for the site on July 15, 1998, with residual soil contamination in place. In January 2004, during a product piping upgrade, soil contamination associated with hydrocarbon release was identified. The case was reopened by RWQCB on August 25, 2009. Subsequent assessments revealed that hydrocarbon contamination was detected in soil and groundwater samples and recommended the need for further assessment of the unassessed areas on site (AGE, 2018). Five groundwater monitoring wells have been installed in 2018. According to groundwater data, residual hydrocarbon contamination appeared to be decreasing. In 2022, RWQCB issued a case closure status based on the fact that the residual contamination is not an immediate threat to the drinking water source. (RWQCB, 2022c.) Following the directive from RWQCB, onsite monitoring wells were decommissioned (AGE, 2022). RWQCB has indicated that residual contamination may pose a risk to future construction/ redevelopment activities on- or adjacent to the site. (RWQCB, 2022c.)
6	Tosco-76 Station #4817	3601 Inglewood Avenue, Redondo Beach	Proposed Project and Trench Option	350 feet, south	The site is currently an active Shell gas station with registered USTs in place and formerly operated by 76 service station with two 12,000-gallon gasoline USTs. Groundwater at the site is approximately 22 feet bgs and estimated to flow northwest, parallel to the Proposed Project footprint. Historical release at the site led to soil and groundwater contamination. Subsequent remedial actions reduced the contamination levels to below maximum contaminant levels. The RWQCB issued a case closure in 2012 with residual onsite contamination in place considering it is a low threat to groundwater. (RWQCB, 2012.) Residual contamination is considered a low threat to groundwater, but a portion of the subject site would be acquired for the Proposed Project.

Map ID[1]	Site Name	Site Address	Potential Impact to	Distance from Project (In Feet)	Discussion
7	City of Lawndale Garage	4722 West Manhattan Beach, Lawndale	Proposed Project and Trench Option	205 feet, west	This site has been a maintenance yard and previously contained one 550-gallon and two 10,000-gallon USTs. Groundwater at the site was encountered approximately 20 feet bgs and estimated to flow northeast. Historical release at the site led to subsurface contamination. The UST system was removed from the site. Approximately 32 tons of impacted soil was excavated and disposed of off-site. Subsequent investigations determined that the contamination in onsite soils were below the acceptable levels (Ninyo & Moore, 2019). Therefore, RWQCB issued a closure to the past hydrocarbon release case at the site (RWQCB, 2019). Residual contamination is considered low threat to groundwater, but a portion of the subject site would be acquired for the Proposed Project or Trench Option.
8	Thrifty #257	16515 Hawthorne Boulevard, Lawndale	Hawthorne Option	Directly adjacent, west	This site is a former Thrifty facility, which was turned over to Atlantic Richfield in 1997 and then to Tesoro corporation in 2012. Three 10,000-gallon USTs were reportedly removed from the site in 1994 and three new USTs were installed. Assessments at the site indicated soil contamination from an unauthorized release at the site. Sampling performed post issuance of site closure in 1996 by RWQCB identified contamination concentrations in soil and groundwater (SAIC Energy, 2012). Groundwater was encountered at a depth of approximately 40 feet bgs (SAIC Energy, 2012). Several investigations were conducted at the site from 1986 through 2009 including on-site and off-site groundwater monitoring (Environmental Services, 2016). The site cleanup status on GeoTracker webpage is indicated as open for remediation at the time of assessment (GeoTracker, 2020).
9	Arco #5107	16518 Hawthorne Boulevard, Lawndale	Hawthorne Option	Directly adjacent, east	This site is an active gasoline service station operated by Arco. Records indicate that a release at the site contaminated soil and groundwater. Groundwater at the site is approximately 35 feet bgs with a varied flow towards west to northwest. Several phases of assessments have been conducted at the site since 1989 including free product removal, groundwater pump-and-treat, vapor extraction. The site cleanup status on GeoTracker webpage is indicated as open for remediation at the time of assessment (GeoTracker, 2020).

Map ID[1]	Site Name	Site Address	Potential Impact to	Distance from Project (In Feet)	Discussion
10	United Oil Co.,	16926 S Hawthorne Boulevard, Lawndale	Hawthorne Option	Directly adjacent, east	This site has been a gasoline retail facility since 1990s. During site development activities in 1996, contaminated soil was observed underneath the tanks. Further assessment determined that the release had contaminated onsite and off-site soil and groundwater. Groundwater was encountered at approximately 45 feet bgs and estimated to be flowing northeast. At the time of the tanks' replacement, approximately 190 cubic yards of soil were removed from the site, and limited liquid petroleum hydrocarbons were recovered. Groundwater monitoring has been conducted at the site since 1999. Additional air sparge and soil vapor extraction wells were installed as a part of remediation effort (SGI, 2006). The records indicate that the impacted soil and free product was removed from the site, and plume has remained stable, contained, and is anticipated to decrease over time. Site closure was issued based on the fact that the residual soil and groundwater contamination are unlikely to cause significant human health and environment risk (RWQCB, 2014).
11	Chevron Company Pipeline Right-of-Way (former)	18900 Hawthorne Boulevard, Torrance	Hawthorne Option	Directly under alignment	The site is currently occupied and used as a car dealer facility. The previous uses at the site resulted in the release of petroleum hydrocarbons to the subsurface contaminating onsite soils. Perched groundwater at the site was estimated to between approximately 55 and 60 feet bgs and is underlain by Bellflower Aquiclude of approximately 100 feet thick. The property south of the site was cut by about 10 feet during construction of 190 street. Groundwater beneath the perched zone was not impacted (Chevron, 1996). Majority of the impacted soil has been removed and the site have been capped; therefore, RWQCB determined that no further assessment or remediation is needed at the time (RWQCB, 1996). The site would be acquired for the Hawthorne Option.

Map ID[1]	Site Name	Site Address	Potential Impact to	Distance from Project (In Feet)	Discussion
12	Union Carbide Corporation	19500 Mariner Avenue, Torrance	Proposed Project	Adjacent, south	The former, approximately 100-acre, Union Carbide Corporation facility was built in 1956 for polyethylene manufacturing. The site also included an ethylene glycol blending, canning, and distribution operation; and a chemical and plastics receiving and distribution operation. The glycol production unit was demolished in 1969. Forty acres were sold for the Old Towne Mall and K-Mart complex. The remaining facility operated until 1982, when the manufacturing operations were discontinued and much of the facility was decommissioned, sold, and redeveloped. In 2008, the terminal operations were shut down except for storage of raw materials supplied to the Union Carbide Corporation latex production facility. In the past, the facility was also used for on-site disposal, and/or discharge to county sewer lines. Past activities at the site resulted in soils and groundwater contamination with the components of dripolene, VOCs, total petroleum hydrocarbons (TPH), and metals. Numerous investigations and remedial actions have been conducted since 1970s (Montgomery Watson, 2000). The site's northeastern border is adjacent to the Proposed Project. Perched groundwater at the site was encountered at approximately 55 feet bgs and the deeper aquifer at 90 feet bgs. The current, approximately 37-acre facility operating as Union Carbide Corporation Torrance Distribution Facility is a terminal and distribution center (URS, 2010). Ethylene glycol is now brought in by rail or truck and distribution continues. The facility consists of old and new bulk terminals, a distilled spirits plant, a concrete-lined stormwater detention basin, and the heil separator. The facility also includes bulk storage, transfer, and blending of chemicals. The site has 56 ASTs, as well as 8 USTs that are currently used to store chemical products on site. One aboveground storage tank located near the eastern boundary of the facility is used to store wastewater collected from the heil separator. DTSC has indicated that portion of the subject site (Areas 1 and 2 as designated in remedial action plan), adjacent to the Metro ROW were impacted with dense nonaqueous phase liquids and benzene in perched groundwater and are currently under institution controls and ongoing remediation (DTSC 2022a; 2022b).

Map ID[1]	Site Name	Site Address	Potential Impact to	Distance from Project (In Feet)	Discussion
13	North Posse Site	3041 Del Amo Boulevard, Torrance	Proposed Project	Adjacent, west	This site consists of approximately 31 acres of predominantly undeveloped land with horse stables located on approximately 1.2 acres in the southeastern portion of the property. Historically, the site was an out-parcel ancillary to the Torrance Oil refinery located across the site at 3700 W 190th Street. The property was used as a borrow pit for construction of berms at the refinery site. Oil pipelines were observed on and adjacent to the property. (SCS Engineers, 2022). No oil production/processing activities were conducted on the site; however, the northwest portion of the site was used for disposal of refinery wastes between the 1940s and 1960s. Several investigations at the site confirmed that this disposal area has been contaminated with TPH, semi-volatile organic compound (SVOCs), VOCs, ACM, and metals above regulatory screening levels. It is also indicated that the soil vapor has elevated concentrations of methane and VOCs, possibly from the groundwater contamination from potential off-site source located northeasterly to the site (SCS Engineers, 2018). Groundwater at the site is approximately 70 feet bgs and flows generally in a southwesterly direction. The site has numerous groundwater monitoring wells associated with the refinery present on the property primarily around the perimeter (SCS Engineers, 2018). In 2022, a workplan was prepared by SCS Engineers for additional assessment at the site (SCS Engineers, 2022). The facility is part of the oil refinery clean up and abatement program under the remedial action plan under the California Land Reuse and Revitalization Act.
14	Former Amp-Matrix Facility	355-455 Maple Avenue, Torrance	Proposed Project	600 feet south	This site was formerly owned by Matrix Science Corporation, which operated a manufacturing facility to produce electronic connectors between 1968 and 1988 on six contiguous parcels. The site was acquired by AMP, Inc., in 1998 and continued similar operations until the facility was bought by the current user, Tyco Electronics Corporation. Past site use had resulted in subsurface contamination at the site. Groundwater at the site is estimated to be at approximately 105 feet bgs and flowing south-southeast. Several phases of subsurface investigation and remedial actions related to VOCs have been conducted at the site, including contaminated soil removal, soil vapor extraction, and on-site and off-site groundwater monitoring. The offsite groundwater monitoring wells were installed as part of an interim remedial action plan and monitoring of those wells is ongoing under the oversight of RWQCB (Clark, 2020).

Map ID[1]	Site Name	Site Address	Potential Impact to	Distance from Project (In Feet)	Discussion
15	Torrance/Dowell Schlumberger, Inc.	305 Crenshaw Boulevard, Torrance	Proposed Project	Adjacent, north	The name on the EnviroStor website indicates that this site is owned by Hydro Chem Industrial Services, Inc. It is noted that the facility has never been regulated as a treatment, storage, and disposal facility and so was administratively closed. (DTSC, 2020). Due to insufficient data, it is unclear whether the site has been subject to any release of hazardous materials in the past. However, the site location shown on GeoTracker corresponds to the former DOW Chemical Company located at 301 Crenshaw Boulevard. Based on the review of historical aerial photographs, it appears that the location of these two sites is shown as one facility. Therefore, the findings corresponding to the 301 Crenshaw site (ID #16) applies to this location. The site cleanup status on GeoTracker webpage is indicated as open for remediation at the time of assessment (GeoTracker, 2020).
16	DOW Chemical Company	301 Crenshaw Boulevard, Torrance	Proposed Project	<50 feet northeast	The former DOW chemical facility operated on approximately 52 acres. The site was listed multiple times in the DTSC records. DOW began manufacturing polystyrenes, epoxy resins, and Styrofoam since 1953. When the facility was open, hazardous wastes were generated, stored, and managed on site. All operations at the facility were closed, however, around 2015. The improper use of hazardous material resulted in the contamination of subsurface soils and groundwater. Several assessment and corrective actions were conducted at the site since at least 2002. Americas Styrenics currently operate the site to manufacture polystyrene plastics. No online records showing the corrective actions reports were found. However, the DTSC site history summary on EnviroStor indicates that the final RCRA facility investigation report was approved in June of 2019, and the owner or operator has consented to conducting corrective action measures at the site. The site is currently being monitored for active groundwater contamination.

Map ID[1]	Site Name	Site Address	Potential Impact to	Distance from Project (In Feet)	Discussion
17	PPG Industries, Inc.	465 Crenshaw Boulevard, Torrance	Proposed Project	Directly adjacent, north	This site is located at the Torrance Transit Center (TC), adjacent to the Proposed Project alignment. Between 1950 and 2000, aqueous and solvent-based paint coatings and resins were manufactured at the site. In 2000, the manufacturing facility was demolished. Groundwater at the site is approximately 85 feet bgs and flows east (RWQCB, 2008). In 1999, a 2,000-gallon UST was removed from the site. During the UST removal, TPH and VOC contamination were discovered in the soil. Subsequent assessment determined that the groundwater was also contaminated. Extensive subsurface investigations and remediation actions, including soil removal, soil vapor extraction, and groundwater pump and treat were conducted in the late 1990s. Additional investigations conducted in 2007 and 2008 indicated residual contamination in the groundwater. In 2009, soil remediation activities were conducted, and a subsequent human health risk assessment was conducted to assess potential human health risks to on-site workers and possible vapor intrusion risk due to residual contaminants. The human health risk assessment determined that the residual contaminants were not considered a risk to on-site workers or occupants; however, the risk levels exceeded residential standards. As a result, DTSC requested a land use covenant restricting the land use near the site to commercial/industrial use. DTSC issued a remedial action completion in 2010 indicating the remedial efforts were completed (Ardent, 2015). In 2015, the City of Torrance adopted a mitigated negative declaration and approved the construction and operation of the Torrance TC (City of Torrance, 2015).
18	Vought Aircraft Industries, Inc.	640 Alaska Avenue, Torrance	Proposed Project	Directly adjacent, south	This site, which is located south of the Torrance TC, currently operates as a Triumph manufacturing facility. The facility was formerly owned and operated by Northrop Grumman Corporation from 1968 until 2000 when it was purchased by Vought Aircraft Industries, Inc. The facility and was used by Northrop Grumman Corporation to manufacture aluminum skins for Boeing 737 aircrafts. The facility was a large-quantity generator of hazardous waste and maintained a RCRA-permit until it was closed in 1992. As a part of a corrective action program for the site, DTSC has identified areas of past releases (DTSC, 2005). Several investigations have been completed at the facility to assess subsurface contamination beneath the site. It is also indicated that off-site sources located northwest of the site may be a contributing source of deep soil vapor at the site. Records indicate that soil vapor extraction and monitoring are still in progress (Arcadis, 2019).

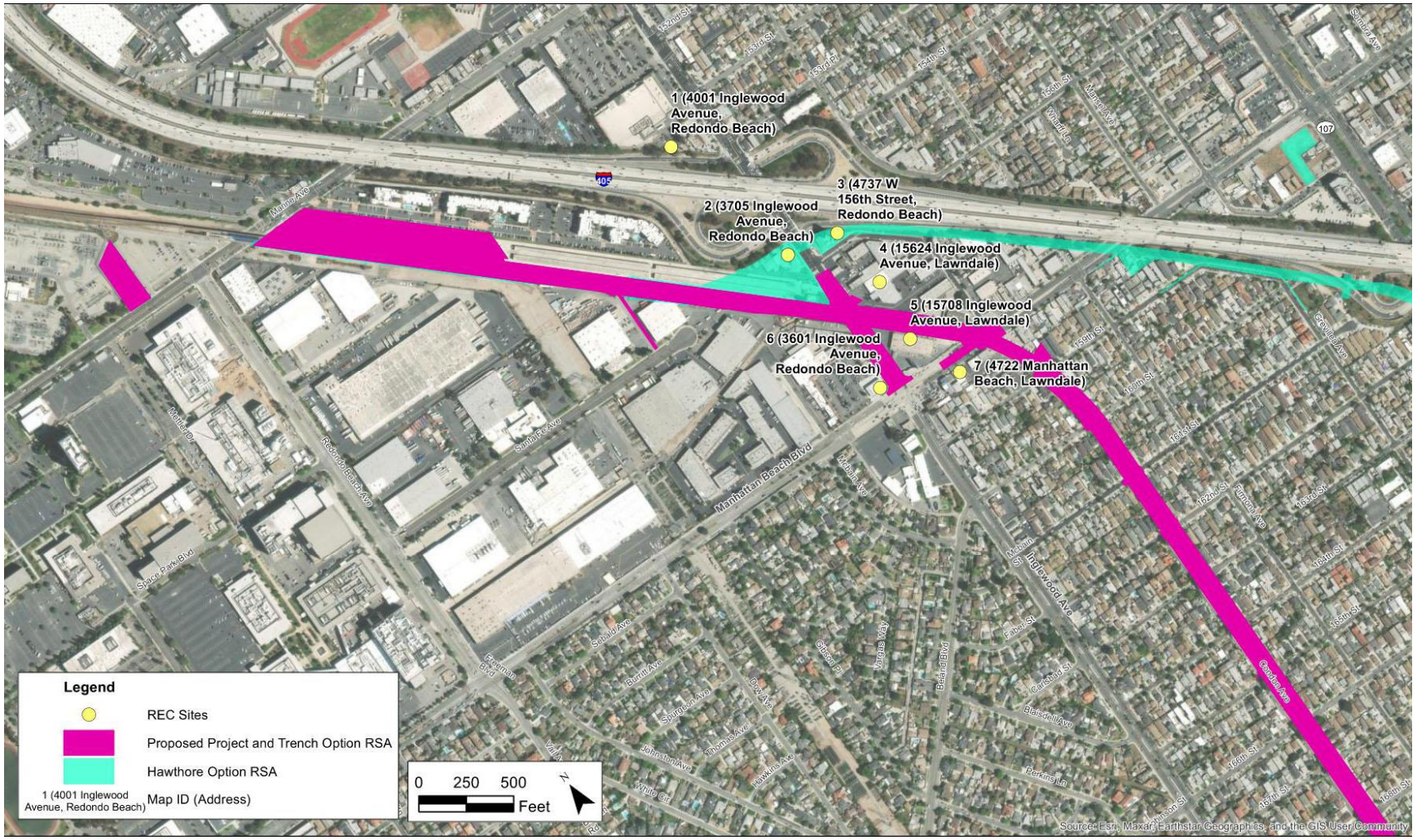
Map ID[1]	Site Name	Site Address	Potential Impact to	Distance from Project (In Feet)	Discussion
19	Exxon Mobil Oil Torrance Refinery	3700 West 190 Street, Torrance	Proposed Project	Directly adjacent, east	This site occupies approximately 700 acres on the east of the existing freight tracks bounded by 190th Street on the north, Van Ness Avenue on the east, Del Amo Boulevard on the south, and Prairie Avenue on the west. In addition, the refinery owned an approximate 29-acre triangular piece of land on the west of the Proposed Project alignment between Prairie Avenue and Del Amo Boulevard, also referred to as North Posse Site (Refer Map ID#12). The site has been used as an oil refinery since at least the 1950s. Exxon Mobil owned the site until it was transferred to Torrance Refining Company in 2016. Past activities at the site resulted in hydrocarbon contamination to the soil and groundwater beneath the site. Groundwater was encountered at approximately 70 feet bgs, and perched groundwater was reportedly present at approximately 25 and 80 feet bgs with variable flow influenced by the lower-permeability perching layers (AECOM, 2020a). The contamination appeared to have migrated off site to the southeast and southwest, from beneath the Project footprint, based on a study by others. (AECOM, 2020a). Numerous assessments and remediation actions have been conducted including removal of soil, groundwater pump-and-treat, and soil vapor extraction. In addition, several groundwater monitoring wells were installed to monitor the contamination levels. (AECOM, 2020a.) The site cleanup status on GeoTracker webpage is indicated as open for remediation at the time of assessment (GeoTracker, 2020).

Note: South of 190th Street, there is one alignment for the Proposed Project, and no options.

[1]Map ID numbers correspond to site numbers shown on Figure 3.9-3 and Figure 3.9-6

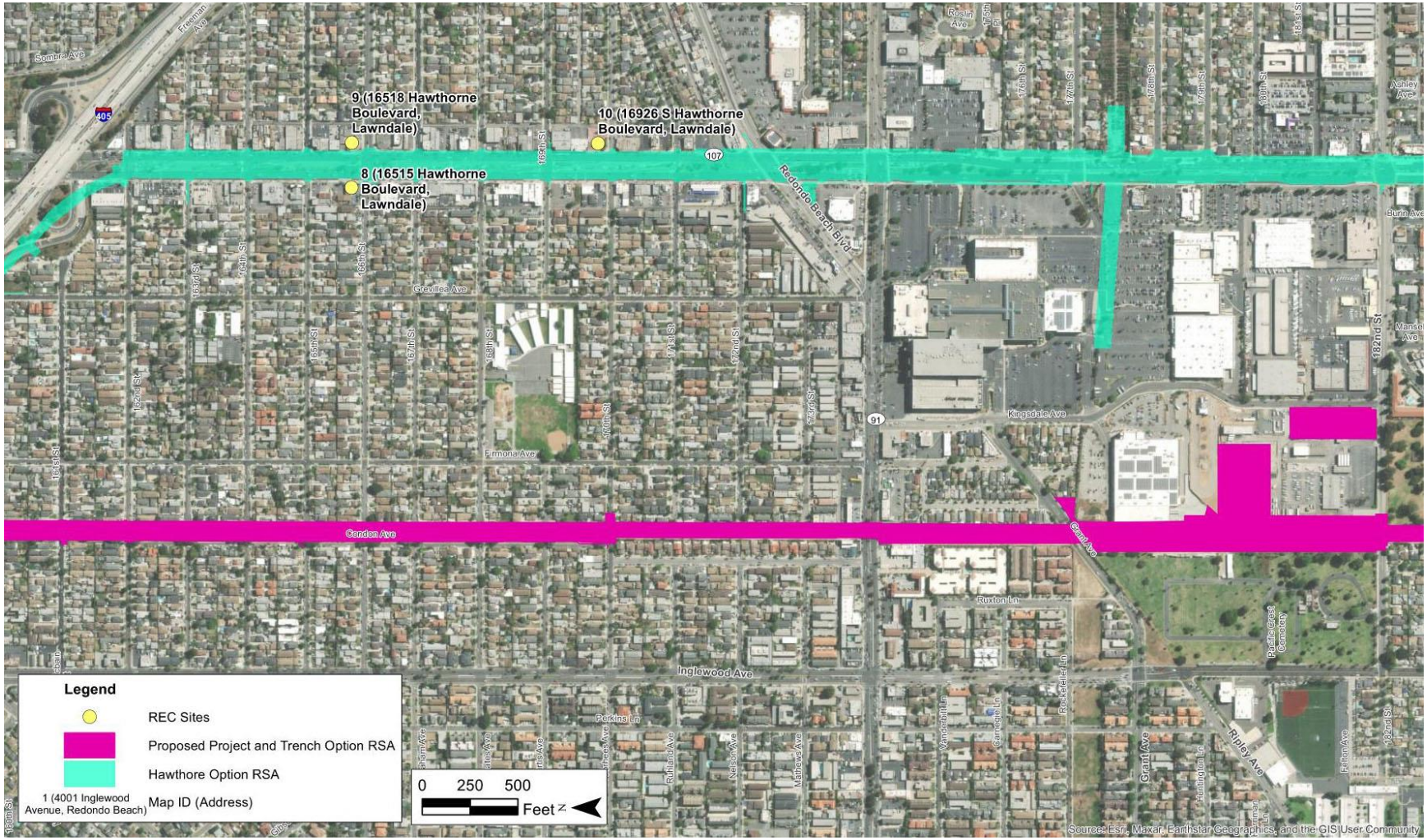
Bgs= below ground surface; TCA= 1,1,1-trichloroethane; TCE= trichloroethene (TCE); DCE= 1,2-dichloroethane; PCE= tetrachloroethylene; TPH= total petroleum hydrocarbons; SVOC= semi-volatile organic compound; VOC= Volatile Organic Compound; UST= Underground Storage Tanks; RWQCB= Regional Water Quality Control Board; USEPA= United States Environmental Protection Agency; ERNS= Emergency Response and Notification Systems

Figure 3.9-3. Sites of Concern (RECs) (Sheet 1 of 4)



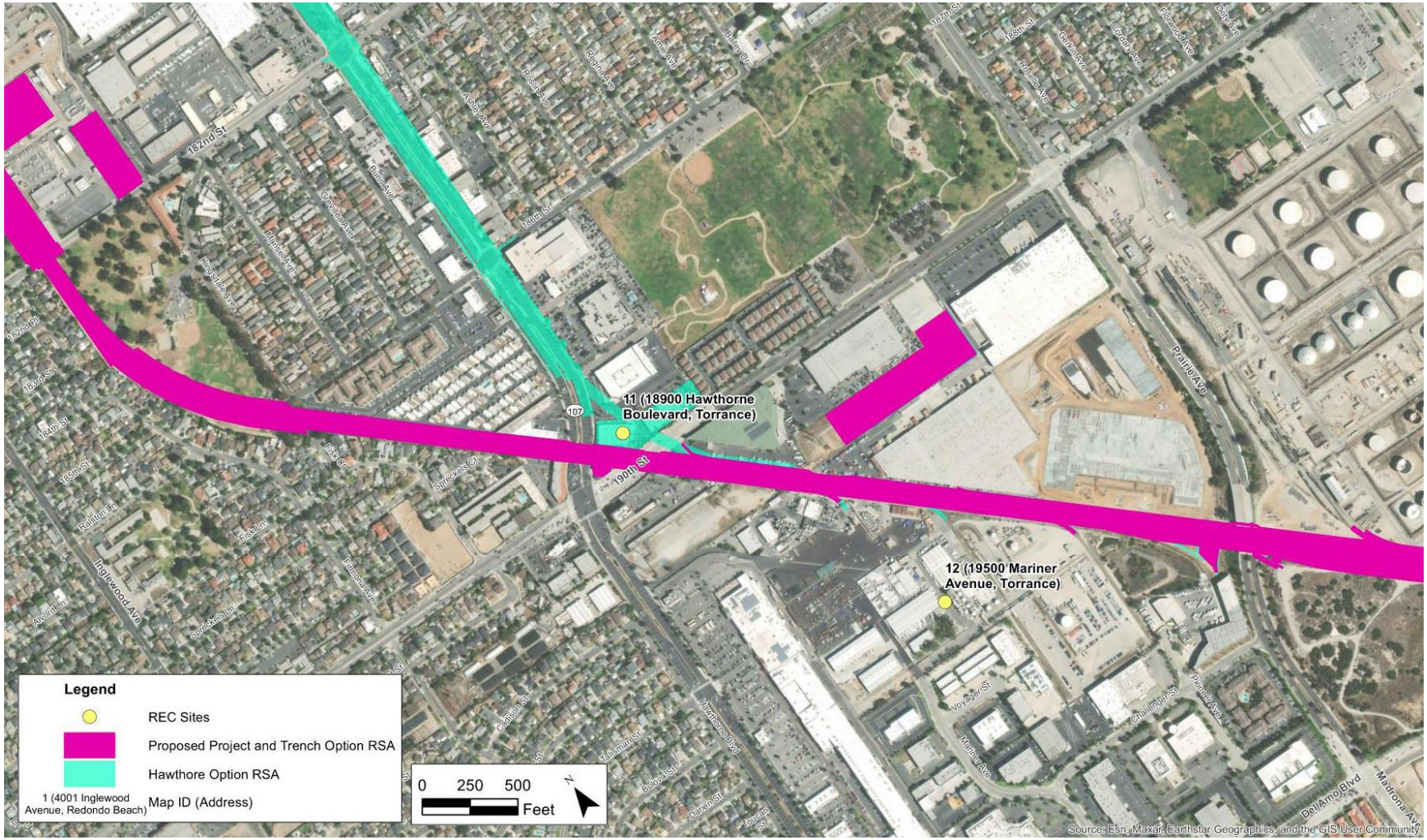
Source: Diaz Yourman & Associates, 2020a; 2020b; 2022

Figure 3.9-4. Sites of Concern (RECs) (Sheet 2 of 4)



Source: Diaz Yourman & Associates, 2020a; 2020b; 2022

Figure 3.9-5. Sites of Concern (RECs) (Sheet 3 of 4)



Source: Diaz Yourman & Associates, 2020a; 2020b; 2022

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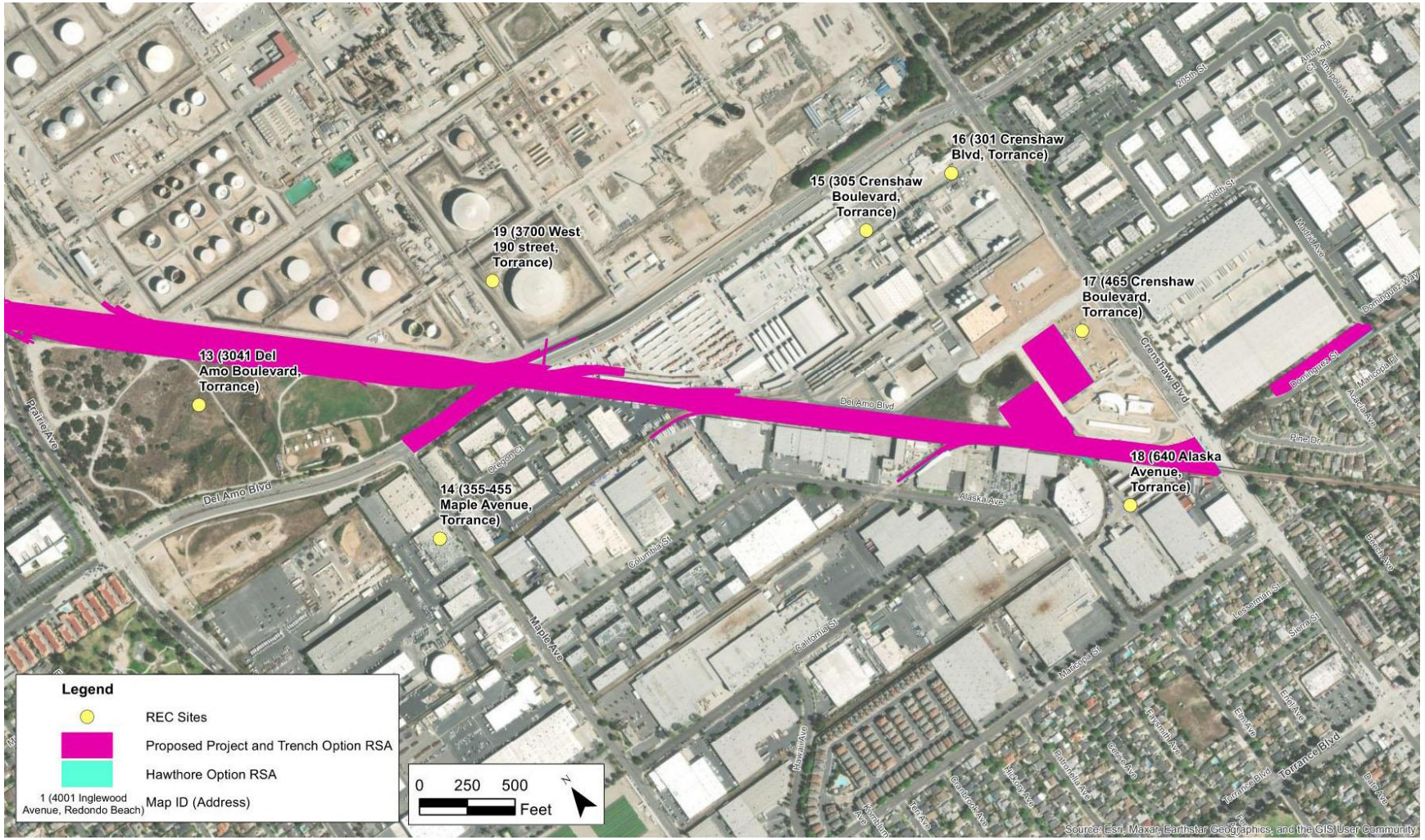
Figure 3.9-6. Sites of Concern (RECs) (Sheet 4 of 4)



Source: Diaz Yourman & Associates, 2020a; 2020b; 2022

3.9-4 Environmental Impacts

3.9-4.1 Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

3.9-4.1.1 Construction Impacts

Less Than Significant Impact. The RSA contains multiple sources of potentially hazardous materials that could be encountered during construction of the Proposed Project. Overall, the Proposed Project would have a **less than significant impact** during construction related to routine transport, use, or disposal of hazardous materials. The following sections describe the impacts in detail for the types of hazards.

Transport, Use, and Disposal of General Construction Materials

Less than Significant Impact. Most hazardous waste generated during construction (e.g., unused, or off-specification paint and primer, paint thinner, solvents, and vehicle and equipment maintenance-related materials) is of low risk and can be recycled. Construction equipment may inadvertently drip small quantities of hazardous materials (e.g., fuel oil and grease) and contaminate soil. PF-HHM-1 would be implemented, which would include plans detailing BMPs regarding hazardous material transport, storage, and use, as well as BMPs for cleanup should releases occur; this would reduce impacts related to transport, use, and disposal of hazardous materials.

The Proposed Project would demolish existing bridges at Grant Avenue and Del Amo Boulevard, and reconfigure freight tracks throughout the corridor. The excavation and demolition of the existing bridges would require the removal, transport, and disposal of soil and bridge materials that have potentially been contaminated by various contaminants of concern as discussed in Section 3.9-3. Some of the anticipated demolition-related hazardous waste (i.e., batteries and mercury-containing lamps and thermostats) is known as “universal waste” and can be recycled and is of low risk to the public or environment. Other anticipated hazardous waste (e.g., ACMs, LBP, PCB) is of higher risk and can pose a significant hazard to the public or environment if not managed properly. PF-HHM-2 would be implemented as a part of the project, would include demolition plans that detail the procedures for ACMs, LBP, PCB, TWW, and universal waste encountered during demolition activities in accordance with federal and state regulations. Therefore, the impact related to general construction materials would be **less than significant**.

Disposal of Contaminated Soil within the Metro ROW

Less than Significant Impact. The Proposed Project would be in an active freight ROW, and would excavate soils associated with construction, leveling, and right-of-way widening. As discussed in Section 3.9-3.1, historic railroad operations may have led to the presence of hazardous materials along the ROW including heavy metals and hydrocarbon contamination in soil, herbicides, TWW, and asbestos, which would need to be properly handled when disturbed. In addition, ADL will be likely present within unpaved soils adjacent to the Proposed Project. PF-HHM-1, Handling, Storage, and Transport of Hazardous Materials and Wastes, would include a plan detailing BMPs regarding hazardous material transport, storage, including for soils contaminated by heavy metals or with VOCs, in compliance with SCAQMD Rule 1446 and 1156. Upon removal, TWW from existing and historical railroad usage including wood railroad ties, power poles, or guard rail posts (including those previously salvaged and stored on site) in the Proposed Project footprint would be managed or disposed of in accordance with the demolition plans prepared as a part of PF-HHM-2, Demolition Plans. PF-HHM-3, would be implemented, which would require that Phase II site investigations, including testing for ADL pursuant to ASTM standards, would be performed to determine the presence of hazardous materials in soil within the

Metro ROW at the locations identified in Table 3.9-1, and corrective action would be taken in compliance with federal and state regulations.

Additionally, PF-HHM-4, Soil, Soil Vapor, and Groundwater Management Plans would be implemented as a part of the Proposed Project and would require preparation of soil and soil vapor management plans to address the possibility of encountering contaminated soil and soil vapor during Project construction. Contaminated soil would be disposed of at a permitted landfill per the specifications of DTSC or RWQCB or other agencies overseeing the Proposed Project construction. Section 3.11, Utilities and Service Systems describes landfills, including landfills that accept contaminated soils, and their capacities when available. It is anticipated that approximately 88,113 cubic yards (CY) of soil quantity would be generated from the Proposed Project construction, 10% of which is assumed to be contaminated (i.e., approximately 8,811 CY), which would need to be disposed of at a permitted landfill per the specifications of DTSC or RWQCB or other agencies overseeing construction of the Proposed Project. As described in Section 3.11, Utilities and Service Systems, the two nearest landfills which process contaminated soils would be able to adequately process the small amount of contaminated soil anticipated to be generated by the Proposed Project. Therefore, the impact related to disposal of contaminated soils would be less than significant.

Disposal of Potentially Contaminated Groundwater

Less than Significant Impact. Based on the findings discussed in Section 3.9-3, there is a potential that the groundwater in the proposed project alignment is contaminated from offsite sources that are identified in Table 3.9-1. The Proposed Project construction would disturb potentially contaminated groundwater at locations where pile foundation for construction of elevated structures is proposed. As described in PF-HHM-4, the contractor would provide a groundwater management plan, which would establish provisions for encountering and managing contaminated groundwater. PF-HHM-5, would require consultation with RWQCB, and the Proposed Project would comply with BMPs required as part of the NPDES permit. The extracted groundwater would be discharged into storm drain system or collected onsite in drums or similar equipment and disposed accordingly, based on the contaminant concentrations. Therefore, the impact related to contaminated groundwater would be **less than significant**.

TRENCH OPTION

Less Than Significant Impact. The RSA contains multiple sources of potentially hazardous materials that could be encountered during construction of the Trench Option. Overall, the Trench Option would have a **less than significant impact** during construction related to routine transport, use, or disposal of hazardous materials. The following sections describe the impacts in detail for the types of hazards.

Transport, Use, and Disposal of General Construction Materials

Less than Significant Impact. The Trench Option would transport, use, and dispose of similar general construction materials as described under the Proposed Project. Similar to the Proposed Project, the Trench Option would comply with the same regulatory control measures and implement PF-HHM-1 and PF-HHM-2 to minimize impacts related to hazardous waste generated during construction. Therefore, the impact related to general construction materials would be **less than significant**.

Disposal of Contaminated Soil within the Metro ROW

Less than Significant Impact. Similar to the Proposed Project, the Trench Option would be in an active freight ROW and would excavate soils associated with construction. The construction of Trench Option would require greater disturbance to the ground for below-grade sections of the length of the

alignment. The Trench Option involves excavation quantities of approximately 340,000 CY and would require approximately 137,300 CY of fill for construction. The net quantity would result in approximately 202,600 CY of soil cuttings, of which 10% (I.e., 20,260 CY) is assumed to be contaminated. As described in Section 3.11, Utilities and Service Systems, the two nearest landfills which process contaminated soils would be able to adequately process the amount of contaminated soil anticipated to be generated by the Trench Option. While the amount of excavated contaminated soil would be greater than for the Proposed Project, the Trench Option would comply with the same regulatory control measures and implement PF-HHM-2, PF-HHM-3, and PF-HHM-4 to minimize impacts related to contaminated soil. Therefore, the impact related to contaminated soils would be **less than significant**.

Disposal of Potentially Contaminated Groundwater

Less than Significant Impact. Based on the findings discussed in Section 3.9-3, there is a potential that the groundwater in the Trench Option alignment is contaminated from offsite sources identified in Table 3.9-1. Construction for the Trench Option may require dewatering in greater quantities compared to Proposed Project, particularly at locations where the groundwater is shallow (at approximately 25 feet bgs) and the trench sections are deep. This would create conditions involving release of contaminated groundwater into the environment. The extracted groundwater would be discharged into storm drain system or collected onsite in roll-off containers or similar equipment and disposed accordingly, based on the contaminant concentrations. Similar to the Proposed Project, the Trench Option would implement PF-HHM-4 and PF-HHM-5 to minimize impacts related to contaminated groundwater. Therefore, the impact related to contaminated groundwater would be **less than significant**.

HAWTHORNE OPTION

Less Than Significant Impact. The RSA contains multiple sources of potentially hazardous materials that could be encountered during construction of the Hawthorne Option. Overall, the Hawthorne Option would have a **less than significant impact** during construction related to routine transport, use, or disposal of hazardous materials. The following sections describe the impacts in detail for the types of hazards.

Transport, Use, and Disposal of General Construction Materials

Less than Significant Impact. The Hawthorne Option would be entirely on an elevated structure from the Redondo Beach (Marine) Station to 190th Street. Construction of the Hawthorne Option would transport, use, and dispose of similar general construction materials as described under the Proposed Project. The construction of the elevated structure would require construction of piles that would have vertical subsurface disturbance possibly resulting in soil cuttings. In addition, construction of the elevated structure would require demolition of more existing structures compared to the Proposed Project, including the commercial properties between Inglewood Avenue and W 162nd Street.

The Hawthorne Option would result in greater risks of encountering building demolition-related waste, such as ACM, LBP, PCB. Construction of the Hawthorne Option would comply with the same regulatory control measures as described for the Proposed Project to deal with hazardous waste generated during construction, and also implement PF-HHM-1 and PF-HHM-2 to minimize impacts. Existing building structures that are to be demolished as part of the Hawthorne Option would be inspected for hazardous building materials prior to demolition. Hazardous building materials that are abated or being demolished would be properly managed by licensed contractors and disposed offsite in hazardous waste accepting landfills. Therefore, the impact related to general construction materials would be **less than significant**.

Disposal of Contaminated Soil within the Metro ROW

Less than Significant Impact. The Hawthorne Option would be located within the Metro ROW from the Redondo Beach (Marine) Station to approximately 2,000 feet south, before it leaves the Metro ROW. The impacts related to contaminated soils are similar to those discussed for the Proposed Project but are of lesser magnitude because of the shorter length of the alignment within the freight corridor. The Hawthorne Option is anticipated to excavate approximately 67,700 CY of soil, most of which would be reused onsite as fill. Approximately 450 CY of soil would need to be exported, of which 10% (i.e., 45 CY) is assumed to be contaminated. As described in Section 3.11, Utilities and Service Systems, the two nearest landfills which process contaminated soils would be able to adequately process the small amount of contaminated soil anticipated to be generated by the Hawthorne Option. Similar to the Proposed Project, the Hawthorne Option would implement PF-HHM-2, PF-HHM-3, and PF-HHM-4 to minimize impacts related to contaminated soil. Therefore, the impact related to contaminated soils would be **less than significant**.

Disposal of Potentially Contaminated Groundwater

Less than Significant Impact. Based on the findings discussed in Section 3.9-3, there is a potential that the groundwater in the Hawthorne Option alignment is contaminated from offsite sources adjacent to the RECs discussed in Table 3.9-1. Construction for Hawthorne Option construction would disturb potentially contaminated groundwater at locations where pile foundation for construction of elevated structures is proposed. Similar to the Proposed Project, the Hawthorne Option would implement PF-HHM-4 and PF-HHM-5 to minimize impacts related to contaminated groundwater. The extracted groundwater would be discharged into storm drain system or collected onsite in drums or similar equipment and disposed accordingly, based on the contaminant concentrations. Therefore, the impact related to contaminated groundwater would be **less than significant**.

3.9-4.1.2 Operational Impacts

Less than Significant Impact. Operation of the Proposed Project would involve the occasional use, storage, and disposal of hazardous materials that could include limited quantities of maintenance vehicle fuels, oils, transmission fluids, paints, solvents, cleaners, and pesticides. The light rail transit vehicles are to be electrically powered and, therefore, would not use hazardous materials, such as diesel or natural gas, as fuel. As such, the Proposed Project would not generate significant amounts of hazardous materials that would require routine transport, use, or dispose of hazardous materials or create conditions involving the release of hazardous materials into the environment. PF-HHM-1 would be implemented as a part of the project, and would include plans detailing BMPs regarding hazardous material transport, storage, and use, as well as BMPs for cleanup should releases occur; this would reduce impacts related to transport, use, and disposal of hazardous materials. Therefore, the Proposed Project would result in a **less than significant impact** related to routine transport, use, and disposal of hazardous materials during operation.

TRENCH OPTION

Less than Significant Impact. Similar to the Proposed Project, operation of the Trench Option would not generate significant amounts of hazardous materials that would require routine transport, use, or disposal of hazardous materials, or create conditions involving the release of hazardous materials into the environment. PF-HHM-1 would be implemented as part of the project. Therefore, the Trench Option would result in a **less than significant impact** related to routine transport, use, and disposal of hazardous materials during operation.

HAWTHORNE OPTION

Less than Significant Impact. Similar to the Proposed Project, operation of the Hawthorne Option would not generate significant amounts of hazardous materials that would require routine transport, use, or disposal of hazardous materials or create conditions involving the release of hazardous materials into the environment. PF-HHM-1 would be implemented as part of the project. Therefore, the Hawthorne Option would result in **less than significant impact** related to routine transport, use, and disposal of hazardous materials during operation.

3.9-4.2 Would the Project 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?

3.9-4.2.1 Construction Impacts

Less than Significant Impact. The RSA contains multiple sources of potentially hazardous materials that could be encountered during construction of the Proposed Project. Overall, the Proposed Project would have a **less than significant impact** during construction involving the release of hazardous materials into the environment.

Oil and Gas Pipelines

Less than Significant Impact. Oil and gas pipelines are located adjacent to the Proposed Project corridor, and oil refineries are located near the southern end. Oil and gas pipelines including a 10-inch Shell crude oil, 8-inch ExxonMobil jet fuel, and 20-inch Chevron gas lines run within the Metro ROW. Oil and gas pipelines may pose a hazard to human health and safety or to the environment if oil or gas are released. Release could occur through spills during construction or rupture of a pipeline during construction. At this phase of design, Metro has obtained as-built drawings from these utility owners and developed preliminary plans for relocation or protect-in-place. Per the Metro Rail Design Criteria, Metro would continue to coordinate with the utility owners in future phases of design, and present preliminary relocation concepts to each utility owner with affected facilities. Metro would conduct additional surveys and potholing as needed to verify the relocation plans, which would avoid any conflicts with pipelines during construction. As noted in PF-US-1 in Section 3.11, Utilities and Service Systems, prior to ground-disturbing activities, all oil and gas pipelines within the ROW would be identified and marked onsite in coordination with the well owners to avoid damaging the pipelines. Utility agreements would be finalized to ensure the designs are prepared by third party utility owners. Therefore, the impact related to oil and gas pipelines would be **less than significant**.

Hazardous Gases

Less than Significant Impact. Common problems associated with oil fields and refineries include methane and hydrogen sulfide soil gas, oil seepage, contaminated soils, leaking wells, and wells not plugged and abandoned to current standards. Under certain conditions, the gases (for instance, methane gas, typically associated with petroleum production, natural seepage, or landfills) can become trapped under an impermeable layer. Human-made structures, such as pavement or structure foundations, can also prevent gas from venting to the atmosphere. As the gas accumulates, it can build up to high concentrations and pressures. Construction activities that involve substantial subsurface disturbance, such as drilling for column foundations, may inadvertently release the gas to the environment and public.

The Proposed Project would be traversing through small portions of Lawndale and Torrance oil fields in Los Angeles County. As noted in Section 3.9-3.1, there is one plugged and abandoned dry hole well

within the RSA as shown on the Figure 3.9-2 (near 171st Street within the Metro ROW). A dry hole well is a well (as for gas or oil) that was unproductive and hence abandoned. The abandoned wells are usually closed permanently using cement grout. Construction activities in this area would involve constructing the at-grade light rail guideway and relocating the freight track and would not involve deep subsurface disturbance. Additionally, based on a study conducted by California Energy Commission (CEC, 2020) on quantifying methane from California's plugged and abandoned oil and gas wells, methane emissions from abandoned/plugged wells in California are negligible, at least for wells located primarily outside large active oil and gas fields. Therefore, the likelihood that construction would release hazardous gases from the abandoned dry hole well is low. Additionally, it is unlikely that unknown abandoned oil wells and abandoned test borings (dry holes) may be present within the construction disturbance limits as the RSA does not pass through oil and gas fields.[1]

PF-HHM-6, Oil and Gas Wells would be implemented as part of the project, and would require that prior to ground-disturbing activities, all oil wells (including abandoned or suspected wells) within 200 feet of the Proposed Project would be identified, inspected, and addressed in accordance with CalGEM standards and in coordination with the well owners. Per PF-HHM-6, where the alignment cannot be adjusted to avoid well casings, the well would be abandoned in accordance with California Laws for Conservation of Petroleum and Gas (1997), Division 3. Oil and Gas, Chapter 1. Oil and Gas Conservation, Article 4, Sections 3228, 3229, 3230, and 3232. Therefore, the impact related to hazardous gases would be **less than significant**.

Contaminated Groundwater

Less than Significant Impact. Construction of the Proposed Project would involve pile foundations at aerial structures that would encounter potentially contaminated groundwater near areas identified in Table 3.9-1. Any extracted groundwater during construction should be managed properly to avoid release into the environment. PF-HHM-4 would be implemented as a part of the project, and would require preparation of Soil, Soil Vapor, and Groundwater Management Plans that require appropriate management of contaminated groundwater. The contaminated groundwater would be disposed of or discharged per PF-HHM-5, in compliance with all RWQCB and County of Los Angeles permit requirements. Therefore, the impact related to contaminated groundwater would be **less than significant**.

Buried Utilities

Less than Significant Impact. In addition to the oil and gas pipelines described above, several other buried utilities may be disturbed during construction activities. Potentially vulnerable/intrusive dry utilities include electrical ducts, train system and control duct banks, train and yard communications duct banks, train signaling duct banks, and natural gas lines. Disturbance to the dry utilities could result in interruptions of utility service, but there would not be a release of hazardous materials into the environment. Potentially vulnerable/intrusive wet utilities include the sewer lines, and domestic water lines, which, when damaged, may result in release of gray or black water causing potential contamination to the subsurface soil and groundwater. These waters usually consist of harmful bacteria

[1] Individual oil wells do not, in general, appear on the regulatory database listings unless associated soil or groundwater contamination have been brought to the attention of a regulatory agency.

and disease-causing pathogens which, when coming into contact with humans, may cause a health risk. At this phase of design, Metro has obtained as-built drawings from these utility owners and developed preliminary plans for relocation or protect-in-place. Metro would continue to coordinate with the utility owners in future phases of design, and present preliminary relocation concepts to each utility owner with affected facilities. Utility agreements would be finalized to ensure the designs are prepared by third party utility owners. Per PF-US-1, prior to construction, the contractor would coordinate with utility owners and verify the location of existing utilities. Therefore, the impact related to buried utilities would be **less than significant**.

TRENCH OPTION

Less than Significant Impact. The RSA contains multiple sources of potentially hazardous materials that could be encountered during construction of the Trench Option. Overall, the Trench Option would have a **less than significant impact** during construction involving the release of hazardous materials into the environment. The potential for significant public or environmental hazards resulting from reasonably foreseeable upset or accident conditions involving the release of hazardous materials into the environment was evaluated individually for construction and operations based on the differences in pertinent environmental concerns.

Oil and Gas Pipelines

Less than Significant Impact. The Trench Option would be located in the same area as the Proposed Project but would require greater disturbance to the ground for below-grade sections of the length of the Project. Compared to the Proposed Project, there would be a greater risk of release through spills or rupture of a pipeline during construction of the trench segment. As with the Proposed Project, Metro has obtained as-built drawings from these utility owners and developed preliminary plans for relocation or protect-in-place for the Trench Option. As noted in PF-US-1 in Section 3.11, Utilities and Service Systems, prior to ground-disturbing activities, Metro would continue to coordinate with the utility owners in future phases of design to avoid conflicts with oil and gas pipelines. Therefore, the impact related to oil and gas pipelines would be less than significant.

Hazardous Gases

Less than Significant Impact. Constructing the trench would require greater disturbance to the ground for below-grade sections of the length of the alignment and could create a passage for potential pathway for accumulating hazardous gases emanating from nearby oil field activities. The Trench Option is located within the same corridor as the Proposed Project, and there is one plugged and abandoned dry hole well within the RSA as shown on the Figure 3.9-2 (near 171st Street within the Metro ROW). The construction of the Trench Option in this area would involve deeper subsurface disturbance, compared to the Proposed Project. However, the likelihood that the dry hole well would lead to hazardous gas emissions during construction are low, given the nature of the well. Additionally, it is unlikely that unknown abandoned oil wells and abandoned test borings (dry holes) may be present within the construction disturbance limits as the RSA does not pass through oil and gas fields.

PF-HHM-6 would be implemented as a part of the project, and would require that prior to ground-disturbing activities, all oil wells (including abandoned or suspected wells) within 200 feet of the project would be identified, inspected, and addressed in accordance with CalGEM standards and in coordination with the well owners.

Trench construction would involve dewatering potentially contaminated groundwater, which has the potential for off-gassing any dissolved VOCs into the surroundings. However, PF-HHM-4 would be

implemented as a part of the project, and would prepare Soil, Soil Vapor, and Groundwater Management Plans requiring appropriate management of contaminated groundwater and gases. Therefore, the impact related to hazardous gases would be **less than significant**.

Contaminated Groundwater

Less than Significant Impact. The deepest trench section is near Inglewood Avenue and Manhattan Beach Boulevard, where trench depths are between 30 feet to 40 feet. Groundwater in that area is in the range of approximately 20 to 25 feet bgs, and various sites in that area have resulted in a contaminated groundwater plume.

Dewatering activities during construction have the potential to cause contaminated groundwater to release into the environment, migrate farther into the groundwater table, or to release contaminated groundwater into drainage systems if proper procedures are not followed. PF-HHM-4 would be implemented as a part of the project, and would require preparation of Soil, Soil Vapor, and Groundwater Management Plans that require appropriate management of contaminated groundwater. The contaminated groundwater would be disposed of or discharged per PF-HHM-5, in compliance with all RWQCB and County of Los Angeles permit requirements. Therefore, the impact related to contaminated groundwater would be **less than significant**.

Buried Utilities

Less than Significant Impact. Similar to the Proposed Project, construction of the Trench Option could disrupt buried utilities, such as sewer lines or domestic water lines, which may result in release of gray or black water causing potential contamination to the subsurface soil and groundwater. At this phase of design, Metro has obtained as-built drawings from these utility owners and developed preliminary plans for relocation or protect-in-place. Per standard practice, utility coordination meetings with third parties would continue through future design phases on plans for relocation or protect-in-place to avoid conflicts with the utilities. Per PF-US-1, prior to construction, the contractor would coordinate with utility owners and verify the location of existing utilities. Therefore, the impact related to buried utilities would be **less than significant**.

HAWTHORNE OPTION

Less than Significant Impact. The RSA contains multiple sources of potentially hazardous materials that could be encountered during construction of the Hawthorne Option. Overall, the Hawthorne Option would have a **less than significant impact** during construction involving the release of hazardous materials into the environment.

Oil and Gas Pipelines

Less than Significant Impact. The Hawthorne Option alignment would be located within the Metro ROW from the Redondo Beach (Marine) Station to approximately 2,000 feet south, before it leaves the Metro ROW. The impacts related to oil and gas lines that are located within the ROW are similar to those discussed for the Proposed Project but are of lesser magnitude because of the shorter length of the alignment within the freight corridor. As with the Proposed Project, Metro has obtained as-built drawings from these utility owners and developed preliminary plans for relocation or protect-in-place for the Hawthorne Option. As noted in PF-US-1 in Section 3.11, Utilities and Service Systems, prior to ground-disturbing activities, Metro would continue to coordinate with the utility owners in future phases of design to avoid conflicts with oil and gas pipelines. Therefore, the impact related to oil and gas pipelines would be **less than significant**.

Hazardous Gases

Less than Significant Impact. The construction of the elevated alignment would require piles with vertical subsurface disturbance. Similar to the Proposed Project, drilling for deep foundations that involve substantial subsurface disturbance may inadvertently release the gas to the environment and public. There is one plugged and abandoned dry hole well within 200 feet of the Hawthorne Option as shown on the Figure 3.9-2. However, the likelihood that the dry hole well would lead to hazardous gas emissions during construction are low, given the nature of the well. Additionally, it is unlikely that unknown abandoned oil wells and abandoned test borings (dry holes) may be present within the construction disturbance limits as the RSA does not pass through oil and gas fields. PF-HHM-6 would be implemented as part of the project, which would require that prior to ground-disturbing activities, all oil wells (including abandoned or suspected wells) within 200 feet of the Proposed Project would be identified, inspected, and addressed in accordance with CalGEM standards and in coordination with the well owners. Therefore, the impact related to hazardous gases would be **less than significant**.

Contaminated Groundwater

Less than Significant Impact. Construction of the Hawthorne Option would involve pile foundations at elevated structures that would encounter potentially contaminated groundwater near areas identified in Table 3.9-1. Any extracted groundwater during construction would be managed properly to avoid release into the environment. PF-HHM-4 would be implemented as a part of the project, and would require preparation of Soil, Soil Vapor, and Groundwater Management Plans that require appropriate management of contaminated groundwater. The contaminated groundwater would be disposed of or discharged per PF-HHM-5, in compliance with all RWQCB and County of Los Angeles permit requirements. Therefore, the impact related to contaminated groundwater would be **less than significant**.

Buried Utilities

Less than Significant Impact. Construction of the Hawthorne Option could disrupt buried utilities, such as sewer lines or domestic water lines, which may result in release of gray or black water causing potential contamination to the subsurface soil and groundwater. The Hawthorne Option alignment would primarily be constructed within city street right-of-way , and therefore has a greater chance of conflict with municipal buried utilities, compared with the Proposed Project, which is primarily within the freight corridor. At this phase of design, Metro has obtained as-built drawings from these utility owners and developed preliminary plans for relocation or protect-in-place. Per standard practice, utility coordination meetings with third parties would continue through future design phases on plans for relocation or protect-in-place to avoid conflicts with the utilities. Per PF-US-1, prior to construction, the contractor would coordinate with utility owners and verify the location of existing utilities. Therefore, the impact related to buried utilities would be **less than significant**.

3.9-4.2.2 Operational Impacts

Less than Significant Impact. Once the Proposed Project is operational, the risks discussed in Section 3.9-4.2.1 regarding construction impacts would end. Operation of the Proposed Project would involve the occasional use and storage of routine detergents and cleansers for vehicle maintenance activities. There would also be potential for fuels, oils, and transmission fluids to drip or spill from Metro support vehicles in limited quantities. Accidental exposure to some of these chemicals can pose physical hazards (e.g., chemical burns) or health hazards (e.g., poisoning), which may give rise to acute or chronic illnesses. The properties and health effects of different chemicals are unique to each chemical and

depend on the extent to which an individual is exposed. The exposure of individuals to hazardous materials is minimal, given the limited quantities of these materials that would be stored and used on the project site. The Proposed Project would not include use or storage of chemicals that have the potential to result in an off-site upset or accidental event. Therefore, the Proposed Project would result in a **less than significant impact** related to accident conditions involving the release of hazardous materials into the environment during operation.

TRENCH OPTION

Less than Significant Impact. Similar to the Proposed Project, the Trench Option would not include use or storage of chemicals, or disturbance in areas with active or abandoned oil and gas wells that have the potential to result in an off-site upset or accidental event. Therefore, the Trench Option would result in a **less than significant impact** related to accident conditions involving the release of hazardous materials into the environment during operation.

HAWTHORNE OPTION

Less than Significant Impact. Similar to the Proposed Project, the Hawthorne Option would not include use or storage of chemicals or disturbance in areas with active or abandoned oil and gas wells that have the potential to result in an off-site upset or accidental event. Therefore, the Hawthorne Option would result in a **less than significant impact** related to accident conditions involving the release of hazardous materials into the environment during operation.

3.9-4.3 Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

3.9-4.3.1 Construction Impacts

Less than Significant Impact. RK Lloyde Continuation High School and Centinela Valley Independent Study School are located near the northern end of the RSA within a quarter-mile of the existing Redondo Beach (Marine) Station. Environmental Charter High School, William Green Elementary School, Adams Middle School, Washington Elementary School, and Franklin School are located near the central portion of the RSA between Manhattan Beach Boulevard and 190th Street within a quarter-mile of the Proposed Project. There are no proposed schools within a quarter-mile of the Proposed Project; therefore, this analysis focuses on existing schools. The RSA contains multiple sources of potentially hazardous materials that could be encountered during construction of the Proposed Project within a quarter-mile of a school. Overall, the Proposed Project would have a **less than significant impact** during construction related to the potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of a school. The following sections describe the impacts in detail for the types of hazards.

Hazardous Emissions

Less than Significant Impact. As noted in Section 3.9-3.1, ACM may be emitted during demolition of older structures. PF-HHM-2 would be implemented as a part of the project, and would require demolition plans that detail the procedures for ACMs, LBP, PCB, TWW, and universal waste encountered during demolition activities in accordance with federal and state regulations. Excavation of soils within the RSA that are potentially contaminated with VOCs would need to be properly handled for disposal. Some of the proper soil handling considerations include use of temporary fencing and/or caution tape to minimize workers at the contaminated site, use of air monitoring devices, covering the stockpiled soil with plastic sheeting to control dust and minimize exposure, and ensuring compliance with the approved soil management plan. The hazardous waste and hazardous materials plan required as a part

of PF-HHM-1 would include provisions for the handling and transport of contaminated soil in compliance with SCAQMD Rule 1166. Additionally, PF-AQ-1, Metro Green Construction Policy Compliance would be implemented, requiring construction to comply with the provisions of the Metro Green Construction Policy, which include provisions for emissions and fugitive dust control. Therefore, the impact related to hazardous emissions within a quarter-mile of an existing school would be **less than significant**.

Handling of Hazardous Materials

Less than Significant Impact. During construction, there would be use of commercially available hazardous materials such as gasoline, brake fluids, coolants, and paints. Standard equipment maintenance and good housekeeping practices during construction would minimize the risk of any release; however, if any release of these substances did occur, releases are anticipated to be localized and unlikely to pose a risk to the educational institutions within a quarter-mile of construction activities. Additionally, PF-HHM-1 would be implemented, including preparation of plans detailing BMPs regarding hazardous material transport, storage, and use, as well as BMPs for cleanup should releases occur. PF-HHM-2 and PF-AQ-1 would be implemented as a part of the project, and would include preparation of demolition plans, provisions for the handling and transport of contaminated soil in compliance with SCAQMD Rule 1166, and emissions controls in compliance with Metro's Green Construction Policy. Therefore, impacts related to handling of hazardous materials within quarter-mile of an existing school would be **less than significant**.

TRENCH OPTION

Less than Significant Impact. As with the Proposed Project, the RSA contains multiple sources of potentially hazardous materials that could be encountered during construction of the Trench Option within a quarter-mile of a school. Overall, the Trench Option would have a **less than significant impact** during construction related to the potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within quarter-mile of a school. The following sections describe the impacts in detail for the types of hazards.

Hazardous Emissions

Less than Significant Impact. The Trench Option is in the same corridor as the Proposed Project, and the same schools as described above would be within a quarter-mile of the Trench Option. Construction of the Trench Option would have similar hazards as identified for the Proposed Project during demolition and excavation of soils potentially contaminated with VOCs. PF-HHM-1, PF-HHM-2, and PF-AQ-1 would be implemented as a part of the project, and would include preparation of plans detailing BMPS regarding handling of hazardous materials, preparation of demolition plans, provisions for the handling and transport of contaminated soil in compliance with SCAQMD Rule 1166, and emissions controls in compliance with Metro's Green Construction Policy. Therefore, the impact related to hazardous emissions would be **less than significant**.

Handling of Hazardous Materials

Less than Significant Impact. Similar to the Proposed Project, commercially available hazardous materials would be used during construction, and releases of these materials would be localized and unlikely to pose a risk to nearby schools. As described above, PF-HHM-1, PF-HM-2, and PF-AQ-1 would be implemented as part of the project, and would include preparation of plans detailing BMPs regarding hazardous material transport, storage, and use, as well as BMPs for cleanup should releases occur. Therefore, the impact related to handling of hazardous materials would be **less than significant**.

HAWTHORNE OPTION

Less than Significant Impact. As with the Proposed Project, the RSA contains multiple sources of potentially hazardous materials that could be encountered during construction of the Hawthorne Option within a quarter-mile of a school. Overall, the Hawthorne Option would have a **less than significant impact** during construction related to the potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within a quarter-mile of a school. The following sections describe the impacts in detail for the types of hazards.

Hazardous Emissions

Less than Significant Impact. The Hawthorne Option would be within a quarter-mile of the same schools as the Proposed Project, except for Adams Middle School, Washington Elementary School, and Franklin School. Construction of the Hawthorne Option would have similar hazards as identified for the Proposed Project Option during demolition and excavation of soils potentially contaminated with VOCs. PF-HHM-1, PF-HHM-2, and PF-AQ-1 would be implemented as a part of the project, and would include demolition plans, provisions for the handling and transport of contaminated soil in compliance with SCAQMD Rule 1166, and emissions controls in compliance with Metro's Green Construction Policy. Therefore, the impact related to hazardous emissions within a quarter-mile of an existing school would be **less than significant**.

Handling of Hazardous Materials

Less than Significant Impact. Construction of the Hawthorne Option would have similar hazards as identified for the Proposed Project. As described above, PF-HHM-1, PF-HHM-2, and PF-AQ-1 would be implemented as part of the project, and would minimize impacts related to handling of hazardous materials. Therefore, impacts related to handling of hazardous materials within a quarter-mile of an existing school would be **less than significant**.

3.9-4.3.2 Operational Impacts

No Impact. Operation of the Proposed Project would involve the occasional use and storage of routine detergents and cleansers for vehicle maintenance activities. There would also be potential for fuels, oils, and transmission fluids to drip or spill from Metro support vehicles in limited quantities. However, the potential for exposure to these hazards and hazardous materials would be limited to within the project ROW. In addition, site personnel shall be trained in site-specific hazardous materials spill response. Metro staff is available 24 hours a day through the Quality Assurance Department to respond to hazardous materials releases, and Metro sites frequently undergo emergency response drills. There would be no hazardous emissions associated with operations of the Proposed Project. Therefore, the operation of Proposed Project would result in **no impact** related to hazardous emissions or the handling of hazardous materials and waste within a quarter-mile of an existing school.

TRENCH OPTION

No Impact. Similar to that noted in the Proposed Project section, operations of the Trench Option would not result in significant hazardous emissions. Therefore, the operation of the Trench Option would result in **no impact** related to hazardous emissions or the handling of hazardous materials and waste within a quarter-mile of an existing school.

HAWTHORNE OPTION

No Impact. Similar to that noted in the Proposed Project section, operations of the Hawthorne Option would not result in significant hazardous emissions. Therefore, the operation of the Hawthorne Option

would result in **no impact related** to hazardous emissions or the handling of hazardous materials and waste within a quarter-mile of an existing school.

3.9-4.4 Would the Project 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?

3.9-4.4.1 Construction Impacts

Less than Significant Impact. The Proposed Project is in a highly urbanized setting and traverses the cities of Redondo Beach, Lawndale, and Torrance. Based on the review of EDR records, the Proposed Project is not directly located on a site that is on a list of sites pursuant to Section 65962.5 (Cortese), but the construction of the portions of the Proposed Project may occur near sites that are on the list (some of which may have ongoing remediation activities). Section 3.9-3.1 describes the REC sites and the databases where they are listed including, but not limited to, DTSC EnviroStor and CORTESE within the RSA that may have potential subsurface contamination that may be implicated by the proposed construction. Table 3.9-2 lists the sites that would be disturbed during construction or acquired for the Proposed Project, which are mapped in Figure 3.9-3 through Figure 3.9-6.

Table 3.9-2. Potential REC Sites for the Proposed Project

Map ID[1]	Site Name	Distance from Project (In Feet)	Discussion
1	Voi-Shan Aerospace, Inc. (former)	875 feet, north	Construction may disturb groundwater between Marine Avenue and Manhattan Beach Boulevard. A limited Phase II site investigation is recommended to evaluate groundwater for TPH, VOC, SVOC and metals in this area.
4	Merrell Paint Co., Inc.	150 feet, north	Groundwater extracted during construction adjoining the subject site may have minor concentrations of residual contamination. A limited Phase II site investigation is recommended to evaluate groundwater for TPH and VOC between Inglewood Avenue and Manhattan Beach Boulevard.
5	Westwood Building Materials	Directly adjacent, south	Groundwater extracted during construction adjoining the subject site may have minor concentrations of residual contamination. A limited Phase II site investigation is recommended to evaluate groundwater for TPH and VOC between Inglewood Avenue and Manhattan Beach Boulevard.
6	Tosco-76 Station #4817	350 feet, south	Residual contamination is considered a low threat to groundwater, but a portion of the subject site would be acquired for the Proposed Project. Therefore, a limited Phase II site investigation is recommended to evaluate for TPH to determine the status of residual contamination on site.
7	City of Lawndale Garage	205 feet, west	Contamination levels in the soils on site are low, but a portion of the subject site would be disturbed during construction for the Proposed Project. Therefore, a limited Phase II site investigation is recommended test for TPH to determine the status of residual contamination on site.
12	Union Carbide Corporation (UCC)	Adjacent, south	Given the site's proximity to the construction area, a Phase II site investigation is recommended to evaluate soils and groundwater for TPH, VOC, SVOC, dripolene, and metals in the area adjacent to the subject property.

Map ID[1]	Site Name	Distance from Project (In Feet)	Discussion
13	North Posse Site	Adjacent, west	A portion of the site would be acquired. A Phase II site investigation is recommended to evaluate soils and groundwater for TPH, VOC, SVOC, ACM, and metals along the alignment between Prairie Avenue and Del Amo Boulevard.
14	Former Amp-Matrix Facility	600 feet south	Construction may disturb groundwater near the site. A Phase II site investigation is recommended to evaluate groundwater for TPH and VOC along the alignment.
15	Torrance/Dowell Schlumberger, Inc.	Adjacent, north	The site would not be disturbed, but due to the lack of records indicating assessment and corrective actions, and the proximity to the Proposed Project, a Phase II site investigation is recommended to evaluate soils and groundwater for TPH, VOC, SVOC, and metals along the northern portion of the Torrance TC.
16	DOW Chemical Company	Northeast	The site would not be disturbed, but due to its proximity to the project, a Phase II site investigation is recommended to evaluate soils and groundwater for TPH, VOC, SVOC, and metals along the northern portion of the Torrance TC.
17	PPG Industries, Inc.	Directly adjacent, north	The subject site is not a REC; however, construction involving subsurface disturbance would follow the soil management plan per PF-HHM-4.
18	Vought Aircraft Industries, Inc.	Directly adjacent, south	Construction activities would disturb soil along the subject site. A Phase II site investigation is recommended to evaluate soils, up to depth of 15 feet bgs or to proposed disturbance depth, whichever is lower, for TPH and VOC along the alignment adjacent to the Torrance TC.
19	Exxon Mobil Oil Torrance Refinery	Directly adjacent, east	Construction activities may disturb groundwater between Prairie Avenue and Del Amo Boulevard. A Phase II site investigation is recommended to evaluate soils and groundwater between Prairie Avenue and Del Amo Boulevard.

Note: South of 190th Street, there is one alignment for the Proposed Project, and no options.
[1]Map ID numbers correspond to site numbers shown on Figure 3.9-3 and Figure 3.9-6
TPH=total petroleum hydrocarbons; SVOC= semi-volatile organic compound; VOC= Volatile Organic Compound; REC= Recognized Environmental Conditions; TC= Transit Center; ACM= Asbestos Containing Materials

Construction activities such as grading, or any other ground-disturbing activities could encounter contaminants or interfere with ongoing remediation efforts. Unless construction activities are coordinated with site-remediation activities, there could be a temporary increased risk of damage to or interference with groundwater remediation facilities (e.g., extraction and monitoring wells, pumps, and pipelines). Construction at sites with existing contamination could also result in the generation of additional waste materials and could expose workers to hazardous materials.

Project-related effects of hazardous waste containing chemical compounds would generally be limited to areas where the RECs have been identified or unanticipated contamination at unknown releases. The size of these impacted areas would depend upon the volume and nature of the release materials and the general condition of the release site (e.g., paved, unpaved, sloped, flat, bermed). The individuals most at-risk would be construction workers, or others in the immediate vicinity during excavation, transportation, or storage of the hazardous wastes, or during demolition and construction. The

exposure pathways through which these individuals could be exposed include inhalation, ingestion, or dermal contact.

The contractor would be required to implement federal and state handling and disposal regulations. As part of the project, PF-HHM-1 and PF-HHM-4 would be implemented, which would reduce the risk of impacts related to hazardous contaminants encountered during construction as well as hazardous materials used during construction. PF-HHM-3 would require Phase II site investigations to be completed prior to construction for the sites identified in Table 3.9-2. The Phase II site investigation results will be used in preparation of construction management plans to handle construction spoils in areas that are identified as contaminated. Additionally, PF-HHM-5 would ensure that contaminated groundwater would be managed appropriately according to federal and state regulations. Therefore, the Proposed Project would have a **less than a significant impact** related to hazardous material sites during construction.

TRENCH OPTION

Less than Significant Impact. The Trench Option would be located in the same corridor as the Proposed Project and has the potential to encounter the same five RECs between the Redondo Beach (Marine) Station and 190th Street (south of 190th Street, the alignment is the same as the Proposed Project). These include sites 1, 4, 5, 6, and 7, which are listed in Table 3.9-2.

Construction of Trench Option would result in greater ground disturbance when compared to the Proposed Project. As a result of disturbing more ground, there is an increase in opportunities to encounter hazardous materials under the Trench Option in comparison to the Proposed Project. In addition to the REC sites that are to be evaluated, then Trench Option would require handling potentially contaminated groundwater that would be extracted during construction.

While there would be more handling of potentially contaminated materials under the Trench Option, as with the Proposed Project, the contractor would be required to implement federal and state handling and disposal regulations. As part of the project, PF-HHM-1 and PF-HHM-4 would be implemented, which would reduce the risk of impacts related to hazardous contaminants encountered during construction as well as hazardous materials used during construction. PF-HHM-3 would require Phase II site investigations to be completed prior to construction for the sites identified in Table 3.9-2. The Phase II site investigation results will be used in preparation of construction management plans to handle construction spoils in areas that are identified as contaminated. Additionally, PF-HHM-5 would ensure that contaminated groundwater would be managed appropriately according to federal and state regulations. Therefore, the Trench Option would have a **less than significant impact** related to hazardous material sites during construction.

HAWTHORNE OPTION

Less than Significant Impact. Construction of the Hawthorne Option may occur at or near REC sites (some of which may have ongoing remediation activities). Between the Redondo Beach (Marine) Station and 190th Street, sites 1 and 4 as described in Table 3.9-2 would also apply to the Hawthorne Option (south of 190th Street, the alignment is the same as the Proposed Project). Table 3.9-3 lists the six REC sites unique to the Hawthorne Option, which are mapped in Figure 3.9-3 and Figure 3.9-4. Similar to the Proposed Project, the contractor would be required to implement federal and state handling and disposal regulations. As part of the project, PF-HHM-1 and PF-HHM-4 would be implemented, which would reduce the risk of impacts related to hazardous contaminants encountered during construction as well as hazardous materials used during construction. PF-HHM-3 would require Phase II site

investigations to be completed prior to construction for the sites listed in Table 3.9-3. The Phase II site investigation results will be used in preparation of construction management plans to handle construction spoils in areas that are identified as contaminated. Additionally, PF-HHM-5 would ensure that contaminated groundwater would be managed appropriately according to federal and state regulations. Therefore, the Hawthorne Option would have a **less than significant impact** related to hazardous material sites during construction.

Table 3.9-3. Potential REC Sites for the Hawthorne Option

Map ID[1]	Site Name	Distance from Project (Feet)	Discussion
2	Mobil Oil Corp (former)	Directly under alignment	The site would be acquired. Further assessment is recommended to determine the status of the past release at the site.
3	Electra Media Inc.,	Directly adjacent, south	A portion of the site would be acquired. Further assessment is recommended to determine the status of the past release at the site.
8	Thrifty #257	Directly adjacent, west	The site would not be disturbed, but based on the site proximity and ongoing remediation, a Phase II site investigation is recommended to evaluate soil and groundwater for TPH, VOC, and SVOC along the alignment between 165th and 166th Street.
7	Arco #5107	Directly adjacent, east	The site would not be disturbed, but based on the site proximity and ongoing remediation, a limited Phase II site investigation is recommended to evaluate soil and groundwater for TPH, VOC, and SVOC along the alignment between 165th and 166th Street.
10	United Oil Co.,	Directly adjacent, east	The site would not be disturbed, but based on the site proximity, a limited Phase II site investigation is recommended to evaluate soil and groundwater for TPH and VOC along the alignment adjacent to the subject property.
11	Chevron Company Pipeline Right-of-Way (former)	Directly under alignment	The site would be acquired. Further assessment is recommended to determine the status of the past release at the site.

Note: South of 190th Street, there is one alignment for the Proposed Project, and no options.
[1]Map ID numbers correspond to site numbers shown on Figure 3.9-3 and Figure 3.9-6
TPH=total petroleum hydrocarbons; SVOC= semi-volatile organic compound; VOC= Volatile Organic Compound

3.9-4.4.2 Operational Impacts

No Impact. The exposure to any potential hazardous materials from off-site sources would cease after construction activity because there will not be any subsurface disturbance. Therefore, the Proposed Project would result in **no impact** related to operations associated with Government Code Section 65962.5.

TRENCH OPTION

No Impact. The exposure to any potential hazardous materials from off-site sources would cease after construction activity because there will not be any subsurface disturbance. Therefore, the Trench Option would result in **no impact** related to operations associated with Government Code Section 65962.5.

HAWTHORNE OPTION

No Impact. The exposure to any potential hazardous materials from off-site sources would cease after construction activity because there will not be any subsurface disturbance. Therefore, the Hawthorne

Option would result in **no impact** related to operations associated with Government Code Section 65962.5.

3.9-4.5 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 or excessive noise for people residing or working in the Project Area?

No Impact. The Proposed Project is not within an airport land use plan or within two miles of any airport. Therefore, the Proposed Project would have **no impact** related to safety hazards associated with a public airport or public use airport during construction or operation.

TRENCH OPTION

No Impact. For the same reasons as with the Proposed Project, the Trench Option would have **no impact** related to safety hazards associated with a public airport or public use airport during construction or operation.

HAWTHORNE OPTION

No Impact. For the same reasons as with the Proposed Project, the Hawthorne Option would have **no impact** related to safety hazards associated with a public airport or public use airport during construction or operation.

3.9-4.6 For a project located within the vicinity of a private airstrip, as a result, create a safety hazard for people residing or working in the project area.

No Impact. The Proposed Project is not within the vicinity of a private airstrip. Therefore, the Proposed Project would have **no impact** related to safety hazards associated with private airstrip during construction or operation.

TRENCH OPTION

No Impact. For the same reasons as with the Proposed Project, the Trench Option would have **no impact** related to safety hazards associated with a private airstrip during construction or operation.

HAWTHORNE OPTION

No Impact. For the same reasons as with the Proposed Project, the Hawthorne Option would **have no impact** related to safety hazards associated with a private airstrip during construction or operation.

3.9-4.7 Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

3.9-4.7.1 Construction Impacts

Less and Significant. As described in Section 3.1, Transportation, PF-T-1 would be implemented, which would require the contractor to prepare a construction traffic management plan (CTMP) that would address emergency access during construction. The CTMP would include street closure information, detour plans, haul routes, and a staging plan based on the nature and timing of specific construction activities at each of the construction sites. The CTMP would ensure there would be no impairment to any adopted emergency response plans or emergency evacuation routes within the RSA. Therefore, the Proposed Project would result in a **less than significant impact** related to impairment of an adopted emergency response plan or emergency evacuation plan.

TRENCH OPTION

Less than Significant Impact. Like the Proposed Project, construction of the Trench Option would require a CTMP per PF-T-1 that would phase any road closures and maintain emergency access. Therefore, the Trench Option would result in a **less than significant impact** related to impairment of an adopted emergency response plan or emergency evacuation plan.

HAWTHORNE OPTION

Less than Significant Impact. Like the Proposed Project, construction of the Hawthorne Option would require a CTMP per PF-T-1 that would phase any road closures and maintain emergency access. Therefore, the Hawthorne Option would result in a **less than significant impact** related to impairment of an adopted emergency response plan or emergency evacuation plan.

3.9-4.7.2 Operational Impacts

Less than Significant Impact. The operation of the Proposed Project would maintain or improve all existing freight crossings, build multiple grade-separated crossings that would not hinder emergency routes or evacuation, and add two light rail tracks and crossing safety improvements to the two existing at-grade freight crossings at 170th Street and 182nd Street. While these crossings would be intermittently blocked by passing trains for 15 to 90 seconds at a time, neither street is on an evacuation route, nor would access from evacuation or disaster routes be cut off while gate arms are down at the crossing. Therefore, operation of the Proposed Project would result in a **less than significant impact** to emergency response and evacuation plans.

TRENCH OPTION

Less than Significant Impact. Like the Proposed Project, the Trench Option would not close any existing roadway segments or crossings. Additionally, there would be no at-grade crossings and therefore no intermittent closures of crossings as the light rail train operates. Therefore, operation of the Trench Option would result in a **less than significant impact** to emergency response and evacuation plans.

HAWTHORNE OPTION

Less than Significant Impact. Like the Proposed Project, the Hawthorne Option would not close any existing roadway segments or crossings. Additionally, there would be no at-grade crossings and therefore no intermittent closures of crossings as the light rail train operates. Therefore, operation of the Hawthorne Option would result in a **less than significant impact** to emergency response and evacuation plans.

3.9-4.8 Would the Project expose people or structures to a significant risk of loss, injury or death involving wildfires, including where wildland fires are adjacent to urbanized areas or where residences are intermixed with wildlands?

No Impact. The Proposed Project is in a highly urbanized area, and no portion of the RSA is within or close to areas prone to wildfires. Therefore, the Proposed Project would have **no impact** related to safety hazards associated with wildfires during construction or operation.

TRENCH OPTION

No Impact. For the same reasons as with the Proposed Project, the Trench Option would have **no impact** related to safety hazards associated with wildfires during construction or operation.

HAWTHORNE OPTION

No Impact. For the same reasons as with the Proposed Project, the Hawthorne Option would have **no impact** related to safety hazards associated with wildfires during construction or operation.

3.9-5 Mitigation Measures

No mitigation measures are required, as there are no significant impacts to hazards and hazardous materials.

3.9-6 Project Impacts Remaining After Mitigation

As described in Section 3.9-5 no mitigation measures are required to reduce construction and operation impacts to a level below significance.

3.9-7 Cumulative Impacts

The methodology for cumulative analysis and a description of relevant projects and projections are included in Section 3.0, Introduction. The geographic scope for the hazardous materials cumulative impact analysis is the RSA defined in Section 3.9-2.1 as , as that is considered the area necessary to construct, maintain, and operate the Proposed Project and Options. The following projects are included within the RSA:

> Torrance Industrial Exchange

3.9-7.1 Proposed Project

The Proposed Project would not result in significant impacts related to hazards and hazardous materials during construction or operations. The Proposed Project would be required to comply with all prescribed standards, requirements, and guidance related to hazards and hazardous waste. The Torrance Industrial Exchange is located within the cumulative RSA and is immediately adjacent to the Metro ROW; it could be constructed concurrently with the Proposed Project, but in general, impacts associated with hazards and hazardous materials are site-specific and largely localized. This project and other future projects would also comply with all the same requirements and apply mitigation measures as necessary to minimize impacts. Therefore, the Proposed Project in combination with related past, present, and probable future projects would not result in significant cumulative hazards and hazardous impacts during construction or operations.

3.9-7.2 Trench Option

Although the Trench Option may result in incrementally different impacts related to hazards and hazardous wastes than those analyzed under the Proposed Project, the Trench Option would result in a similar potential for cumulative impacts. The Trench Option and future projects would be required to comply with all prescribed standards, requirements, and guidance related to hazards and hazardous waste. Therefore, the Trench Option in combination with related past, present, and probable future projects would not result in significant cumulative hazards and hazardous impacts during construction or operations.

3.9-7.3 Hawthorne Option

Although the Hawthorne Option may result in incrementally different impacts related to hazards and hazardous wastes than those analyzed under the Proposed Project, the Hawthorne Option would result in a similar potential for cumulative impacts. The Hawthorne Option and future projects would be required to comply with all prescribed standards, requirements, and guidance related to hazards and

hazardous waste. Therefore, the Hawthorne Option in combination with related past, present, and probable future projects would not result in significant cumulative hazards and hazardous impacts during construction or operations.

3.10 HYDROLOGY AND WATER QUALITY

This section of the Draft EIR provides an analysis of the potential impacts on hydrology and water quality.

3.10-1 Regulatory Framework

Federal, state, regional, and local regulations concerning hydrology and water quality are described in the following section.

3.10-1.1 Federal Regulations

Clean Water Act

The Clean Water Act (CWA) (Title 33 of the United States Code [USC], 1972) is the nation's primary mechanism for protecting and improving water quality. The goal of the CWA is to eliminate the discharge of pollutants into the nation's waters, and to restore and maintain their chemical, physical and biological integrity. The CWA makes the states and the United States Environmental Protection Agency (USEPA) jointly responsible for identifying and regulating both point (localized) and nonpoint (diffuse) sources of pollution. A 1987 amendment to the CWA added Section 402(p), which requires the USEPA to develop regulations for the control of nonpoint source discharges, which generally result from surface runoff, precipitation, drainage, seepage, or hydrologic stormwater modification.

Section 401(a)(1) of the CWA specifies that any applicant for a federal license or permit to conduct any activity, including, but not limited to, the construction or operation of facilities that may result in any discharge into navigable waters, shall provide the federal licensing or permitting agency a certification from the state in which the discharge originates or will originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the navigable water at the point where the discharge originates or will originate. Section 401(a)(1) also specifies that any such discharge will comply with the applicable provisions of Sections 301, 302, 303, 306 and 307 of the CWA. Succinctly, this means that in California, the Regional Water Quality Control Board (RWQCB) must certify that a project will comply with water quality standards. The Section 401 Program was recently updated with new procedural requirements established by the Environmental Protection Agency's newly promulgated "Clean Water Act Section 401 Certification Rule" (85 Fed. Reg. 42,210 [July 13, 2020]) (EPA, 2020). These requirements relate more to between-agency coordination timelines and procedures. In addition, the State Water Resources Control Board (SWRCB) updated their Section 401 procedures with a new application process and state wetland definition (SWRCB, 2019a; SWRCB, 2019b). These new procedures became effective May 2020.

Section 402 of the CWA also established the National Pollutant Discharge Elimination System (NPDES). NPDES permits are required for the discharge of pollutants from point sources into navigable waters. In California, the SWRCB and the nine RWQCBs are responsible for administering the NPDES stormwater program.

Section 404 of the CWA and Executive Order 11990 authorize the Secretary of the Army, acting through the United States Army Corps of Engineers (USACE), to issue permits when a federally-funded project impacts "Waters of the U.S." Section 404 of the CWA establishes a permit program for the discharge of dredged or fill material into Waters of the U.S. Waters of the U.S. are those waters used in interstate or foreign commerce, subject to ebb and flow of tide, and all interstate waters, including interstate wetlands. Waters of the U.S. are further defined as all other waters such as navigable waterways, intrastate lakes, rivers, streams, intermittent streams, mudflats, sandflats, wetlands, sloughs, prairie

potholes, wet meadows, playa lakes, natural ponds or impoundments of water, tributaries of waters and territorial seas. This permit is not required as part of the Project unless USACE jurisdictional waters are impacted, which is not anticipated.

Section 303(d) of the CWA requires that states maintain a list of impaired waterbodies. Impaired waterbodies do not meet water quality standards, even after generators of point sources of pollution have implemented the minimum required levels of pollution control technology. Furthermore, Section 303(d) requires that priority rankings and action plans are established for waterbodies on the impaired waterbodies list, and that Total Maximum Daily Loads (TMDL) be developed to provide water quality goals. TMDLs are discussed in more detail in Section 3.10-1.3. Listed water bodies, their associated impairments, and related TMDLs are described in Section 3.10-3.2 for water bodies located within or downstream of the resource study areas (RSA) for the Proposed Project and Options.

Federal Emergency Management Agency Executive Order 11988 and National Flood Insurance Program

Executive Order 11988 (Floodplain Management, 1977) directs all federal agencies to avoid to the extent possible long- and short-term adverse impacts associated with the modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. The Federal Emergency Management Agency (FEMA) provides floodplain information and regulates development in and around FEMA established floodplains for many areas of the country through Flood Insurance Studies and their associated Flood Insurance Rate Maps (FIRM). FEMA manages the National Flood Insurance Program (NFIP) that provides flood insurance to property owners renters and businesses (FEMA, 2022).

United States Fish and Wildlife Coordination Act

The United States Fish and Wildlife Service (USFWS) Coordination Act (16 USC 661-666) requires consultation with the USFWS and the state agency responsible for wildlife resources whenever a stream or other body of water is proposed to be modified for any purpose whatsoever. The Proposed Project is not anticipated to require USFWS coordination related to impacts on rivers, streams, or lakes.

3.10-1.2 State and Regional Regulations

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (1969), codified as Division 7 (Water Quality) of the State Water Code, established the responsibilities and authorities of the SWRCB and the nine RWQCBs. According to Section 13001 of the Porter-Cologne Water Quality Control Act, these RWQCBs are to be "... the principal state agencies with primary responsibility for the coordination and control of water quality." The RWQCBs issue NPDES permits for discharges into surface waters. Section 13050 directs each RWQCB to "...formulate and adopt water quality control plans (Basin Plans) for all areas within the region " (SWRCB, 2020).

The RWQCBs implement the Basin Plans by issuing and enforcing waste discharge requirements (WDR) to individuals, communities, or businesses whose discharges can affect water quality. These regulations can be either WDRs for discharges onto land, or NPDES permits for discharges into surface water. For surface waters that are not within federal jurisdiction (i.e., not considered waters of the U.S.), the same new procedures as mentioned in Section 3.10-1.1 above apply here as well (California Water Boards, 2022). The Basin Plan implemented by the RWQCB is described in more detail in Section 3.10-1.3.

California Fish and Game Code (Section 1602)

Section 1602 of the California Fish and Game Code requires agencies to notify the California Department of Fish and Wildlife (CDFW) of any project that will divert, obstruct, or change the natural flow or bed, channel, or bank of any river, stream, or lake. If CDFW jurisdictional areas are impacted by a project, a Section 1602 Streambed Alteration Agreement would be required. The Proposed Project is not anticipated to impact CDFW jurisdictional areas related to rivers, streams, or lakes.

Construction General Permit

Projects within the state that would disturb greater than one acre of ground surface during construction are required to obtain coverage under the SWRCB Construction General Permit (Order 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ). The existing Construction General Permit expired September 2, 2014 but was administratively extended until the SWRCB adopted a permit reissuance An updated version of the Construction General Permit (Order No. 2022-0057-DWQ) was approved on September 8, 2022 and will go into effect on September 1, 2023; the permit is valid for five years (SWRCB, 2022a).

Construction activities that are typically subject to this permit include clearing, grading and disturbances to the ground such as stockpiling, or excavation. The RWQCB is responsible for administering the Construction General Permit within its jurisdiction. The Construction General Permit requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) developed by a certified Qualified SWPPP Developer. SWPPPs are required to include best management practices (BMP) designed to protect water quality (SWRCB, 2013). Example BMPs include but are not limited to soil stabilization (i.e., erosion control), sediment control, and waste management. The Los Angeles RWQCB Construction Site Best Management Practices Manual lists minimum required BMPs that must be implemented during various construction activities (LARWCB, 2010).

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA), passed by the State in 2014, was designed to help protect groundwater quality and supply over the long-term. The SGMA ranked groundwater basins throughout the state as high, medium, low, or very low priority with regard to protecting their groundwater. Local agencies that manage high and medium priority basins are required to form groundwater sustainability agencies that develop and implement groundwater sustainability plans to avoid undesirable results and mitigate overdraft within 20 years. The Coastal Plan of Los Angeles is currently ranked as “very low” priority (California Department of Water Resources, 2022). Therefore, a groundwater sustainability plan has not been developed by the RWQCB for the West Coast Subbasin of the Coastal Plain of the Los Angeles Groundwater Basin.

Los Angeles Regional Water Quality Control Board

Surface water discharge resulting from construction dewatering activities is regulated under Los Angeles RWQCB Order No. R4-2003-0108 NPDES No. CAG994004 (LRWQCB, 2003). Effluent limits are also established by this permit. The TMDLs are achieved on the local and regional levels through the NPDES construction permitting process and the implementation of regional and local watershed management plans (SWRCB, 2018).

The RWQCB implements the Section 402 program (see Section 3.10-1.1 above) and regulates construction activities and groundwater dewatering. Discharge of dewatered groundwater to surface waters during construction is regulated by the RWQCB Waste Discharge Requirements for Construction Dewatering (Order No. R4-2018-0125).

The RWQCB promulgates policies to protect surface waters (e.g., hydromodification); and protects surface and groundwater through implementation of the Basin Plan. The RWQCB adopted the regional Basin Plan in 1994 in compliance with the State Porter-Cologne Water Quality Control Act. The Basin Plan assigns beneficial uses, water quality objectives, waste discharge requirements, and TMDLs to each 303(d)-listed receiving water body. A TMDL is a calculation of the maximum amount of a pollutant allowed to enter a waterbody so that the waterbody will meet and continue to meet water quality objectives for that particular pollutant. Specific TMDLs and beneficial uses for the watersheds within the RSAs are included in Section 3.10-3.2.

The most recent RWQCB Regional Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) Permit[1] (MS4 Permit) was adopted in 2021 (Order No. 2021-0105). The MS4 Permit regulates stormwater discharges and protects water quality. The MS4 Permit lists minimum BMPs that must be implemented on all construction sites, including erosion control, sediment control, non-stormwater management, and waste management BMPs. The MS4 Permit also lists additional BMPs that must be implemented on all construction sites disturbing one or more acre, along with additional BMPs for enhanced risk construction sites. BMPs for roadway paving and repair are also specified. Non-stormwater discharges to receiving waters are prohibited by the MS4 Permit (with some exceptions) (LARWQCB, 2021).

Low impact development (LID) plans are required by the MS4 Permit for new developments that would add 10,000 square feet of impervious surfaces to an area. The LID Plan must include design details/BMPs to retain stormwater runoff on site for the stormwater quality design volume (SWQDv). The SWQDv is defined as either the eighty-fifth (85th) percentile twenty-four (24) hour runoff event as determined from the Los Angeles County eighty-fifth (85th) percentile precipitation isohyetal map; or the volume of runoff produced from a three-quarters (0.75) inch, twenty-four (24) hour rain event, whichever is greater. Retaining stormwater for the SWQDv can be achieved through infiltration and/or bioretention. If it is not feasible to fully infiltrate or use bioretention to handle the SWQDv, stormwater runoff harvest and use is the next preferred control measure (LADPW, 2014).

Enhanced Watershed Management Programs

Watersheds within California have been grouped into Watershed Management Areas (WMAs), which are generally single large watersheds containing smaller watersheds. Two WMAs are located within the RSAs: Santa Monica Bay and Dominguez Channel (SWRCB, 2021; 2022b). Enhanced watershed management programs (EWMP) have been prepared that encompass both WMAs: the Beach Cities EWMP and the Dominguez Channel EWMP. EWMPs are comprehensive watershed plans intended to facilitate effective, watershed-specific implementation strategies in accordance with the MS4 Permit and summarize specific water quality priorities (LARWQCB, 2015;LARWQCB, 2018).

The Beach Cities EWMP was last updated in 2016 by the Cities of Hermosa Beach, Manhattan Beach, Redondo Beach and Torrance, together with the Los Angeles County Flood Control District (LACFCD) for the Santa Monica Bay and Dominguez Channel watersheds within their jurisdictions. This area is collectively referred to herein as the Beach Cities EWMP Area. Approximately 7,840 acres of the Beach

[1] Order No. R4-2012-0175 NPDES Permit No. CAS004001 Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, except those Discharges Originating from the City of Long Beach MS4.

Cities EWMP Area drains to Santa Monica Bay; approximately 7,380 acres is tributary to the Dominguez Channel (including the Torrance Carson Channel [Torrance Lateral]) (Beach Cities EWMP Group, 2016). More information on the Santa Monica Bay and Dominguez Channel watersheds is provided in Section 3.10-3.2.

The Dominguez Channel EWMP was last updated in 2016 by the cities of Carson, El Segundo, Hawthorne, Inglewood, Lawndale, Lomita, and Los Angeles; the unincorporated areas of the County of Los Angeles; and the LACFCD for the watersheds within their jurisdictions. This area is collectively referred to as the Dominguez Channel WMA. The Dominguez Channel WMA encompasses approximately 133 square miles of land and water, including the Dominguez Channel Watershed, the Machado Lake Watershed, and the Los Angeles/Long Beach Harbors Watershed (Dominguez Channel Watershed Management Group, 2015). More information on the Dominguez Channel Watershed is provided in Section 3.10-3.2. The Machado Lake and Los Angeles/Long Beach Harbors watersheds are not located within the vicinity of the RSAs and are thus not discussed further.

Metro's Water Use and Conservation Policy

Metro adopted a Water Use and Conservation Policy statement in July 2009 to conserve the use of potable water resources at its facilities in the most cost-effective and efficient manner (Metro, 2010). The goal of Metro's Water Use and Conservation Policy is to conserve the use of potable water resources at its facilities in the most cost-effective and efficient manner. The policy asserts that the use of water for construction, operations and maintenance purposes must be consistent with local, state, or federal water conservation measures and that in instances where it is necessary to protect public safety, human health and the environment, Metro may deviate from water conservation measures. In addition, Metro is committed to use drought-tolerant plants for landscaping to the maximum extent practical.

3.10-1.3 Local Regulations

City of Hawthorne

The City of Hawthorne's City Code contains regulations that focus on water resources and water conservation, described in Table 3.10-1.

Table 3.10-1. City of Hawthorne - Relevant Regulations

Code/Goal/Policy	Description
City of Hawthorne City Code	
Title 8, Chapter 50.070	Projects applying to the City for a grading permit that will disturb five or more acres must submit satisfactory proof to city that: (1) a notice of intent (NOI) to comply with a state Construction General Permit has been filed; and (2) a SWPPP has been prepared before the City shall issue any grading or building permit on the construction project.
Title 8, Chapter 50.060	Best management practices must be implemented during project operation, including the removal and lawful disposal of any solid waste or any other substance which, if it were to be discharged to the MS4, would be a pollutant, including fuels, waste fuels, chemicals, chemical wastes and animal wastes, from any part of the premises exposed to stormwater.
Title 8, Chapter 60.040	The use of recycled or non-potable water for construction purposes is required, when available. The washing down of paved surfaces, including, but not limited to, sidewalks, driveways, parking lots, tennis courts, or patios, is prohibited, except when it is necessary to alleviate safety or sanitation hazards. The washing of vehicles requires the use of a bucket and a hand-held hose with positive shut-off nozzle, mobile high pressure/low volume wash system, or at a commercial site that re-circulates (reclaims) water on-site. Washing during hot conditions is prohibited when additional water is required due to evaporation.

Source: City of Hawthorne, 2022

City of Lawndale

The City of Lawndale's City Code and General Plan contains BMPs and objectives and policies that focus on water resources and water conservation, described in Table 3.10-2.

Table 3.10-2. City of Lawndale - Relevant Regulations

Code/Goal/Policy	Description
City of Lawndale City Code	
Title 13, Chapter 13.16	The Standard Urban Stormwater Mitigation Plan and Low Impact Development Implementation chapter requires compliance with the regional MS4 Permit, including retaining stormwater runoff for the SWQDv. The Chapter also includes BMPs for erosion control on slopes and channels, signage at storm drains, outdoor storage of materials, and outdoor trash storage areas.
City of Lawndale General Plan Land Use Element	
Goal 1	Conserve water resources in the city through retention of the existing drainage system, the protection of limited groundwater resources, and domestic water conservation measures.
Policy 1a	New construction and development shall conserve water through conservation techniques relating to water usage and waste (Policies 1b – 1g are similar).
Policy 1h	Provide additional storm drainage facilities, and improve existing deficient facilities, where necessary as determined by the LAC Dept. of Wastewater Management and/or the City of Lawndale.
City of Lawndale General Plan Conservation Element	
Implementation Program 1	> Water Conservation Ordinance about water conservation measures for new construction, development, landscaping, and general water usage and waste. > Utilization of runoff. Research and develop a system to utilize storm drainage runoff for public landscaping needs. > Surface Drainage Improvements. The City shall identify the locations in need of surface drainage facilities or improvements and coordinate with the LAC Dept. of Wastewater Management to carry out the improvement projects. > Zoning Ordinance Revisions. For replenishment of groundwater supply, the City shall revise the City's zoning Ordinance to promote the use of permeable materials in order to encourage water percolation into the soil.

Source: City of Lawndale, 1992c; 1992f; 2022

City of Redondo Beach

The City of Redondo Beach's City Code and General Plan contains BMPs and objectives and policies that focus on water resources, described in Table 3.10-3.

Table 3.10-3. City of Redondo Beach - Relevant Regulations

Code/Goal/Policy	Description
City of Redondo Beach City Code	
Title 5, Chapter 7	The Stormwater Management and Discharge Control chapter includes hydrology and water quality-related regulations. The requirements of various sections of this chapter are detailed below. Section 109 lists prohibited discharges, including disposal of landscape debris (leaves, dirt, or other landscape debris) and discharges from the washing out of concrete trucks. > Section 111 details general good housekeeping practices, including: • Runoff of water used for irrigation purposes shall be minimized to the maximum extent practicable. Runoff of water from the permitted washing down of paved areas shall be minimized to the maximum extent practicable. • Machinery or equipment that is to be repaired or maintained in areas susceptible to or exposed to stormwater, shall be placed in a manner so that leaks, spills, and other maintenance-related pollutants are not discharged to the storm sewer system. • Best management practices shall be used in areas exposed to stormwater for the removal and lawful disposal of all fuels, chemicals, fuel and chemical wastes, animal wastes, garbage, batteries, or other materials which have potential adverse impacts on water quality. > Section 113 states that construction activities and operations to comply with the current Municipal NPDES Permit by using smart growth practices and integrate LID practices and standards for stormwater pollution mitigation through means of infiltration, evapotranspiration, biofiltration, and rainfall harvest and use details prohibited discharges into the storm system.
City of Redondo Beach General Plan Infrastructure Systems and Community Services Element	
Policy 6.2.1	Ensure the provision and operation of adequate storm drainage facilities, where necessary, throughout the city.
Policy 6.2.3	Require that the approval of new development in the city be contingent upon the ability of the project to be served with adequate storm drainage infrastructure and service.
Policy 6.2.7	Require that improvements to or expansion of existing storm drainage facilities necessitated by specific new development projects be borne by the project proponent, either through the payment of impact fees or the actual construction of such improvements

Source: City of Redondo Beach, 1993d; 2022

City of Torrance

The City of Torrance's City Code and General Plan contains BMPs and objectives and policies that focus on water resources, described in Table 3.10-4.

Table 3.10-4. City of Torrance – Relevant Regulations

Code/Goal/Policy	Description
City of Torrance City Code	
Division 4, Chapter 10	The Stormwater and Urban Runoff Pollution Control chapter includes BMPs that must be implement on construction sites that require a building or grading permit. These BMPs include: > Retain on site the sediments generated on or brought to the project site, using treatment control or structural BMPs. > Retain construction-related materials and wastes, spills and residues at the project site and prevent discharges to streets, drainage facilities, the MS4, receiving waters or adjacent properties. > Contain non-stormwater runoff from equipment and vehicle washing at the project site. > Control erosion from slopes and channels through use of effective BMPs, such as limitation of grading during the wet season, inspection of graded areas during rain events, planting and maintenance of vegetation on slopes, if any, and covering any slopes susceptible to erosion. > Prepare and implement an erosion and sediment control plan > No person shall wash any concrete truck or any part of any concrete truck, in any place in the City except an area designated for that purpose by the City, if the City has designated such a place. No person shall permit or suffer any concrete rinseate or wash water from any truck, pump, tool, or equipment to enter any drain, open ditch, street or road or any catch basin or any other part of the MS4.
Division 4, Chapter 11	The Low Impact Development Strategies for Development and Redevelopment chapter includes contains requirements for stormwater pollution control measures in development and redevelopment projects, including implementation of LID strategies. This includes retaining stormwater runoff for the SWQDv per MS4 Permit requirements.
Division 7, Chapter 9	The Flood Hazard Insurance chapter identifies the requirements and provisions that apply to all areas of special flood hazards within the City. This section establishes a development permit process for flood hazard areas, designates a floodplain administrator for the City, and establishes standards for construction within flood hazard areas. These requirements are part of the City of Torrance's participation in NFIP.
City of Torrance General Plan Community Resources Element	
Policy CR.15.1	Continue to cooperate with and support regional programs that protect water resources in Torrance.
Policy CR.15.5	Enforce regulations aimed at reducing groundwater and urban runoff pollution, including the National Pollutant Discharge Elimination System (NPDES) requirements of the Regional Water Quality Control Board.
Policy CR.15.10	Promote implementation of effective water conservation and water demand management measures including Best Management Practices.
Policy CR.16.1	Maintain the Madrona Marsh Nature Preserve for the enjoyment and education of present and future generations.
Policy CR.16.2	Support the dual use of drainage detention and retention basins for open space, recreation, and/or wildlife habitat opportunities, and increased groundwater recharge as long as the secondary use does not conflict or interfere with the operation and maintenance of the primary function of flood control and drainage.

Source: City of Torrance, 2010c; 2022a

It should be noted that according to the Torrance General Plan, the Madrona Marsh is a permanent ecological preserve owned and maintained by the City of Torrance. The County of Los Angeles has also designated the Madrona Marsh and adjacent sandy upland as a Significant Ecological Area (SEA). SEAs are officially designated areas within the County with irreplaceable biological resources. A SEA within unincorporated areas of the County is maintained and regulated by the County's SEA Program, whereas a SEA within an incorporated city, such as the Madrona Marsh, is maintained and regulated by the incorporated city.

3.10-2 Methodology

Information in this section is focused on the following topics:

Hydrology

- Identify and describe construction and operation activities that could affect surface runoff and drainage;
- Identify and describe impacts related to surface runoff impervious surfaces (e.g., guideway viaduct, trench structure, and surface parking lots);
- Identify and describe permits required; and
- Ensure that project stormwater drainage regulatory requirements are met during construction and operation.

Water Quality

- Identify issues that may prevent or slow the implementation of a water quality control plan (i.e., basin plan);
- Identify and describe beneficial uses and potential effects;
- Identify and describe impaired waters, and potential for increasing such impairments; and
- Describe if there may be any violation of water quality standards, waste discharge requirements, or degradation of surface or groundwater quality.

Visual surveys of the RSAs were conducted in November of 2020. Site-based surveys consisted of visual observation and selected photographic documentation of all surface water features within the RSAs, but especially parks and open space areas. Thus, based on the urban nature of any new areas, along with the general stasis of the baseline conditions, it was determined to be acceptable to conduct web-based aerial reconnaissance. A visual review was conducted in May 2020 using web-based aerial photographs of the RSAs. This work also included using Google Earth (2020) to evaluate both past (starting in 1994) and current conditions.

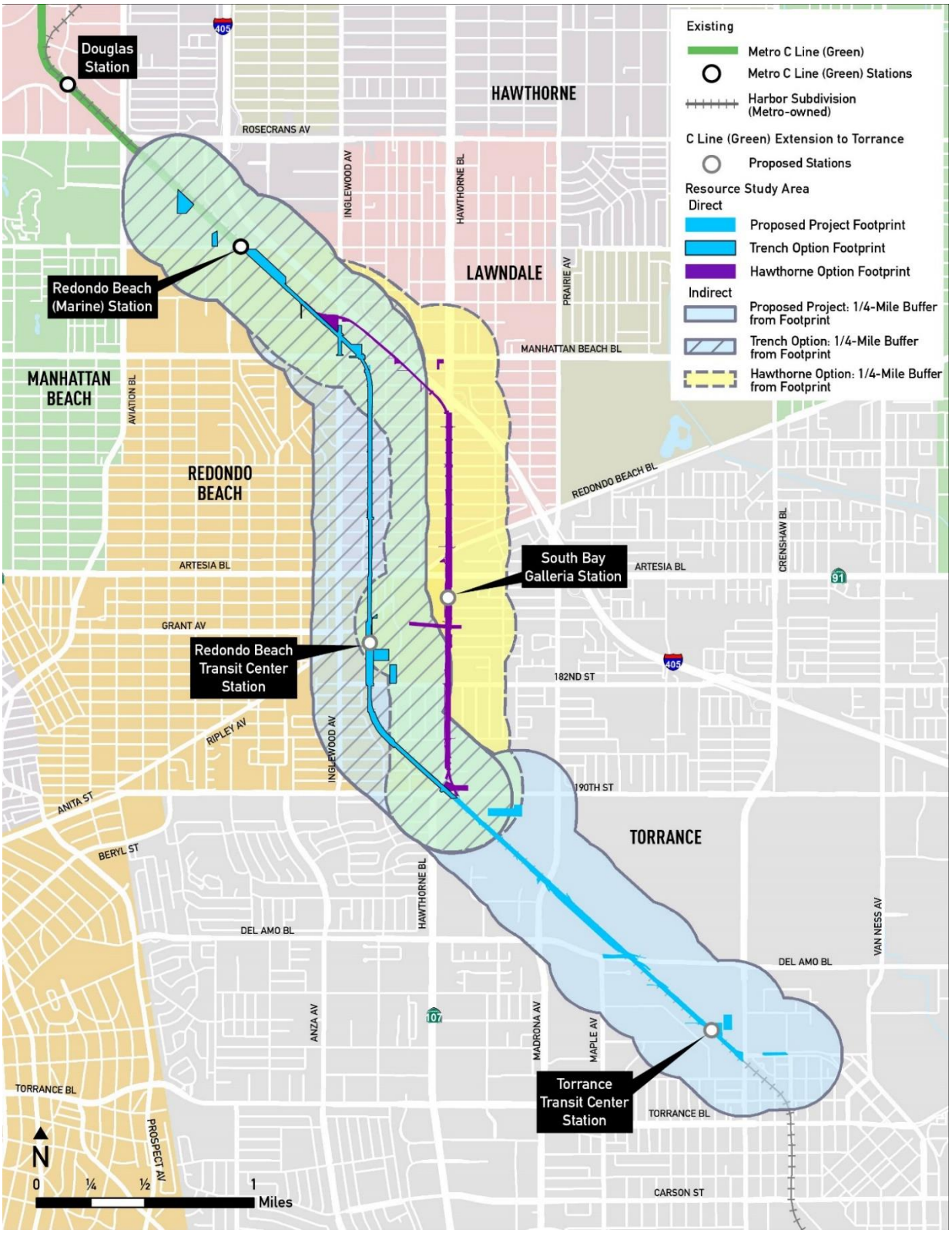
The amount of impervious surfaces was calculated using proportion assumptions from the Los Angeles County Hydrology Manual, Appendix D (Los Angeles County, 2006). Although the Trench and Hawthorne Options are defined as the segment from the Redondo Beach (Marine) Station to 190th Street (see Chapter 2, Project Description), the impervious surface area calculations for the options were conducted "end-to-end" (from the Redondo Beach [Marine] Station to Torrance Transit Center [TC]) to allow for better comparison with the Proposed Project.

3.10-2.1 Resource Study Area

To analyze direct impacts to hydrology and water quality, the direct RSA was established as the project footprint. The project footprint includes the area necessary to construct, operate, and maintain the Proposed Project, Trench Option, or Hawthorne Option. The permanent footprint area includes the light rail guideway, as well as other permanent features such as the surface parking lot at the Torrance TC Station, and, for the Proposed Project and Trench Option, areas where the existing freight track would be relocated within the Metro owned railroad right-of-way (Metro ROW). Additionally, to understand hydrology and water quality impacts in a larger context, an indirect RSA was established as a quarter-mile buffer of the Proposed Project, Trench Option, and Hawthorne Option footprints. The direct and indirect RSAs are shown in Figure 3.10-1.

The impacts section addresses the impacts of the Proposed Project, Trench Option, and Hawthorne Option based on an analysis of water resources within the RSAs as described in the existing conditions section. The analysis considers whether the Proposed Project and Options would contribute to a new or existing deficiency in stormwater conveyance capacity downstream of the RSAs. The analysis also evaluates the pollutants expected to be generated by the Project and Options in relation to receiving water impairments and their related TMDLs. Existing setting information and analysis is also included in Appendix 3.10-A, Drainage Study/Hydraulics Report.

Figure 3.10-1. Resource Study Areas



Source: STV, 2022

3.10-2.2 Significance Thresholds

Based upon the thresholds of significance contained in Appendix G of the CEQA Guidelines, implementation of the Proposed Project would result in a significant impact if any of the following occurred:

a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality;

b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin;

c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

   i. result in substantial erosion or siltation on- or offsite;

   ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

   iii. 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; or

   iv. impede or redirect flood flows;

d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation; or

e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

3.10-2.3 Project Features

As described in Chapter 2, Project Description, a number of features have been incorporated into the project to ensure compliance with the laws, guidelines, and best practices of regulatory agencies. The following project features have been developed for hydrological resources and water quality.

PF-HWQ-1. SWPPP Implementation per Construction General Permit and MS4 Permit

Construction of the Proposed Project, Trench Option, and Hawthorne Option would disturb greater than one acre of ground surface and are thus subject to the Construction General Permit SWPPP requirements. The SWPPP would include BMPs designed to prevent impacts to water quality from occurring during construction. BMPs included would be the minimum BMPs required by the MS4 Permit for all construction sites and additional BMPs determined necessary by the SWPPP developer. BMPs designed to prevent introduction of chemicals, trash, and/or hazardous substances into waters may include but are not limited to fueling equipment offsite, secondary containment, drip pans, spill response plans, and designed waste receptacles on site. BMPs designed to prevent erosion, prevent sedimentation, and slow and capture runoff on the construction site may include but are not limited to stabilized construction entrances/exits, fiber rolls, silt fences, sandbags, water application for dust control, check dams, drainage inlet protections, infiltration basins, and hydroseeding. BMPs would be implemented before, during, and/or immediately after construction.

PF-HWQ-2. Groundwater Treatment and Discharge per RWQCB Waste Discharge Requirements for Construction Dewatering

Per the requirements of the RWQCB Waste Discharge Requirements for Construction Dewatering, dewatered groundwater would be treated if necessary and then discharged in a pre-approved location specified by said requirements.

PF-HWQ-3. Trench Construction Groundwater Pressure Control

During Trench Option construction, BMPs would be implemented that include but are not limited to installing wall drains and appropriate drainage at the top of the trench to help relieve groundwater pressure buildup along the trench walls (Metro 2022b). BMPs used for groundwater pressure control would minimize the potential for introduction of pollutants into groundwater and surface flows, as well as the potential for erosion, siltation, and flooding to occur on or offsite.

PF-HWQ-4. Trench Construction Runoff Collection and Treatment

During Trench Option construction, surface runoff flowing within the trench would be collected, pumped out of the trench, treated (if necessary), and discharged a pervious area on site for infiltration into the soil. BMPs used for surface runoff collection, treatment, and discharge would minimize the potential for introduction of pollutants into surface runoff, as well as the potential for erosion, siltation, flooding, and exceedance of existing storm drain system capacities on or offsite. Surface runoff treatment and discharge would comply with RWQCB Basin Plan water quality requirements.

PF-HWQ-5. Temporary Storm Drain Inflow Rerouting

Although no existing storm drain rerouting is proposed under the Trench Option, runoff from the Trench Option footprint may be directed to different discharge points than existing points to avoid adverse hydrology and water quality impacts. Hawthorne Option construction would involve the permanent rerouting of two major storm drains running parallel to the alignment and one minor storm drain crossing the alignment. While these new permanent storm drain routes are constructed, temporary rerouting of inflows would be necessary during Hawthorne Option construction.

For both the Trench and Hawthorne Options, stormwater inflows would be captured, treated (if necessary), rerouted around the construction site, and discharged into the existing storm drain system. Treatment and discharge of storm drain inflows to the existing storm drain system would be conducted per RWQCB Basin Plan water quality requirements.

PF-HWQ-6. LID BMPs per Regional Requirements

The operational design of the Proposed Project, Trench Option, and Hawthorne Option alignments would include LID BMPs designed to retain the SWQDv on site per regional LID requirements. Examples of potential LID BMPs that may be implemented include but are not limited to increasing runoff's flow path length of travel and providing on-site detention basins for retainment and infiltration. Additional runoff (beyond the SWQDv) would continue to be discharged via new or existing tie-ins to the existing stormwater drainage system. In elevated portions of the alignment, runoff would be collected by down drains. Discharge locations of underdrains installed along the Proposed Project alignment would be the same as existing discharge locations. Although no existing storm drain rerouting is proposed under the Trench Option, runoff from the Trench Option footprint may be directed to different existing discharge points. Rerouted storm drains under the Hawthorne Option would be discharged to the same or similar discharge points as existing conditions. Existing catch basins on adjacent storm drains would be retained during operation to prevent debris and trash from entering the stormwater drainage system.

PF-HWQ-7. Trench Operation Runoff Collection and Treatment

During Trench Option operation, runoff that exceeds the SWQDv in the trench would be collected via a sump drainage system (two sumps in the vicinity of Manhattan Beach Boulevard and 182nd Street) at the low point along the trenched alignment. Runoff collected in the sump would be treated as needed, and then would either be pumped or flow via gravity from the sump to the existing storm drain system in compliance with RWQCB Basin Plan water quality requirements.

PF-HWQ-8. City of Torrance Flood Zone Requirements

A small portion of the Proposed Project temporary footprint would be located within the 100-year flood zone, where a temporary construction easement would be needed for removal of an existing spur track. Construction in this area would be required to comply with Division 7, Chapter 9 of the Torrance City Code, titled "Flood Hazard Insurance." This section establishes a development permit process for flood hazard areas, designates a floodplain administrator for the City, and establishes standards for construction within flood hazard areas.

3.10-3 Affected Environment / Existing Conditions

This section describes the affected environment/existing conditions related to water resources within the RSAs. In addition, resources located outside of the RSAs are also discussed if they are regionally significant and/or downstream of the RSAs (thereby potentially affected by Proposed Project activities).

3.10-3.1 Climate

With prevailing winds from the west and northwest, moist air from the Pacific Ocean is carried inland across the County until it is forced upward by the mountains. The resulting storms, common from November through March, are followed by dry periods during summer months. Differences in topography are responsible for large variations in temperature, humidity, precipitation, and cloud cover throughout the County. The coastal portions of the County, with mild rainy winters and warm dry summers, have a subtropical Mediterranean climate. Precipitation in the Region generally occurs as rainfall, although snowfall can occur at high elevations. Most precipitation occurs during limited storm events. The average annual rainfall for Los Angeles County is 15.7 inches. However, large variations exist within the County, ranging from approximately 14 inches for the coastal plain to over 35 inches in the mountains (LARWCQB, 2018; 2021).

3.10-3.2 Watersheds and Surface Water Quality Within the RSA

As discussed above, two WMAs are located within the RSAs: Santa Monica Bay and Dominguez Channel (SWRCB 2021; 2022b). As noted, EWMPs have been prepared for both of these WMAs. Information has been included below on two applicable watersheds located within the Beach Cities and Dominguez Channel EWMP Areas.

Watershed boundaries are also assigned hydrologic units, each of which can be identified by a 12-digit hydrologic unit code (HUC-12). The two hydrologic units located within the RSAs, along with their receiving waterbodies, are listed below.

> **HUC-12 180701060101**

- Dominguez Channel (above 135th Street)
- Dominguez Channel Estuary

> **HUC-12 180701060102**

- Dominguez Channel (Estuary to 135th Street)
- Dominguez Channel Estuary
- Torrance Lateral
- Dominguez Channel Estuary
- Dominguez Channel Estuary
- Los Angeles Harbor

Santa Monica Bay Watershed

The RSAs are partially located within the Santa Monica Bay Watershed, which falls within the Beach Cities EWMP mentioned previously. The predominant land uses within the Santa Monica Bay watershed are residential land uses (Beach Cities EWMP Group, 2016). Table 3.10-5 and Table 3.10-6 list beneficial uses and 303(d) impairments/TMDLs, respectively, for the waterbodies within the Santa Monica Bay Watershed as identified by the Basin Plan.

Table 3.10-5. Santa Monica Bay Watershed Beneficial Uses

Water Body	MUN	IND	NAV	REC 1	REC 2	COMM	MAR	WILD	RARE	MIGR	SPWN	SHELL
Santa Monica Bay Nearshore + Offshore		E	E	E	E	E	E	E	E	E	E	E
Hermosa Beach			E	E	E	E	E	E			E[1]	E
King Harbor		E	E	E	E	E	E	E	E			
Redondo Beach			E	E	E	E	E	E	E	E	E[1]	E
Torrance Beach			E	E	E	E	E	E		E	E[1]	E

Source: Beach Cities EWMP, 2016 (Table B-2).
E = Existing Beneficial Use Beneficial Use Code Descriptions: MUN: municipal; IND: industrial; NAV: navigation; REC-1: water contact recreation; REC-2: non-contact water recreation; COMM: commercial and sport fishing; WARM: warm freshwater habitat; MAR: marine habitat; WILD: wildlife habitat, RARE: rare, threatened, and endangered species; MIGR: migration of aquatic organisms; SPWN: spawning, reproduction, and/or early development; SHELL: shellfish harvesting
[1]Most frequently used grunion spawning beaches. Other beaches may be used as well.

Table 3.10-6. Santa Monica Bay Watershed 303(d) Impairments and TMDLs

Waterbody	303(d)-Listed Pollutants[1]	TMDL?[2]
Santa Monica Bay	PCBs (Polychlorinated biphenyls)	Yes
	Trash	Yes
	DDT (Dichlorodiphenyltrichloroethane)	Yes
	Mercury	No – expected in 2027
	Arsenic	No – expected in 2027

Source: SWRCB, 2022c
TMDL: Total maximum daily load
[1] Water quality impairments according to the most recent 303(d) list approved by the SWRCB in 2022 are listed here. The most up to date 303(d) list should be consulted prior to beginning project work to ensure no changes to TMDLs have occurred.
[2]Not all water quality impairments have been assigned a TMDL. A "yes" indicates a TMDL has been assigned to the waterbody listed for that impairment; a "no" indicates no TMDL has been assigned. If an expected completion date of a future TMDL exists, that year has been included.

Dominguez Channel Watershed

The RSAs are partially located within the Dominguez Channel watershed, which is located in both the Beach Cities EWMP Area and the Dominguez Channel WMA. The predominant land uses of the Dominguez Channel watershed are industrial, residential, and commercial uses. Storm drains from the Cities of Manhattan Beach and Redondo Beach drain through the City of Lawndale before discharging to the freshwater portion of Dominguez Channel. The City of Torrance's MS4 discharges directly to Dominguez Channel (freshwater) and Lateral ((Beach Cities EWMP Group, 2016; Dominguez Channel WMA Group, 2015). Table 3.10-7 and Table 3.10-8 list beneficial uses and TMDLs, respectively, for waterbodies within the Dominguez Channel watershed as identified by the Basin Plan.

Table 3.10-7. Dominguez Channel Watershed Beneficial Uses[1,2]

Water Body	MUN	REC 1	REC 2	COMM	WARM	EST	MAR	WILD	RARE	MIGR	SPWN
Dominguez Channel	P[3]	P	E		P			P	E		
Torrance Lateral[4]	P[3]	P	E		P			P	E		
Dominguez Channel Estuary		E	E	E		E	E	E	E	E	E

Source: LARWQCB 2018; 2021

[1] E = Existing Beneficial Use; P = Potential Beneficial Use

[2] Beneficial Use Code Descriptions: MUN: municipal; REC-1: water contact recreation; REC-2: non-contact water recreation; COMM: commercial and sport fishing; WARM: warm freshwater habitat; EST: estuarine habitat; MAR: marine habitat; WILD: wildlife habitat, RARE: rare, threatened, and endangered species; MIGR: migration of aquatic organisms; SPWN: spawning, reproduction, and/or early development

[3] Designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date.

[4] Listed in Basin Plan Table 1 as a "major surface water," tributary to Dominguez Channel Estuary.

Table 3.10-8. Dominguez Channel Watershed 303(d) Impairments and TMDLs

Waterbody	303(d)-Listed Pollutants[1]	TMDL?[2]
Dominguez Channel Estuary (unlined portion below Vermont Avenue)	PCBs (Polychlorinated biphenyls)	Yes
	Benzo(a)pyrene	Yes
	Pyrene	Yes
	Phenanthrene	Yes
	Chrysene (C1-C4)	Yes
	Benzo(a)anthracene	Yes
	DDT (tissue and sediment)	Yes
	Lead	Yes
	Dieldrin (tissue)	Yes
	Chlordane (tissue)	Yes
	Indicator bacteria	No – expected in 2027
	Benthic Community Effects	Yes
	Toxicity	Yes
	Copper	Yes
	Indicator bacteria	No – expected in 2027

Waterbody	303(d)-Listed Pollutants[1]	TMDL?[2]
Dominguez Channel (lined portion above Vermont Ave)	Zinc	Yes
	Copper	Yes
	Lead	Yes
	Toxicity	Yes
Torrance Carson Channel (Torrance Lateral)	Lead	Yes
	Indicator bacteria	No – expected in 2027
	Copper	Yes
Los Angeles Harbor (Cabrillo Marina, Consolidated Slip, Fish Harbor, Inner Cabrillo Beach Area)	PCBs	Yes
	DDT (general, tissue, and sediment	Yes
	Benzo(a)pyrene	Yes
	Copper (general and sediment)	Yes
	Chromium	Yes
	Toxaphene (tissue)	Yes
	Zinc (general and sediment)	Yes
	Mercury (general and sediment)	Yes
	Dieldrin	Yes
	Cadmium (sediment)	Yes
	Chlordane (tissue and sediment)	Yes
	Phenathrene	Yes
	Pyrene	Yes
	Chrysene (C1-C4)	Yes
	2-methylnaphthalene	Yes
	Benzo(a)anthracene	Yes
	Benthic community effects	Yes
	DDT (tissue and sediment)	Yes
	Lead (general and sediment)	Yes
	Toxicity	Yes
	Dibenz(a,h)anthracene	Yes
	PAHs (polycyclic aromatic hydrocarbons)	Yes
	Indicator bacteria	Yes

Source: SWRCB, 2022b

[1] Water quality impairments according to the most recent 303(d) list approved by the SWRCB in 2016 2022 are listed here. The most up to date 303(d) list should be consulted prior to beginning project work to ensure no changes to TMDLs have occurred.

[2] Not all water quality impairments have been assigned a TMDL. A "yes" indicates a TMDL has been assigned to the waterbody listed for that impairment; a "no" indicates no TMDL has been assigned. If an expected completion date of a future TMDL exists, that year has been included.

3.10-3.3 Surface Water Hydrology and Drainage Facilities

The RSAs are urbanized with few natural areas or natural drainage features. The RSAs consist mostly of impervious surfaces conveying runoff to storm drains. Most of the drainage networks are controlled by structural flood control measures, including storm drains, underground culverts, and open concrete

channels. Local storm drains convey stormwater southeasterly to Dominguez Channel, except for the section between the Redondo Beach TC and Hawthorne Boulevard/190th Street. Stormwater in this area is conveyed by storm drainage west towards South Santa Monica Bay. The drainage from the proposed rail alignments is conveyed by underground storm drain systems. There are several open channels within the RSAs, but no Waters of the U.S. or natural drainage features cross these proposed rail alignments.

Multiple storm drainage features are located within the RSAs. Figure 3.10-2 shows the location of current storm drains. The RSAs drain in a southeasterly direction to Dominguez Channel and west to the South Santa Monica Bay through municipal storm drains. These waters are located approximately four miles east and three miles west of the RSA, respectively. Most of the northern and southern sections of the RSAs drain to Dominguez Channel, which is shown in yellow as the Dominguez Channel and Los Angeles Harbor watershed area in Figure 3.10-2. The area from the proposed Redondo Beach TC to Hawthorne Boulevard/190th Street drains to South Santa Monica Bay, which is shown in orange as the South Santa Monica Bay watershed area in Figure 3.10-2. Although Amie Basin is within the Dominguez Channel Watershed in the figures below, during wet weather, the Amie Basin pumps to the west to the Henrietta Sump, located in the Santa Monica Bay Watershed. The Henrietta Sump is described more detail below under "City of Torrance – Sumps."

City of Torrance - Sumps

The City of Torrance includes a series of sumps in addition to storm drain systems. According to the 2010 Torrance General Plan, "sumps" is a local term for shallow depressions that are used for flood control and retention basins. Torrance has several sumps (i.e., stormwater retention basins) and detention basins that control stormwater runoff and prevent localized ponding and flooding (City of Torrance, 2015b). Sumps hold water after a storm but have no outlet per se, though they do contribute to discharge via pumps. In addition to providing flood control, sumps provide natural treatment of water quality, improve infiltration and groundwater recharge, and provide habitat within an otherwise highly urbanized area (City of Torrance, 2022d). Sumps that are located within or downstream of the RSAs have the potential to be affected by hydrological or water quality-related changes in the RSAs. Sumps within the RSAs include the following:

- Pioneer Avenue Basin (located on the west side of Prairie Avenue and adjacent to the western edge of the Metro ROW). This sump is located within the Dominguez Channel Watershed directly south of and adjacent to the Proposed Project footprint near its intersection with Prairie Avenue.

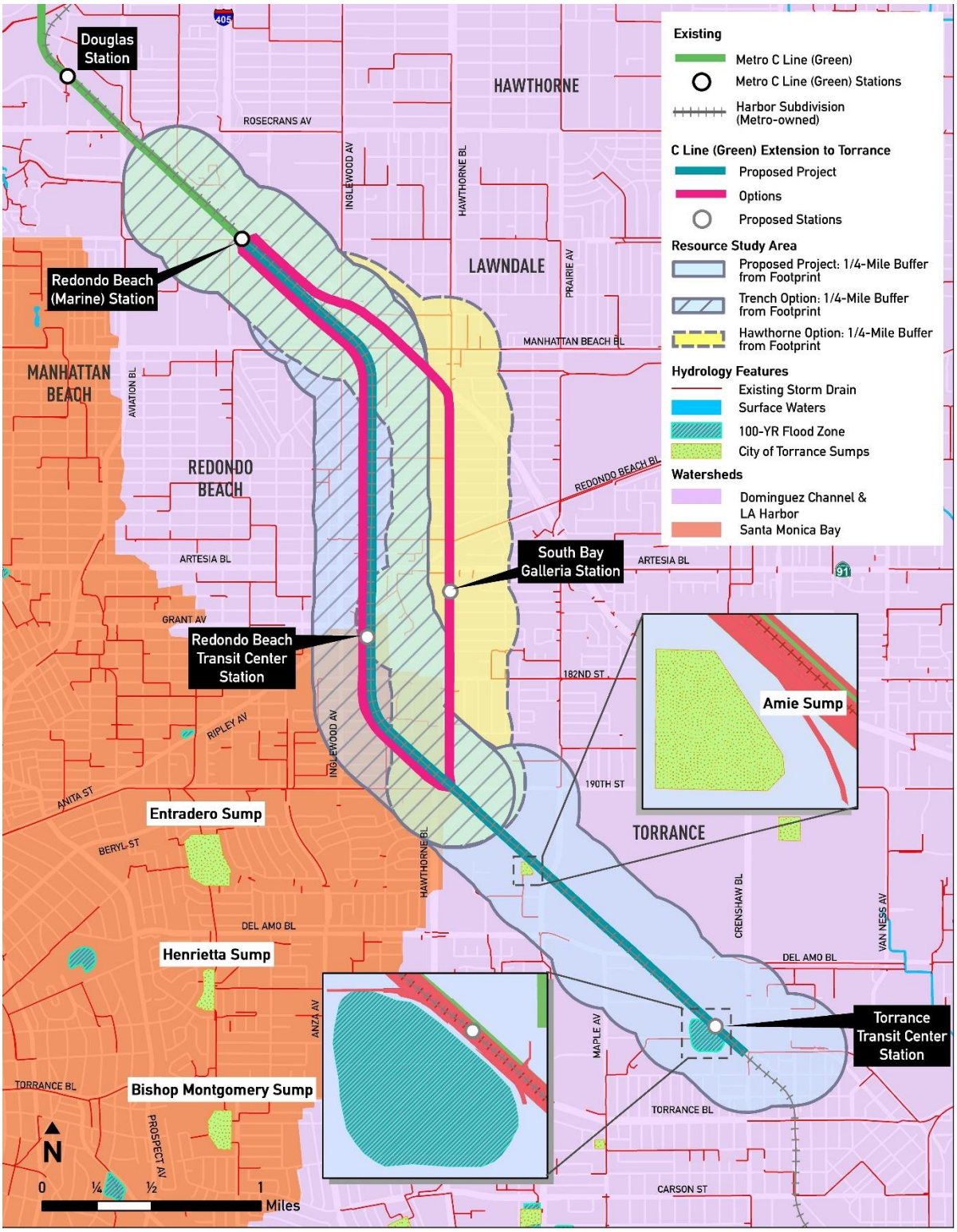
Sumps downstream of the RSAs include the following:

- Amie Sump (located east of Hawthorne Boulevard, between Del Amo Boulevard to the north and Torrance Boulevard to the south). This feature is located approximately 0.5 miles south of the RSAs in the Dominguez Channel Watershed. During wet weather, this sump pumps to Henrietta Sump (listed above) that is located in the Santa Monica Bay Watershed.
- Entradero Sump and Drainage Ditch (located to the west of Hawthorne Boulevard, between 190th Street to the north and Del Amo Boulevard to the south). This feature is located approximately 1 mile southwest of the RSAs within the Santa Monica Bay Watershed.
- Henrietta Sump (located south of Del Amo Boulevard, east of Anza Avenue, and north of Torrance Boulevard). This feature is located approximately 1.3 miles southwest of the RSAs within the Santa Monica Bay Watershed.

- Bishop Montgomery Sump (located south of Torrance Boulevard and west of Palos Verdes Boulevard. This feature is located approximately 2 miles southwest of the RSAs within the Santa Monica Bay Watershed.

The City of Torrance has plans via their Stormwater Basin Enhancement Program to improve the Entradero, Henrietta, and Amie sumps to enhance their beneficial capabilities (City of Torrance, 2022d). These sumps are shown in Figure 3.10-2.

Figure 3.10-2. Watersheds, Waters, Flood Zones, and Sumps



Sources: FEMA, 2021; LACDPW, 2022b; City of Torrance, 2022; AECOM, 2022; STV, 2022

3.10-3.4 Existing Stormwater Drainage Conditions

Proposed Project and Trench Option Footprint

Drainage patterns along the Proposed Project and Trench Option footprints were assessed in the Drainage Study/Hydraulics Report included as Appendix 3.10-A of this EIR. Drainage patterns along the Proposed Project and Trench Option footprints generally flow in either a northerly or southerly direction depending on the specific location. From the northern extent of the footprints from approximately Marine Avenue to south of Manhattan Beach Boulevard, the topography is relatively flat with an approximate maximum grade of 0.5% to the east. South of Manhattan Beach Boulevard, rainfall runoff generated along the ROW exits to street crossings or other low points along the footprints, ultimately being collected and transported by existing storm drain systems. Existing drainage facilities, which are of various sizes and cross section types, are generally located outside of the Metro ROW or cross (encroach) the ROW laterally at various locations along the footprints. Existing storm drains are shown in Figure 3.10-2.

The area within the Proposed Project permanent footprint is currently approximately 20% impervious (12.4 impervious acres of 61.3 total acres). The area within the Trench Option permanent footprint (including the area south of 190th Street) is currently approximately 19% impervious surfaces (11.6 impervious acres of 60.7 total acres). Impervious surfaces within these footprints include existing paved elevated structures, road crossings, and rail stations.

Hawthorne Option Footprint

Drainage patterns along the Hawthorne Option footprint were assessed in Appendix 3.10-A, Drainage Study/Hydraulics Report. Along the northern extent of the Hawthorne Option footprint from approximately Marine Avenue to south of Manhattan Beach Boulevard, the topography is relatively flat with an approximate maximum grade of 0.5% to the east. The drainage network along Hawthorne Boulevard and Inglewood Avenue generally flows in a northerly direction. Runoff from existing catchments along the footprint is captured mainly by catch basins to existing storm drain systems. (Catch basins help prevent debris and trash from entering the stormwater system). The main drain, into which northern and southern drains are connected to, is the Manhattan Beach Boulevard channel. This drain flows east and discharges into the Dominguez Channel. The area from Redondo Beach Transit Center to Hawthorne Boulevard/190th Street drains by way of multiple storm drains to the South Santa Monica Bay. Existing storm drains are shown in Figure 3.10-2.

Currently, impervious surfaces within the area of Hawthorne Option permanent footprint include existing paved elevated structures, road crossings, rail stations, and most of Hawthorne Boulevard (with the exception of some landscaped areas). These areas are approximately 23% impervious (17.1 impervious acres of 74.2 total acres), including the area south of 190th Street.

3.10-3.5 Groundwater

The RSAs are urbanized and consist mostly of impervious surfaces with drainage structures, allowing little percolation of surface water into groundwater basins. The RSAs are within the West Coast Subbasin of the Coastal Plain of the Los Angeles Groundwater Basin. The basin is adjudicated and is administrated by the California Department of Water Resources. The beneficial uses of this subbasin include Municipal and Domestic Supply, Industrial Service Supply, and Industrial Process Supply. The average annual production of groundwater is roughly 52,000 acre-feet, which accounts for about 20% of total retail demand.

Production wells typically capture groundwater at less than 100 feet below ground surface (bgs). In 2021, groundwater depth was measured northeast of the intersection of Inglewood Avenue and Manhattan Beach Boulevard, which is within the northern end of the RSA and adjacent to the Proposed Project and Trench Option footprints. Groundwater was detected at approximately 24 feet bgs at this location (AdvancedGeo, 2021). The shallowest historical recorded groundwater levels were at a 40-foot elevation (20 feet bgs) in the RSA. Perched groundwater (i.e., groundwater trapped above impervious layers that obstruct the downward percolation), has historically been found in several areas within the RSAs, including within and near the ExxonMobil Torrance Refinery located southeast of the Proposed Project. Perched groundwater has been found at depths as shallow as 20 feet bgs on the northern segment of the RSAs (Metro, 2022a).

Two seawater barrier projects are in operation in the RSAs to keep salt water out of the groundwater basins; these are the West Coast Basin Barrier Project and the Dominguez Gap Barrier Project (WRD, 2020). Injection wells along these barriers create a groundwater ridge, which inhibits the flow of salt water into the subbasin to protect and maintain groundwater elevations. These barriers are located to the west (towards Redondo Beach) and south (towards the harbor) of the RSAs. Generally, groundwater in the basin flows from west to east because of this sea water intrusion injection barrier near the coast and a pumping depression inland (Metro, 2021b).

Groundwater quality within the West Coast Basin is considered to be of generally good quality. However, localized areas of reduced groundwater quality are present at margins where seawater intrusion occurred in the past, as well as in shallow groundwater near environmental release sites. Environmental release sites include areas where improper activities (e.g., leaking underground storage tanks [LUSTs], leaking aboveground storage tanks, leaking pipelines, spills, illegal discharges, etc.) have contaminated groundwater with localized plumes of petroleum fuels, solvents, and other constituents of concern (Todd Groundwater, 2015). There are multiple LUSTs within the RSA with an “open” status, which could indicate contaminated groundwater presence within the RSA (USEPA, 2022). Phase I Environmental Site Assessments (ESA) (see Appendix 3.9-A, Phase I ESA – ROW and Appendix 3.9-B, Phase I ESA - Hawthorne of this EIR) determined there are several locations along Proposed Project and Trench Option footprints as well as the Hawthorne Option footprint that may contain contaminated groundwater and soil. The primary potential contaminants are total petroleum hydrocarbons, volatile organic compounds, and semi-volatile organic compounds (Metro, 2021b; Metro, 2021c).

Groundwater can interact with its surrounding soil to exhibit physical characteristics that can cause a hazardous condition called liquefaction. Liquefaction describes the behavior of soils that, when loaded such as in an earthquake, suddenly suffer a transition from a solid state to a liquefied state or having the consistency of a heavy liquid. Specifically, loading is the process in which undrained loose strands tend to decrease in volume, which produces an increase in their pore water pressure. Essentially, this means that the ground can no longer support water, and this is sometimes the cause of sinking due to the dense nature of the sands. Liquefaction zones are areas that have been determined to have a potential for liquefaction conditions, based on such factors as high groundwater. As discussed in the geology and soils analysis (Section 3.8, Geology, Soils, and Paleontology of this EIR), the RSAs are not within a State-designated liquefaction zone. However, as noted in Section 3.8, seismic-induced liquefaction is possible within the RSAs due to potentially high seismic levels of shaking, the potential presence of medium dense sands, and recorded groundwater levels being within 50 feet bgs at some locations within the RSAs.

3.10-3.6 Flooding

The RSA is covered by FIRMs 06037C1760F, 06037C1770F, 06037C1780F, 06037C1790F, and 06037C1930F, dated September 26, 2008. There is one area within the RSA and a small portion of the Proposed Project footprint that has a one percent (100-year) annual chance flood. The very small area of Proposed Project temporary footprint that falls within this flood zone is for a temporary construction easement for removal of an existing spur track. The 100-year flood zone is defined as flood depths of one to three feet (usually areas of ponding) with base flood elevations determined. This flood zone is located southwest of the Proposed Project footprint near the Torrance TC at the intersection of Alaska and California Streets (see Figure 3.10-2).

3.10-3.7 Seiches, Tsunamis and Mudflows

Seiches are large waves generated in enclosed bodies of water, such as lakes, induced by ground shaking. Tsunamis are large waves generated at sea by significant disturbance of the ocean floor, causing the water column above the point of disturbance to displace rapidly. Tsunamis are predominantly caused by shallow underwater earthquakes and landslides. Mudflows result from the down-slope movement of soil and/or rock under the influence of gravity and are also often caused by earthquakes. The RSAs are outside of current seiche and tsunami potential inundation areas and is not located in an area prone to mudflows.

3.10-4 Environmental Impacts

3.10-4.1 Would the Proposed Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

3.10-4.1.1 Construction Impacts

Less than Significant. Proposed Project construction could introduce chemicals and/or hazardous substances from construction equipment into surface waters, and eventually, groundwater (following surface water infiltration into the groundwater basin). Additionally, dust and erosion resulting from soil exposure and disturbance during construction could lead to sedimentation of stormwater, which would increase turbidity and degrade existing surface water quality. Existing contaminants in newly exposed and eroded soil could also be transported in stormwater and could subsequently degrade surface water quality and groundwater quality. Introduction of these substances to receiving waters could exacerbate existing water quality impairments or introduce new water quality impairments. Metro would be required to prepare and implement a SWPPP that meets the requirements of the Construction General Permit, as described in PF-HWQ-1, SWPPP Implementation per Construction General Permit, which would include various BMPs that would reduce the potential for erosion, sedimentation, and/or introduction of pollutants into surface water or groundwater. This would protect surface water and groundwater quality and minimize the introduction or exacerbation of impairments in receiving waters.

The Proposed Project has the potential to degrade surface water quality via dewatering of groundwater. Groundwater levels within the Proposed Project RSA are anticipated to be 20 feet bgs based on historical groundwater records as described in Section 3.10-3.7. In certain locations that require deeper excavation, such installation of piles used for elevated sections, excavation activities may have the potential to encounter groundwater such that dewatering is required. Although groundwater quality is generally good within the Proposed Project RSA, the Phase I Environmental Site Assessments (see Appendix 3.9-A, Phase I ESA – ROW of this EIR) determined multiple locations within the RSA that may contain contaminated groundwater. As described in Section 3.9, Hazards and Hazardous Materials, Phase II site investigations would be conducted in the future per PF-HHM-3, Property Acquisition Phase

II site investigation. The assessments would help determine the quality of groundwater at proposed excavation locations and would help identify areas of contaminated groundwater with which may come into contact. If contaminated groundwater cannot be avoided during construction, PF-HWQ-2, Groundwater Treatment and Discharge per RWQCB Waste Discharge Requirements for Construction Dewatering, would ensure the appropriate treatment and discharge of contaminated groundwater so there would not be any degradation of surface water quality. Therefore, the Proposed Project would have a **less than significant impact** during construction related to violation of water quality standards or discharge requirements or to degradation of water quality.

TRENCH OPTION

Less than Significant. Trench Option construction would require more excavation, as well as a more prolonged period of earthwork, compared to constructing the alignment at grade as part of the Proposed Project. More excavation means construction activities would encounter groundwater more frequently, particularly in the northern portions of the RSA where groundwater is shallower, and potentially expose this groundwater to chemicals and/or hazardous substances. More excavation also has a greater potential to introduce preexisting contaminants in newly exposed and eroded soil into surface waters and groundwaters. More prolonged earthwork would create a larger chance of introducing chemicals and/or hazardous substances to surface waters, as well as causing erosion and subsequent sedimentation of surface waters. However, as described above for the Proposed Project, various BMPs would be implemented during construction per PF-HWQ-1.This would protect surface water and groundwater quality and minimize the introduction or exacerbation of impairments in receiving waters.

More excavation required under the Trench Option compared to the Proposed Project would mean construction activities would encounter more groundwater, particularly in the northern portions of the RSA, requiring more groundwater dewatering than the Proposed Project. In addition, groundwater pressures may develop during trench excavation from groundwater seeping into the soil from construction activities. Some of this groundwater has the potential to be contaminated. However, PF-HHM-3 (as described in Section 3.9, Hazards and Hazardous Materials), would help identify areas of contaminated water in planned excavation areas, and PF-HWQ-2 would prevent contaminated groundwater from being discharged in such a manner that would degrade surface water quality. Given the relatively shallow depth to groundwater in the RSA, groundwater pressure buildup could along the trench walls, causing subsequent uncontrolled release of groundwater into the trench, which could result in degradation of existing or introduction of contaminated groundwater to surface waters. Per PF-HWQ-3, Trench Construction Groundwater Pressure Control, measures would be taken to relieve any potential groundwater pressure buildup that may occur during construction.

Unlike the Proposed Project, surface runoff that flows into the trench during construction could introduce pollutants to surface waters; however, surface runoff would be collected in the trench, treated (if necessary), pumped out of the trench, and discharged to a pervious area onsite for infiltration into the soil per PF-HWQ-4, Trench Construction Runoff Collection and Treatment. In addition, runoff from the Trench Option footprint may be directed to different discharge points than existing points, which has the potential to introduce pollutants to these inflows. Per PF-HWQ-5, Temporary Storm Drain Inflow Rerouting, temporarily rerouted stormwater inflows would be captured to minimize introduction of pollutants from active construction, treated (if necessary), and rerouted around the construction site for appropriate discharge per waste discharge requirements detailed in the MS4 Permit. Therefore, the Trench Option would have a **less than significant impact** during construction related to violation of water quality standards or discharge requirements or to degradation of water quality.

HAWTHORNE OPTION

Less than Significant. The Hawthorne Option would require deeper excavation than the Proposed Project associated with columns that support the elevated alignment. Deeper excavation means a greater likelihood of coming into contact with groundwater and potentially exposing this groundwater to chemicals and/or hazardous substances. Deeper excavation also has a greater potential to introduce preexisting contaminants in newly exposed and eroded soil into surface waters and groundwaters. More prolonged earthwork would create a larger chance of introducing chemicals and/or hazardous substances to surface waters, as well as causing erosion and subsequent sedimentation of surface waters. However, as described above for the Proposed Project, various BMPs would be implemented during construction per PF-HWQ-1. This would protect surface water and groundwater quality and minimize the introduction or exacerbation of impairments in receiving waters.

Deeper excavation for structural columns required under the Hawthorne Option compared to the Proposed Project would mean a greater likelihood of requiring groundwater dewatering. PF-HHM-3 (as described in Section 3.9, Hazards and Hazardous Materials), would help identify areas of contaminated water in planned excavation areas, and PF-HWQ-2 would prevent contaminated groundwater from being discharged in such a manner that would degrade surface water quality.

Unlike the Proposed Project, Hawthorne Option construction involves the permanent rerouting of two major storm drains and one minor storm drain crossing the alignment. While new routes are constructed, temporary disruption and rerouting of inflows has the potential to introduce pollutants to these inflows. Per PF-HWQ-5 temporarily rerouted stormwater inflows would be captured to minimize introduction of pollutants from active construction, treated (if necessary), and rerouted around the construction site for appropriate discharge into the existing storm drain system per waste discharge requirements detailed in the MS4 Permit. Therefore, the Hawthorne Option would have a **less than significant impact** during construction related to violation of water quality standards or discharge requirements or to degradation of water quality.

3.10-4.1.2 Operational Impacts

Less than Significant. Operation of the Proposed Project could introduce new or exacerbate existing surface water quality impairments. Although the at-grade sections of the alignment would be comprised of typical ballast, which are pervious surfaces, the Proposed Project would still involve a net increase in impervious surfaces (as described in Section 3.10-4.6.2 below). Potential water quality impacts from Proposed Project operation include but are not limited to sedimentation caused by runoff from newly added impervious surfaces; nitrates from landscape fertilizing; and trash, debris, vehicle-sourced pollutants, and bacteria from increased human presence. However, implementation of PF-HWQ-6, LID BMPs per Regional Requirements, would prevent stormwater degraded by the Proposed Project operation from leaving the project footprint and further degrading surface water quality. Additional runoff would be collected via new or existing tie-ins to the existing stormwater drainage system. In addition, existing catch basins on adjacent storm drains would be retained during Proposed Project operation to prevent debris and trash from entering the stormwater drainage system.

Operation of the Proposed Project would not involve direct contact with groundwater. The Proposed Project would operate at or above grade. No contaminants would be stored within the Proposed Project footprint that could leak and infiltrate into groundwater. Metro vehicles running along the Proposed Project alignment would be serviced regularly to prevent potential fuel spills during operation. The Proposed Project would include a surface parking lot at the Torrance TC, which is assumed to be 91% impervious. Runoff generated within the proposed surface parking lot would be collected and treated

onsite prior to discharge into the existing municipal collection system. Treatment and runoff discharge volumes and flowrates for the parking lot will be designed to comply with state and local regulations. PF-HWQ-6 would ensure retainment of the SWQDv by LID BMPs, thereby reducing potential for degraded surface water quality to degrade groundwater quality via infiltration into the groundwater basin. Therefore, the Proposed Project would have a **less than significant impact** during operation related to violation of water quality standards or discharge requirements or to degradation of water quality.

TRENCH OPTION

Less than Significant. Operation of the Trench Option would increase impervious surfaces and human presence in the area, which could introduce new or exacerbate existing surface water quality impairments. Potential threats to water quality include but are not limited to sedimentation caused by runoff from newly added impervious surfaces; nitrates from landscape fertilizing; and trash, debris, and bacteria from human presence. PF-HWQ-6 would ensure retainment of the SWQDv and maintaining existing catch basins to prevent debris and trash from entering storm drains, thereby preventing polluted runoff from leaving the site and degrading stormwater and surface water quality.

Unlike the Proposed Project, surface waters have the potential to collect within the trench and could be exposed to water quality impacts during Trench Option operation. However, per PF-HWQ-7, Trench Operation Runoff Collection and Treatment, surface runoff would be collected within the trenches, treated (if necessary), and discharged to existing storm drains. This would ensure trench runoff does not degrade surface water or groundwater quality.

Operation of the Trench Option would not involve direct contact with groundwater. Although the trench would be located below-grade in an area anticipated to have relatively shallow groundwater, the trench would be lined with impervious retaining walls and a paved bottom that would prevent groundwater from entering the trench in substantial volumes. Any groundwater that does permeate the trench would be collected, treated per relevant requirements of the RWQCB, and pumped into the storm drain system. No contaminants would be stored within the trench that could leak and infiltrate into groundwater. Metro vehicles running within the trench would be serviced regularly to prevent potential fuel spills during operation. PF-HWQ-6 would retain most stormwater onsite, thereby preventing potentially polluted surface waters on site from degrading groundwater quality via infiltration into the groundwater basin. Therefore, the Trench Option would have a **less than significant impact** during operation related to violation of water quality standards or discharge requirements or to degradation of water quality.

HAWTHORNE OPTION

Less than Significant. Operation of the Hawthorne Option would increase impervious surfaces and human presence in the area, which could introduce new or exacerbate existing surface water quality impairments. Potential threats to water quality would be similar to the Proposed Project and would include but are not limited to sedimentation caused by runoff from newly added impervious surfaces; nitrates from landscape fertilizing; and trash, debris, and bacteria from human presence. PF-HWQ-6 ensure retainment of the SWQDv and maintaining existing catch basins to prevent debris and trash from entering storm drains, thereby preventing polluted runoff from leaving the site and degrading stormwater and surface water quality.

Operation of the Hawthorne Option would not involve direct contact with groundwater. The elevated alignment would operate above grade. No contaminants would be stored within the Hawthorne Option

footprint that could leak and infiltrate into groundwater. Metro vehicles running along the alignment would be serviced regularly to prevent potential fuel spills during operation. PF-HWQ-6 would retain most stormwater onsite, thereby preventing potentially polluted surface waters on site from degrading groundwater quality via infiltration into the groundwater basin. Therefore, the Hawthorne Option would have a **less than significant impact** during operation related to violation of water quality standards or discharge requirements or to degradation of water quality.

3.10-4.2 Would the Proposed Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

3.10-4.2.1 Construction Impacts

Less than Significant. Construction of the Proposed Project would not substantially interfere with groundwater supplies or groundwater recharge. Construction would require some water for activities like dust control and concrete mixing; this water would be sourced from local utility lines that may depend on groundwater for a portion of their water supply. However, the water needed for construction of the Proposed Project would be extremely minimal and temporary, and thus would not substantially decrease groundwater supplies.

As discussed in Section 3.10-4.1.1, Proposed Project construction may require groundwater dewatering during excavation activities primarily associated with foundations and columns for the elevated track sections. However, dewatered groundwater would be discharged in a pre-approved location per PF-HWQ-2. The amount of groundwater potentially requiring dewatering during construction would be minimal relative to the size of the West Coast subbasin, and dewatered groundwater would be discharged within or close to the RSA, thereby recharging the subbasin. Further, detention basins that would infiltrate excessive surface runoff into the soil surface are being considered for implementation on site per PF HWQ-6 thereby helping recharge groundwater supplies. Therefore, the Proposed Project would have a **less than significant impact** during construction related to a decrease in groundwater supplies or interference with groundwater recharge.

TRENCH OPTION

Less than Significant. Trench Option construction would not substantially interfere with groundwater supplies or groundwater recharge. Construction would require some water for activities like dust control and concrete mixing; this water would be sourced from local utility lines that may depend on groundwater for a portion of their water supply. Since trench excavation would involve greater and more prolonged soil exposure than constructing the alignment at grade, more water for dust control would be required under this option when compared to the Proposed Project. Trench construction would also require more water for concrete mixing than at-grade alignment construction since the trench would be lined with concrete retaining walls and paved bottoms. Despite requiring more water than the Proposed Project construction, Trench Option construction water demand would still be minimal and temporary, thus would not substantially decrease groundwater supplies if sourced directly or indirectly from groundwater.

As discussed in Section 3.10-4.1.1, trench excavation has a greater likelihood of groundwater dewatering than at-grade alignment construction. However, PF-HWQ-2 involves discharging dewatered groundwater in a pre-approved location. The amount of groundwater potentially requiring dewatering during construction would be minimal relative to the size of the West Coast subbasin, and dewatered groundwater would be discharged within or close to the RSA, thereby recharging the subbasin.

In addition, groundwater pressures may develop during trench excavation from groundwater seeping into the soil from construction activities. However, per PF-HWQ-3 measures would be taken to relieve any potential groundwater pressure buildup, thereby preventing unexpected inflow of groundwater into the trench and potentially depleting local supply. Further, PF-HWQ-4 involves the collection and discharge of surface waters that flow into the trench to a pervious area on site for infiltration into the soil, thereby recharging the groundwater basin. Therefore, the Trench Option would have a **less than significant impact** during construction related to a decrease in groundwater supplies or interference with groundwater recharge.

HAWTHORNE OPTION

Less than Significant. Hawthorne Option construction would not substantially interfere with groundwater supplies or groundwater recharge. Construction would require some water for activities like dust control and concrete mixing; this water would be sourced from local utility lines that may depend on groundwater for a portion of their water supply. Compared to the Proposed Project, Hawthorne Option construction would require more water for concrete mixing for construction of the columns. Despite requiring more water than the Proposed Project construction, Hawthorne Option construction water demand would still be minimal and temporary, and thus would not substantially decrease groundwater supplies if sourced directly or indirectly from groundwater.

As discussed in Section 3.10-4.1.1, deeper excavation for columns to construct the elevated alignment has a greater likelihood of groundwater dewatering than at-grade alignment construction. However, PF-HWQ-2 involves the discharge of dewatered groundwater at a pre-approved location. The amount of groundwater potentially requiring dewatering during construction would be minimal relative to the size of the West Coast subbasin, and dewatered groundwater would be discharged within or close to the RSA, thereby recharging the subbasin. Therefore, the Hawthorne Option would have a **less than significant impact** during construction related to a decrease in groundwater supplies or interference with groundwater recharge.

3.10-4.2.2 Operational Impacts

Less than Significant. Proposed Project operation would not substantially interfere with groundwater supplies or groundwater recharge. Operational water usage primarily involves routine cleaning of equipment within the above- or at-grade alignment and occasional power washing of the surface parking lot; this water would be sourced from local utility lines that may depend on groundwater for a portion of their water supply. The average annual production of the West Coast Subbasin is 52,000 AFY (WBMWD, 2023). Proposed water uses for construction and operation would be minimal compared to the basin's overall annual production. As mentioned in Section 3.10-1.2 above, the Coastal Plan of Los Angeles is currently ranked as "very low" priority by the State, indicating that the basin is not threatened with near-term overdraft, and the Proposed Project's minor water demand added to this basin's annual production would not result in a substantial reduction in overall groundwater supplies. Therefore, the Proposed Project's operational water demand is minimal and would not substantially decrease groundwater supplies in the West Coast Subbasin.

Once operational, the Proposed Project permanent footprint would be approximately 29% impervious (compared to its existing conditions of approximately 20% impervious). This increase in impervious surfaces would reduce the total amount of pervious areas capable of groundwater recharge. However, as described in Section 3.10-4.1.2, PF-HWQ-6, LID BMPs per Regional Requirements, involves implementation of LID BMPs designed to retain the SWQDv. Infiltration LID BMPs would enable the recharge of runoff generated onsite into the groundwater basin. Therefore, operation of the Proposed

Project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge, and the impact would be **less than significant**.

TRENCH OPTION

Less than Significant. Trench Option operation would not substantially interfere with groundwater supplies or groundwater recharge. Operational water usage would primarily involve routine cleaning of the alignment; this water would be sourced from local utility lines that may depend on groundwater for a portion of their water supply. Cleaning the paved bottom and retaining walls of the trenches may require slightly more water than an at-grade alignment given the larger surface area of concrete to clean. However, the Trench Option's operational water demand would be minimal, and would not substantially decrease groundwater supplies in the West Coast Subbasin.

Once operational, the Trench Option permanent footprint, including the area south of 190th Street, would be approximately 37% impervious (compared to its existing conditions of approximately 19% impervious). Therefore, relative impervious surface increases would be greater under the Trench Option than the Proposed Project. This increase in impervious surfaces would reduce the total amount of pervious areas capable of groundwater recharge. However, as described in Section 3.10-4.1.2, PF-HWQ-6 involves implementation of LID BMPs designed to retain the SWQDv. Infiltration would enable the recharge of runoff generated onsite into the groundwater basin. PF-HWQ-7 would involve the collection, treatment (if necessary), and rerouting of excess runoff that is not retained on within the trench as part of the SWQDv to the existing storm drain system. The majority of runoff would be infiltrated onsite during project operation. Therefore, operation of the Trench Option would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge, and the impact would be **less than significant**.

HAWTHORNE OPTION

Less than Significant. Hawthorne Option operation would not substantially interfere with groundwater supplies or groundwater recharge. Operational water usage would primarily involve routine cleaning of the above- or at-grade (south of 190th Street) alignment. This water would be sourced from local utility lines that may depend on groundwater for a portion of their water supply. However, the Hawthorne Option's operational water demand is minimal and would not substantially decrease groundwater supplies in the West Coast Subbasin.

Once operational, the Hawthorne Option permanent footprint, including the area south of 190th Street, would be approximately 43% impervious (compared to its existing conditions of approximately 23% impervious). Therefore, relative impervious surface increases would be greater under the Hawthorne Option than the Proposed Project. This increase in impervious surfaces would reduce the total amount of pervious areas capable of groundwater recharge. However, as described in Section 3.10-4.1.2, LID BMPs would be included on site to retain the SWQDv per PF-HWQ-6. Infiltration would enable the recharge of runoff generated onsite into the groundwater basin. Therefore, operation of the Hawthorne Option would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge, and the impact would be **less than significant**.

3.10-4.3 Would the Proposed Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces in a manner which would result in substantial erosion or siltation on- or off-site?

3.10-4.3.1 Construction Impacts

Less than Significant Impact. Proposed Project construction would not result in substantial drainage pattern alteration such that erosion or siltation occurs. Construction would include excavation, equipment laydown, and other ground-disturbing activities such that the existing drainage pattern within the Proposed Project footprint would be temporarily altered. Alteration of drainage patterns could concentrate or redirect surface runoff such that erosion or siltation could occur on or off site. However, no substantial drainage alterations would occur during construction since significant existing natural and manmade drainage features within the Proposed Project's footprint, including sumps, are absent. Substantial excavation would only be required in certain parts of the Proposed Project footprint for elevated track sections to accommodate foundations and columns. However, various BMPs implemented per PF-HWQ-1 would prevent erosion and siltation (e.g., sedimentation) as well as reduce stormwater runoff velocity, thereby limiting its capacity to result in erosion and siltation on or offsite. Any drainage pattern impacts from construction would therefore be minor and temporary, minimizing the potential for erosion and sedimentation to occur on or offsite, including in sumps. Thus, the impact of construction of the Proposed Project relating to the addition of impervious surfaces in a manner which would result in substantial erosion or siltation would be **less than significant**.

TRENCH OPTION

Less than Significant Impact. Trench Option construction would not result in substantial drainage pattern alteration such that erosion or siltation occurs. Significant surface drainage features within Trench Option footprint, including sumps, are absent. Trench Option construction would require more excavation than the Proposed Project to construct trenches. Various BMPs implemented to protect water quality per PF-HWQ-1 would help directly prevent erosion and siltation (e.g., sedimentation), as well as reduce stormwater runoff velocity, thereby limiting its capacity to result in erosion and siltation on or offsite, including in sumps. Unlike the Proposed Project, surface runoff flowing into the trench could result in erosion and siltation; however, PF-HWQ-4 would implement BMPs to collect and discharge surface runoff in a manner that minimizes erosion and siltation potential on or offsite. Runoff from the Trench Option footprint may be directed to different discharge points than existing points, which could result in erosion or siltation on or offsite. However, storm drain inflow collection and rerouting would be designed to minimize erosion and siltation per PF-HWQ-5. Thus, the impact of construction of the Trench Option relating to the addition of impervious surfaces in a manner which would result in substantial erosion or siltation would be **less than significant**.

HAWTHORNE OPTION

Less than Significant Impact. Hawthorne Option construction would not result in substantial drainage pattern alteration such that erosion or siltation occurs. The Hawthorne Option would require deeper excavation than the Proposed Project since it would be entirely elevated, therefore requiring deeper excavation for column foundations. Various BMPs implemented to protect water quality per PF-HWQ-1 would help directly prevent erosion and siltation (e.g., sedimentation), as well as reduce stormwater runoff velocity, thereby limiting its capacity to result in erosion and siltation on or offsite, including in sumps. Unlike the Proposed Project, major storm drains are present within the Hawthorne Option footprint. The alignment column foundations would require two major storm drains running parallel to

the alignment and one minor storm drain crossing the alignment to be rerouted. However, storm drain inflow collection and rerouting during construction would be designed to minimize erosion and siltation per PF-HWQ-5. Thus, the impact of construction of the Hawthorne Option relating to the addition of impervious surfaces in a manner which would result in substantial erosion or siltation would be **less than significant**.

3.10-4.3.2 Operational Impacts

Less than Significant Impact. Proposed Project operation would not result in substantial drainage pattern alteration such that erosion or siltation occurs. No substantial natural or manmade drainage features are present within the existing roadway and railroad rights-of-way. As described in Section 3.10-4.2.2, the Proposed Project permanent footprint would be approximately 29% impervious (compared to its existing conditions of approximately 20% impervious). This increase in impervious surfaces would initially generate more stormwater runoff compared to existing conditions; an increase in runoff has the potential to result in erosion of soils and sedimentation of surface waters. However, the SWQDv would be retained on site per PF-HWQ-6. Additional runoff from the Proposed Project footprint would continue to be collected by storm drain facilities. Elevated portions of the Proposed Project alignment would include down drains. Discharge locations of underdrains installed along the Proposed Project alignment would be the same as existing discharge locations. The retainment of the majority of stormwater runoff within the Proposed Project footprint and preservation of existing discharge locations reduces the potential for erosion and sedimentation to occur on or off site. Thus, the impact of operation of the Proposed Project relating to the addition of impervious surfaces in a manner which would result in substantial erosion or siltation would be **less than significant**.

TRENCH OPTION

Less than Significant Impact. Trench Option operation would not result in substantial drainage pattern alteration such that erosion or siltation occurs. As described in Section 3.10-4.2.2, the Trench Option permanent footprint, including the area south of 190th Street, would be approximately 37% impervious (compared to its existing conditions of approximately 19% impervious). This represents a greater increase in impervious surfaces compared to the Proposed Project; therefore, the Trench Option may have a greater potential to generate additional runoff that leads to erosion of soils and sedimentation of surface waters. However, the SWQDv would be retained on site per PF-HWQ-6. Additional runoff in the trenches would be collected, treated (if necessary), and transferred to existing nearby storm drains per PF-HWQ-7. Although no existing storm drain rerouting is proposed under the Trench Option, runoff from the Trench Option footprint may be directed to different discharge points than existing during its operation to avoid substantial erosion or siltation. The retainment of the majority of stormwater runoff within the Trench Option footprint and eventual discharge of runoff to existing storm drains reduces the potential for erosion and sedimentation to occur on or off site. Thus, the impact of operation of the Trench Option relating to the addition of impervious surfaces in a manner which would result in substantial erosion or siltation would be **less than significant**.

HAWTHORNE OPTION

Less than Significant Impact. Hawthorne Option operation would not result in substantial drainage pattern alteration such that erosion or siltation occurs. As described in Section 3.10-4.2.2, the Hawthorne Option permanent footprint, including the area south of 190th Street, would be approximately 43% impervious (compared to its existing conditions of approximately 23% impervious). This represents a greater increase in impervious surfaces compared to the Proposed Project; therefore, the Hawthorne Option may have a greater potential to generate additional runoff that leads to erosion

of soils and sedimentation of surface waters. However, the SWQDv would be retained on site per PF-HWQ-6. Additional runoff from the Hawthorne Option permanent footprint would continue to be collected by storm drain facilities. Although storm drains would be permanently rerouted under Hawthorne Option, discharge locations of rerouted storm drains would be the same or similar to existing discharge locations per PF-HWQ-6. Retaining most stormwater runoff within the Hawthorne Option footprint and maintaining overall storm drain discharge connections reduces the potential for erosion and sedimentation to occur on or off site, including in downstream sumps. Thus, the impact of operation of the Hawthorne Option relating to the addition of impervious surfaces in a manner which would result in substantial erosion or siltation would be **less than significant**.

3.10-4.4 Would the Proposed Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

3.10-4.4.1 Construction Impacts

Less than Significant Impact. Proposed Project construction would not result in substantial drainage pattern alteration such that flooding occurs. Proposed Project excavation, equipment laydown, and other ground-disturbing activities could alter the existing drainage pattern within the Proposed Project footprint and concentrate or redirect surface runoff such that flooding occurs on or off site. However, no substantial drainage alterations would occur during construction since significant existing natural and manmade drainage features are absent. Substantial excavation would only be required in certain parts of the Proposed Project footprint for elevated track sections. However, various BMPs implemented to protect water quality and manage stormwater per PF-HWQ-1 would reduce stormwater runoff velocity, thereby limiting its capacity to result in flooding on or offsite. Any drainage pattern impacts from construction would therefore be minor and temporary, minimizing the potential for flooding to occur on or offsite, including in sumps. Thus, the impact of construction of the Proposed Project relating to the addition of impervious surfaces in a manner which would result in flooding would be **less than significant**.

TRENCH OPTION

Less than Significant Impact. Trench Option construction would not result in substantial drainage pattern alteration such that flooding occurs. Various BMPs implemented to protect water quality per PF-HWQ-1 would help reduce stormwater runoff velocity, thereby limiting its capacity to result in flooding on or offsite, including in sumps. Surface runoff flowing into the trench could result in flooding; however, PF-HWQ-4 would involve the collection and discharge of surface runoff that minimizes flooding potential on or offsite. Runoff from the Trench Option footprint may be directed to different discharge points than existing points, which could result in flooding on or offsite. However, storm drain inflow collection and rerouting would be designed to minimize flooding per PF-HWQ-5. Thus, the impact of construction of the Trench Option relating to the addition of impervious surfaces in a manner which would result in flooding would be **less than significant**.

HAWTHORNE OPTION

Less than Significant Impact. Hawthorne Option construction would not result in substantial drainage pattern alteration such that flooding occurs. Various BMPs implemented to protect water quality per PF-HWQ-1 would also help reduce stormwater runoff velocity, thereby limiting its capacity to result in flooding on or offsite, including in sumps. In addition, construction would involve temporary disruption

and rerouting of drainage collected by three existing storm drains, which could result in flooding on or offsite. However, storm drain inflow collection and rerouting would be designed to minimize flooding per PF-HWQ-5. Thus, the impact of construction of the Hawthorne Option relating to the addition of impervious surfaces in a manner which would result in flooding would be **less than significant**.

3.10-4.4.2 Operational Impacts

Less than Significant Impact. Proposed Project operation would not result in substantial drainage pattern alteration such that flooding occurs. As described above, the Proposed Project would have more impervious surfaces compared to existing conditions that could result in flooding. However, stormwater runoff would be retained on site per PF-HWQ-6. Additional runoff from the Proposed Project footprint would continue to be collected by new and existing storm drain facilities.

Stormwater runoff discharge locations along the Proposed Project alignment would be the same as existing discharge locations. Retainment of most stormwater runoff within the Proposed Project footprint and preservation of existing discharge locations reduces the potential for flooding to occur on or off site. Thus, the impact of operation of the Proposed Project relating to the addition of impervious surfaces in a manner which would result in flooding would be **less than significant**.

TRENCH OPTION

Less than Significant Impact. Trench Option operation would not result in substantial drainage pattern alteration such that flooding occurs. Although the Trench Option would have more impervious surfaces compared to existing conditions and could result in flooding, most stormwater runoff would be retained on site per PF-HWQ-6. Additional runoff in the trenches would be collected, treated (if necessary), and discharged to existing nearby storm drains per PF-HWQ-7. Although no existing storm drain rerouting is proposed under the Trench Option, runoff from the Trench Option footprint may be directed to different discharge points than existing points to avoid flooding. Retainment of most stormwater runoff within the Trench Option footprint and eventual discharge of runoff to existing storm drain facilities reduces the potential for flooding to occur on or off site. Thus, the impact of operation of the Trench Option relating to the addition of impervious surfaces in a manner which would result in flooding would be **less than significant**.

HAWTHORNE OPTION

Less than Significant. Hawthorne Option operation would not result in substantial drainage pattern alteration such that flooding occurs. Although the Hawthorne Option would have more impervious surfaces compared to existing conditions and could result in flooding, the SWQDv would be retained on site per PF-HWQ-6. Additional runoff from the Hawthorne Option footprint would continue to be collected by storm drain facilities. Although storm drains would be permanently rerouted under the Hawthorne Option, discharge locations of rerouted storm drains would be the same or similar to existing discharge locations per PF-HWQ-6. Retainment of most stormwater runoff within the Hawthorne Option footprint and maintaining existing storm drain discharge locations reduces the potential for flooding to occur on or off site. Thus, the impact of operation of the Hawthorne Option relating to the addition of impervious surfaces in a manner which would result in flooding would be **less than significant**.

3.10-4.5 Would the Proposed Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces in a manner which would 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?

3.10-4.5.1 Construction Impacts

Less than Significant Impact. Proposed Project construction would not result in substantial drainage pattern alteration such that runoff exceeds stormwater drainage systems or additional sources of polluted runoff are generated. Proposed Project excavation, equipment laydown, and other ground-disturbing activities could alter the existing drainage pattern within the Proposed Project footprint and concentrate or redirect surface runoff such that stormwater drainage exceedance or additional polluted runoff generation occurs on or off site. However, no substantial drainage alterations would occur during construction since significant existing natural and manmade drainage features are absent. Substantial excavation would only be required in certain parts of the Proposed Project footprint for elevated track sections. Various BMPs implemented to protect water quality and manage stormwater per PF-HWQ-1 would reduce stormwater runoff velocity, thereby limiting its capacity to result in flooding on or offsite. Any drainage pattern impacts from construction would therefore be minor and temporary, minimizing the potential for exceeding stormwater drainage systems and generating additional sources of polluted runoff, including in sumps. Thus, the impact of construction of the Proposed Project relating to the addition of impervious surfaces in a manner which would exceed stormwater drainage system capacity or substantially add sources of polluted runoff would be **less than significant**.

TRENCH OPTION

Less than Significant Impact. Trench Option construction would not result in substantial drainage pattern alteration such that runoff exceeds stormwater drainage systems or additional sources of polluted runoff are generated. Various BMPs implemented per PF-HWQ-1 would help reduce stormwater runoff velocity, thereby limiting its capacity to cause stormwater drainage systems exceedance or additional sources of polluted runoff generation. Per PF-HWQ-4 surface runoff that flows into the trench would be collected, treated, and infiltrated onsite, thereby avoiding exceedance of existing storm drain capacity and additional polluted runoff sources. Per PF-HWQ-5 temporary rerouting of inflows from an existing storm drain around the construction site would be done in a manner that avoids exceeding existing stormwater drainage systems. Thus, the impact of construction of the Trench Option relating to the addition of impervious surfaces in a manner which would exceed stormwater drainage system capacity or substantially add sources of polluted runoff would be **less than significant**.

HAWTHORNE OPTION

Less than Significant Impact. Hawthorne Option construction would not result in substantial drainage pattern alteration such that runoff exceeds stormwater drainage systems or additional sources of polluted runoff are generated. Various BMPs implemented per PF-HWQ-1 would help reduce stormwater runoff velocity, thereby limiting its capacity to cause stormwater drainage systems exceedance or additional sources of polluted runoff generation. Per PF-HWQ-5 temporary rerouting of inflows from an existing storm drain around the construction site would be done in a manner that avoids exceeding existing stormwater drainage systems. Thus, the impact of construction of the Hawthorne Option relating to the addition of impervious surfaces in a manner which would exceed stormwater drainage system capacity or substantially add sources of polluted runoff would be **less than significant**.

3.10-4.5.2 Operational Impacts

Less than Significant Impact. Proposed Project operation would not result in substantial drainage pattern alteration such that runoff exceeds stormwater drainage systems or additional sources of polluted runoff are generated. The initial increase in runoff generated by the increased impervious surfaces within the Proposed Project permanent footprint would be mostly contained on site as part of the SWQDv per PF-HWQ-6. Retainment of most stormwater runoff within the Proposed Project footprint and preservation of existing discharge locations reduces the potential for exceeding stormwater drainage systems or generating sources of additional polluted runoff. Thus, the impact of operation of the Proposed Project relating to the addition of impervious surfaces in a manner which would exceed stormwater drainage system capacity or substantially add sources of polluted runoff would be **less than significant**.

TRENCH OPTION

Less than Significant Impact. Trench Option operation would not result in substantial drainage pattern alteration such that runoff exceeds stormwater drainage systems or additional sources of polluted runoff are generated. Although the Trench Option would have a greater amount of impervious surfaces compared to existing conditions and could result in stormwater drainage system exceedance or additional polluted runoff generation, per PF-HWQ-6 the SWQDv would be retained on site, thereby minimizing the potential for excessive and/or polluted runoff entering storm drains. Per PF-HWQ-7 additional runoff in the trenches would be collected, treated (if necessary), and transferred existing nearby storm drains. Although no existing storm drain rerouting is proposed under the Trench Option, runoff from the Trench Option footprint may be directed to different discharge points than existing points to reduce stormwater drainage exceedance. Retainment of most stormwater runoff within the Trench Option footprint and eventual discharge of runoff to existing storm drain facilities reduces the potential for exceeding stormwater drainage systems or generating sources of additional polluted runoff. Thus, the impact of operation of the Trench Option relating to the addition of impervious surfaces in a manner which would exceed stormwater drainage system capacity or substantially add sources of polluted runoff would be **less than significant**.

HAWTHORNE OPTION

Less than Significant Impact. Hawthorne Option operation would not result in substantial drainage pattern alteration such that runoff exceeds stormwater drainage systems or additional sources of polluted runoff are generated. Although the Hawthorne Option would have more impervious surfaces compared to existing conditions and could result in stormwater drainage system exceedance or additional polluted runoff generation, per PF-HWQ-6 the SWQDv would be retained on site, thereby minimizing the potential for excessive and/or polluted runoff entering storm drains. Additional runoff from the Hawthorne Option permanent footprint would continue to be collected by storm drain facilities. Although storm drains would be permanently rerouted under Hawthorne Option, discharge locations of rerouted storm drains would be the same or similar to existing discharge locations per PF-HWQ-6. Retainment of most stormwater runoff within the Hawthorne Option footprint via LID BMPs, as well as maintaining the same or similar existing storm drain discharge locations, reduces the potential for exceeding stormwater drainage systems or generating sources of additional polluted runoff. Thus, the impact of operation of the Hawthorne Option relating to the addition of impervious surfaces in a manner which would exceed stormwater drainage system capacity or substantially add sources of polluted runoff would be **less than significant**.

3.10-4.6 Would the Proposed Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces in a manner which would impede or redirect flood flows?

3.10-4.6.1 Construction Impacts

Less than Significant Impact. Proposed Project construction would not result in substantial drainage pattern alteration such that flood flows are impeded or redirected. As described in Section 3.10-3.6, a very small portion of the Proposed Project temporary footprint near the Torrance TC is located within a 100-year flood zone, which would be for a temporary construction easement. Per PF-HWQ-8, City of Torrance Flood Zone Requirements, construction would comply with the City of Torrance's requirements for construction within flood hazard areas, which are designed to reduce potential run-ins with flood waters. Therefore, construction would not impede or redirect flood flows. Thus, construction of the Proposed Project would not result in substantial drainage pattern alteration which would impede or redirect flood flows. Therefore, the impact would be **less than significant**.

TRENCH OPTION

Less than Significant Impact. Trench Option construction would not result in substantial drainage pattern alteration such that flood flows are impeded or redirected. No portion of the Trench Option footprint (north of 190th Street) is located within an existing 100-year flood zone. Although trenches would run below grade, this lowered elevation in the Trench Option footprint would not create a new flood zone area since the footprint is not located near any existing flood zones or large drainage features. Therefore, impeding or redirecting flood flows is not anticipated to occur. Thus, construction of the Trench Option would not result in substantial drainage pattern alteration which would impede or redirect flood flows. Therefore, the impact would be **less than significant**.

HAWTHORNE OPTION

Less than Significant Impact. Hawthorne Option construction would not result in substantial drainage pattern alteration of flood flows are impeded or redirected. No portion of the Hawthorne Option footprint (north of 190th Street) is located within an existing 100-year flood zone. Further, major excavation for piles and foundations associated with the elevated segment of the alignment would not introduce new flood risk given the distance from existing flood zones and from large drainage features. Therefore, construction would not impede or redirect flood flows. Thus, construction of the Hawthorne Option would not result in substantial drainage pattern alteration which would impede or redirect flood flows. Therefore, the impact would be **less than significant**.

3.10-4.6.2 Operational Impacts

Less than Significant Impact. The Proposed Project would operate at approximately the same elevation or in certain locations elevated above the existing railroad and freight rights-of-way and would not exacerbate the existing flood risk or impede or redirect flood flows. Thus, operation of the Proposed Project would not result in substantial drainage pattern alteration which would impede or redirect flood flows. Therefore, the impact would be **less than significant**.

TRENCH OPTION

Less than Significant Impact. Trench Option operation would not result in substantial drainage pattern alteration of flood flows are impeded or redirected. No portion of the Trench Option north of 190th Street would be located within an existing 100-year flood zone. Although the trenched alignment would run below grade, the trench would not create a new flood zone given its distance from existing flood

zones and from large drainage features. Although runoff from the Trench Option footprint may be directed to different discharge points than existing points, runoff would not be directed into an existing flood zone. Thus, operation of the Trench Option would not result in substantial drainage pattern alteration which would impede or redirect flood flows. Therefore, the impact would be **less than significant**.

HAWTHORNE OPTION

Less than Significant Impact. Hawthorne Option operation would not result in substantial drainage pattern alteration of flood flows are impeded or redirected. As shown in Figure 3.10-2, no portion of the Hawthorne Option footprint falls within an existing 100-year flood zone. The new alignment would operate elevated above the existing roadway rights-of-way, and it would therefore not introduce a new flood risk. Thus, operation of the Hawthorne Option would not result in substantial drainage pattern alteration which would impede or redirect flood flows. Therefore, the impact would be **less than significant**.

3.10-4.7 Would the Project, in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

3.10-4.7.1 Construction Impacts

Less than Significant. Proposed Project construction would not risk release of pollutants due to project inundation in a flood hazard, tsunami, or seiche zone. As stated in Section 3.10-3.7, the RSA is outside of current seiche and tsunami potential inundation areas. As stated in Section 3.10-3.6 and Section 3.10-4.4.1, a very small portion of the Proposed Project temporary footprint is located within a 100-year flood zone, which would be for a temporary construction easement for the removal of an existing spur track. PF-HWQ-1 would ensure BMPs are in place to prevent the release of pollutants into surface waters during construction, including during a rare flooding event. Further, per PF-HWQ-8 construction would comply with the City of Torrance's requirements for construction within flood hazard areas, which are designed to reduce potential run-ins with flood waters. Therefore, Proposed Project construction would not risk the release of pollutants in flood hazard, tsunami, or seiche zones, and the impact would be **less than significant**.

TRENCH OPTION

Less than Significant. Trench Option construction would not risk release of pollutants due to project inundation in a flood hazard, tsunami, or seiche zone. No portions of the Trench Option footprint (north of 190th Street) are within a 100-year flood zone, or current seiche and tsunami potential inundation areas. Therefore, Trench Option construction would not risk the release of pollutants in flood hazard, tsunami, or seiche zones, and the impact would be l**ess than significant**.

HAWTHORNE OPTION

Less than Significant. Hawthorne Option construction would not risk release of pollutants due to project inundation in a flood hazard, tsunami, or seiche zone. No portions of the Hawthorne Option footprint (north of 190th Street) are within the 100-year flood zone or current seiche and tsunami potential inundation areas. Therefore, Hawthorne Option construction would not risk the release of pollutants in flood hazard, tsunami, or seiche zones, and the impact would be **less than significant**.

3.10-4.7.2 Operational Impacts

Less than Significant. Proposed Project operation would not risk release of pollutants due to project inundation in a flood hazard, tsunami, or seiche zone. No portions of the permanent footprint would be located within the 100-year flood zone. The new alignment would operate at approximately the same elevation or in certain locations elevated above the existing railroad and freight rights-of-way. Implementation of PF-HWQ-6 would retain the SWQDv via LID BMPs, thereby preventing the majority of any potentially polluted floodwaters from leaving the site. As stated in Section 3.10-3.7, the RSA is outside of current seiche and tsunami potential inundation areas. Therefore, operation of the Proposed Project would not risk the release of pollutants due to flood hazard, tsunami, or seiche zones, and the impact would be **less than significant**.

TRENCH OPTION

Less than Significant. Trench Option operation would not risk release of pollutants due to project inundation in a flood hazard, tsunami, or seiche zone. No portions of the Trench Option permanent footprint are within the 100-year flood zone or current seiche and tsunami potential inundation areas. Therefore, operation of the Trench Option would not risk the release of pollutants due to flood hazard, tsunami, or seiche zones, and the impact would be **less than significant**.

HAWTHORNE OPTION

Less than Significant. Hawthorne Option operation would not risk release of pollutants due to project inundation in a flood hazard, tsunami, or seiche zone. No portions of the Hawthorne Option permanent footprint are within the 100-year flood zone or current seiche and tsunami potential inundation areas. Therefore, operation of the Hawthorne Option would not risk the release of pollutants due to flood hazard, tsunami, or seiche zones, and the impact would be **less than significant**.

3.10-4.8 Would the Proposed Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

3.10-4.8.1 Construction Impacts

Less than Significant. Proposed Project construction would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. As stated in Section 3.10-1.2, a groundwater sustainability plan has not been developed for the West Coast Subbasin of the Coastal Plain of the Los Angeles Groundwater Basin, as it is considered a “very low priority” by the State. Therefore, Proposed Project construction would not conflict with a sustainable groundwater management plan. As stated in Section 3.10-1.3, the RWQCB Basin Plan (e.g., water quality control plan) pertinent to the RSA includes beneficial uses, water quality objectives, and waste discharge requirements designed to protect surface water and groundwater quality within the region. Measures would be taken during construction to reduce impacts to surface water and groundwater quality as described in Section 3.10-4.1.1, including PF-HWQ-1, as well as PF-HWQ-2. Therefore, construction of the Proposed Project would not conflict with implementation of the Basin Plan, and the impact would be **less than significant**.

TRENCH OPTION

Less than Significant. Trench Option construction would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. A groundwater sustainability plan has not been developed for the groundwater basin. Implementation of PF-HWQ-1, as well as PF-HWQ-2, would reduce impacts to surface water and groundwater quality and help ensure compliance

with beneficial uses and water quality objectives for surface water and groundwater within the region. Therefore, construction of the Trench Option would not conflict with implementation of the Basin Plan, and the impact would be **less than significant**.

HAWTHORNE OPTION

Less than Significant. Hawthorne Option construction would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. A groundwater sustainability plan has not been developed for the groundwater basin. Implementation of PF-HWQ-1, as well as PF-HWQ-2, would reduce impacts to surface water and groundwater quality and help ensure compliance with beneficial uses and water quality objectives for surface water and groundwater within the region. Therefore, construction of the Hawthorne Option would not conflict with implementation of the Basin Plan, and the impact would be **less than significant**.

3.10-4.8.2 Operational Impacts

Less than Significant. As stated in Section 3.10-4.8.1, a groundwater sustainability plan has not been developed for the West Coast Subbasin of the Coastal Plain of the Los Angeles Groundwater Basin; therefore, Proposed Project operation would not conflict with a sustainable groundwater management plan. Measures would be taken during operation to reduce impacts to surface water and groundwater quality, including retaining potentially polluted runoff included in the SWQDv on site as described in PF-HWQ-6. This would reduce impacts to surface water and groundwater quality and help ensure compliance with beneficial uses and water quality objectives for surface water and groundwater within the region. Therefore, operation of the Proposed Project would not conflict with implementation of the Basin Plan, and the impact would be **less than significant**.

TRENCH OPTION

Less than Significant. A groundwater sustainability plan has not been developed for the groundwater basin. Implementation of PF-HWQ-6 would include retaining potentially polluted runoff included in the SWQDv on site. This would reduce impacts to surface water and groundwater quality and help ensure compliance with beneficial uses and water quality objectives for surface water and groundwater within the region. Therefore, operation of the Trench Option would not conflict with implementation of the Basin Plan, and the impact would be **less than significant**.

HAWTHORNE OPTION

Less than Significant. A groundwater sustainability plan has not been developed for the groundwater basin. Implementation of PF-HWQ-6 would include retaining potentially polluted runoff included in the SWQDv on site. This would reduce impacts to surface water and groundwater quality and help ensure compliance with beneficial uses and water quality objectives for surface water and groundwater within the region. Therefore, operation of the Hawthorne Option would not conflict with implementation of the Basin Plan, and the impact would be **less than significant**.

3.10-5 Mitigation Measures

No mitigation measures are required, as there are no significant impacts on hydrology and water quality.

3.10-6 Project Impacts Remaining After Mitigation

As stated in Section 3.10-5, no mitigation measures are required to reduce construction and operation impacts to a level below significance.

3.10-7 Cumulative Impacts

The methodology for cumulative analysis and a description of the relevant projects and projections are included in Section 3.0, Introduction. The geographic scope for the hydrology and water quality cumulative impact analysis is the Los Angeles County storm drainage system serving the RSAs, as well as the Santa Monica Bay and Dominguez Channel watersheds. All probable future projects described in the project list in Section 3.0, Introduction fall within the scope of the cumulative analysis.

3.10-7.1 Proposed Project

Water Quality

The Proposed Project is located in the Santa Monica Bay and Dominguez Channel watersheds, which currently are both impaired from development in the region. Additionally, development has resulted in limited availability of water resources, due to the use of groundwater for municipal water supplies and existing pollutant loads of surface water sources. The Proposed Project, as well as past, present, and probable future projects, could contribute to this existing cumulative impact.

Proposed Project construction has the potential to further introduce chemicals and/or hazardous substances as well as sediment into surface waters and groundwaters. There is also the potential to degrade surface water quality via dewatering of groundwater. However, multiple project features would be implemented as a part of the Proposed Project that would protect water quality and ensure appropriate treatment and discharge of contaminated water. The Proposed Project would have a less than significant impact to water quality during construction. Construction of probable future projects would also be required to comply with the same regulations and permits as the Proposed Project. Therefore, the Proposed Project's incremental contribution to cumulatively significant impacts during construction would not be cumulatively considerable.

Proposed Project operation could impact water quality via sedimentation caused by runoff from newly added impervious surfaces; nitrates from landscape fertilizing; and trash, debris, and bacteria from human presence. BMPs would be implemented, which would reduce the potential for degraded surface water quality to degrade groundwater quality. The Proposed Project would have a less than significant impact to water quality during operation. Probable future projects would also be required to comply with the same regulations and permits and local ordinances to protect water quality. Therefore, the Proposed Project's incremental contribution to cumulatively significant impacts during operation would not be cumulatively considerable.

Groundwater Recharge and Groundwater Supplies

Development in the region has resulted in limited availability of water resources, due to the use of groundwater for municipal water supplies and existing pollutant loads of surface water sources. The Proposed Project, as well as past, present, and probable future projects could contribute to the existing cumulative impact.

Construction of the Proposed Project would require water for activities like dust control and concrete mixing, which would be sourced from local utility lines that may depend on groundwater for a portion of their water supply. However, the water needed for construction would be minimal, and would not substantially decrease groundwater supplies. All dewatered groundwater would be discharged in a pre-approved location specified by the RWQCB Waste Discharge Requirements for Construction Dewatering. Dewatered groundwater would likely be discharged within or close to the RSA, thereby recharging the subbasin. The Proposed Project would have a less than significant impact to groundwater during construction. Water for construction of probable future projects would likely be sourced from the same

local utility lines, but the demand would also be minimal. Therefore, the Proposed Project's incremental contribution to cumulatively significant impacts during construction would not be cumulatively considerable.

Proposed Project operation would involve minimal water usage for activities like routine cleaning, which would not substantially decrease groundwater supplies. PF-HWQ-6 would also be implemented, which would ensure retainment of the SWQDv, and there would be a less than significant impact to groundwater during operation. Probable future roadway improvement projects within the RSA would also have minimal water demand during operations. Future development projects could increase imperious surfaces in the area such that pervious capable of groundwater recharge would be reduced. However, the project area is already highly developed, and increases to existing impervious surfaces would be minimal. Further, all projects would be subject to the same regional LID requirements. Therefore, the Proposed Project's incremental contribution to cumulatively significant impacts during operation would not be cumulatively considerable.

Alteration of Drainage Patterns

Proposed Project construction would not result in substantial drainage pattern alteration such that erosion or siltation, flooding, stormwater drainage system exceedance, additional polluted runoff, or impediment of flood flows would occur. Various BMPs would be implemented per PF-HWQ-1, in compliance with the Construction General Permit requirements, which would help directly prevent erosion and siltation (e.g., sedimentation), as well as reduce stormwater runoff velocity, thereby limiting potential for erosion, siltation, flooding, stormwater drainage capacity exceedance, or additional polluted runoff generation on or offsite. The probable future projects described in Section 3.0, Introduction would also be required to comply with the same regulations and local ordinances, at a minimum. Since related projects primarily involve improvements to existing roadways, construction drainage pattern impacts would also likely be minor. Future development projects would occur in areas that are already developed, and there would be no major increases in impervious surfaces or major waterway alterations. None of the related projects (listed in Section 3.0, Introduction) are located within or adjacent to an existing flood zone. Therefore, the Proposed Project, in combination with past, present and probable future projects would not result in a significant cumulative impact related to substantial drainage pattern alterations during construction.

Proposed Project operation would not result in substantial drainage pattern alteration such that erosion or siltation, flooding, stormwater drainage system exceedance, or additional polluted runoff occurs. There would be an increase in impervious surfaces, which has the potential to result in erosion of soils and sedimentation of surface waters, but the SWQDv would be retained on site per PF-HWQ-6. Most of the related projects involve improvements to existing developed roadways and probable future development projects would also be subject to regional LID requirements, so permanent significant drainage pattern alteration is not likely. Therefore, the Proposed Project, in combination with past, present and probable future projects would not result in a significant cumulative impact related to substantial drainage pattern alterations during operation.

Release of Pollutants in Flood Zones, Tsunami Zones, or Seiche Zones

Proposed Project construction would not risk release of pollutants due to project inundation in a flood hazard, tsunami, or seiche zone. The Proposed Project RSA is outside of current seiche and tsunami potential inundation areas. A very small portion of the Proposed Project temporary footprint overlaps with the 100-year flood zone, which is an area that would be used during construction to remove a spur track. However, per PF-HWQ-8, construction would comply with the City of Torrance's requirements for

construction within flood hazard areas, which are designed to reduce potential run-ins with flood waters. PF-HWQ-1 would ensure BMPs are in place to prevent the release of pollutants into surface waters during construction, including during a rare flooding event. None of the projects considered in the cumulative analysis (listed in Section 3.0, Introduction) are located within or adjacent to an existing flood zone or current seiche or tsunami area. Therefore, the Proposed Project, in combination with past, present and probable future projects, would not result in a significant cumulative impact related to flooding during construction or operation.

Conflicts with a Water Quality Plan

Proposed Project construction would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. A groundwater sustainability plan has not been developed for the groundwater basin. Construction of the Proposed Project would be required to comply with beneficial uses, water quality objectives, and waste discharge requirements detailed in the RWQCB Basin Plan. Compliance would be achieved via implementation of PF-HWQ-1 and PF-HWQ-2., and there would be a less than significant impact. The projects identified in Section 3.0, Introduction would be required to comply with the same regulations and local ordinances, at a minimum. Therefore, the Proposed Project, in combination with past, present and probable future projects, would not result in a significant cumulative impact related to conflicts with a water quality plan during construction or operation.

3.10-7.2 Trench Option

During construction, the Trench Option would require more excavation and ground dewatering, as well as a slightly higher water demand, compared to the Proposed Project. During operation, the Trench Option may have a greater potential to degrade water quality than the Proposed Project as a result of collecting runoff within the trench. It would have a greater permanent increase in impervious surfaces than the Proposed Project, and a greater potential to reduce groundwater recharge and supplies. Therefore, the Trench Option would have a higher potential to contribute to cumulative impacts related to water quality and groundwater during construction and operation. However, multiple project features would be implemented as a part of the Trench Option, such as implementation of a SWPPP and BMPs, which would reduce surface water and groundwater quality impacts. Trench Option construction water demand would be minimal and temporary. Therefore, the Trench Option's incremental contribution to cumulatively significant impacts related to water quality and groundwater would not be cumulatively considerable.

The Trench Option would have a slightly higher potential for impacts to drainage patterns, compared to the Proposed Project. Construction would require more excavation, and the Trench Option would have a greater permanent increase in impervious areas. However, multiple project features would be implemented, which would reduce impacts to drainage patterns, and the impact would be less than significant. The Trench Option would have similar potential for impacts as the Proposed Project related to floods, tsunamis, and seiches, and conflicts with a water quality plan. Therefore, the Trench Option, in combination with past, present and probable future projects, would not result in a significant cumulative impact related to alterations of drainage patterns, floods, or conflicts with a water quality plan.

3.10-7.3 Hawthorne Option

During construction, the Hawthorne Option would require deeper excavation and potential ground dewatering, as well as a slightly higher water demand, compared to the Proposed Project. It would have

a greater permanent increase in impervious surfaces than the Proposed Project, and a greater potential to reduce groundwater recharge and supplies. Therefore, the Hawthorne Option would have a higher potential for cumulative impacts related to water quality and groundwater during construction and operation. However, multiple project features would be implemented as a part of the Hawthorne Option, such as implementation of a SWPPP and BMPs, which would reduce surface water and groundwater quality impacts. Hawthorne Option construction water demand would be minimal and temporary. Therefore, the Hawthorne Option's incremental contribution to cumulatively significant impacts related to water quality and groundwater would not be cumulatively considerable.

The Hawthorne Option would have a slightly higher potential for impacts to drainage patterns, compared to the Proposed Project. Construction would require deeper excavation, and the Hawthorne Option would have a greater permanent increase in impervious areas. However, multiple project features would be implemented, which would reduce impacts to drainage patterns, and the impact would be less than significant. The Hawthorne Option would have similar potential for impacts as the Proposed Project related to floods, tsunamis, and seiches, and conflicts with a water quality plan. Therefore, the Hawthorne Option, in combination with past, present and probable future projects, would not result in a significant cumulative impact related to drainage patterns, floods, or conflicts with a water quality plan.

3.11 UTILITIES AND SERVICE SYSTEMS

This section of the Draft EIR provides an analysis of the potential impacts on utilities and service systems.

3.11-1 Regulatory Framework

Federal, state, regional, and local regulations concerning utilities and service systems are described in the following section.

3.11-1.1 Federal Regulations

Federal Power Act of 1935

The Federal Power Act of 1935 created the Federal Power Commission, now the Federal Energy Regulatory Commission (FERC). The FERC is an independent agency that, under Parts II and III of the Act, regulates the transmission and sale of natural gas for resale in interstate commerce, the transmission of oil by pipeline in interstate commerce, and the transmission and wholesale sale of electricity in interstate commerce. The FERC also licenses and inspects private, municipal, and state hydroelectric projects; approves the siting and abandonment of interstate natural gas facilities, including pipelines, storage, and liquefied natural gas; oversees environmental matters related to natural gas and hydroelectricity projects and major electricity policy initiatives; and administers accounting and the financial reporting regulations and conduct of regulated companies.

The Energy Policy Act of 2005 amended the Federal Power Act to extend FERC's jurisdiction to certain power plant sales as well as the reliability of electric service. Other significant amendments to the Act include the Public Utility Regulatory Policies Act of 1978; the Energy Security Act of 1980; the Electric Consumers Protection Act of 1986; the Energy Policy Act of 1992; and America's Water Infrastructure Act of 2018.

Federal Water Pollution Control Act of 1948; Clean Water Act of 1972

In 1972, the Clean Water Act (CWA) was amended to provide that the discharge of pollutants to waters of the United States from any point (such as discharge from an industrial facility) or non-point (surface and farmland water runoff) source is unlawful unless the discharge is in compliance with a National Pollution Discharge Elimination System (NPDES) permit.

The CWA was enacted with the primary purpose of restoring and maintaining the chemical, physical, and biological integrity of the nation’s waters. The CWA also directs states to establish water quality standards for all “waters of the United States” and to review and update such standards on a triennial basis. Section 319 of the CWA mandates specific actions for the control of pollution from non-point sources. The United States Environmental Protection Agency (USEPA) has delegated responsibility for implementation of portions of the CWA to the State Water Resources Control Board and the Regional Water Quality Control Board (RWQCB) and water quality control planning and control programs, such as the NPDES Program. Section 303(c)(2)(b) of the CWA requires states to adopt water quality standards for all surface waters of the United States based on the water body’s designated beneficial use. Where multiple uses exist, water quality standards must protect the most sensitive use. Water quality standards are typically numeric, although narrative criteria based upon biomonitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards.

Safe Drinking Water Act of 1996

The Safe Drinking Water Act (SDWA) is the principal federal law in the United States intended to ensure safe drinking water for the public. It was first enacted in 1974 and amended in 1986 and in 1996. Pursuant to the Act, the USEPA is required to set standards for drinking water quality and oversee all states, localities, and water suppliers that implement the standards. The SDWA applies to every public water system in the United States. The SDWA requires the USEPA to establish National Primary Drinking Water Regulations for contaminants that may cause adverse public health effects. The regulations include both mandatory requirements (Maximum Contaminant Levels and Treatment Techniques) and non-enforceable health goals (Maximum Contaminant Level Goals) for each included contaminant.

Communications Act of 1934

The Communications Act of 1934 replaced the Federal Radio Commission with the Federal Communications Commission (FCC). It also transferred regulation of interstate telephone services from the Interstate Commerce Commission to the FCC. The FCC regulates interstate and international communications by radio, television, wire, satellite, and cable in all 50 states, the District of Columbia, and United States territories. An independent United States government agency overseen by Congress, the commission is the United States' primary authority for communications law, regulation, and technological innovation. The FCC's rules and regulations are in Title 47 of the Code of Federal Regulations (CFR), which are published and maintained by the Government Printing Office.

3.11-1.2 State and Regional Regulations

California Public Utilities Commission

The California Public Utilities Commission (CPUC) was founded by the California Constitution in 1911 and is listed in the California Code of Regulations. The CPUC regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies, in addition to authorizing video franchises (CPUC, 2022a). There are five Governor-appointed Commissioners, as well as staff, who are dedicated to ensuring that consumers have safe, reliable utility service at reasonable rates, protecting against fraud, and promoting the health of California's economy. Generally, the CPUC has authority over and is responsible for maintaining utilities under the following General Orders:

- General Order 28 (1912): Preservation of records of public utilities and common carriers
- General Order 52 (1918): Power and communication lines for the prevention or mitigation of inductive interference
- General Order 58-A (2016): Standards for gas service
- General Order 69-C (1985): Easements on property of public easements
- General Order 95 (2018): Overhead electric line construction
- General Order 103-A (2009): Water service including minimum standards for design and construction
- General Order 112-F (2016): Design, construction, testing, maintenance, and operation of utility gas gathering, transmission, and distribution piping systems
- General Order 131-D (1995): Planning and construction of facilities for the generation of electricity and certain electric transmission facilities
- General Order 133-D (2017): Rules Governing Telecommunications Services

- General Order 159-A (1996): Construction of cellular radiotelephone facilities in California
- General Order 166 (2017): Inspection cycles for electric distribution facilities
- General Order 174 (2012): Rules for Electric Utility Substations

California Code of Regulations

The legal code of the State of California is maintained by the California Office of Administrative Law and includes authoritative sections regarding public utilities in Title 20 (Public Utilities and Energy), Division 1 (Public Utilities Commission). Additionally, the California Health and Safety Code and the California Water Code contain information regarding sanitary and water utilities.

Senate Bill 1332

Senate Bill (SB) 1332, also known as the California Integrated Waste Management Act of 1989, requires cities and counties to prepare an Integrated Waste Management Plan, including a Countywide Siting Element, for each jurisdiction. Per Public Resources Code §§ 41700–41721.5, the Countywide Siting Element provides an estimate of the total permitted disposal capacity needed for a 15-year period, or whenever additional capacity is necessary. The Countywide Siting Element must be updated by each operator and permitted by the California Department of Resources, Recycling, and Recovery, which is within the Natural Resources Agency, every five years.

Urban Water Management Planning Act

In 1983, the California Legislature enacted the Urban Water Management Planning Act (Water Code, Section 10610 *et seq.*), which requires urban water suppliers to develop water management plans to actively pursue the efficient use of available supplies. Every five years, water suppliers are required to develop Urban Water Management Plans (UWMP) to identify short-term and long-term water demand management measures to meet growing water demands. The applicable urban water supplier required to develop an UWMP is the West Basin Municipal Water District (West Basin). See below for information about the West Basin UWMP.

2020 West Basin Urban Water Management Plan

The West Basin Board of Directors adopted the West Basin UWMP on June 28, 2021 (West Basin, 2020). The UWMP reports all current and projected water supplies and demands within West Basin's service area, demonstrates water reliability for the next 25 years and provides a comprehensive overview of West Basin's various programs.

Senate Bill 63

On July 28, 2009, SB 63 was approved and filed, allowing the abolishment of the California Integrated Waste Management Board and transfer of its duties and responsibilities to a new department called the Department of Resources Recycling and Recovery (CalRecycle). This legislation was passed in order to combine the state's solid waste and recycling programs which went into effect on January 1, 2010.

Metro's Water Use and Conservation Policy

The goal of Metro's Water Use and Conservation policy is to conserve the use of potable water resources at its facilities in the most cost-effective and efficient manner (Metro, 2009). The policy asserts that the use of water for construction, operations and maintenance purposes must be consistent with local, state, or federal water conservation measures and that in instances where it is necessary to protect public safety, human health, and the environment, Metro may deviate from water conservation

measures. In addition, Metro is committed to use drought-tolerant plants for landscaping to the maximum extent practical.

Metro's Water Action Plan

Metro's Water Action Plan provides strategies for water conservation as recommendations and cost-benefit analyses of those recommended actions for Metro's consideration to reduce water consumption, and recommends next steps for the refinement, implementation, and ongoing optimization of the Plan and its associated strategies for conservation (Metro, 2010). The intent of this Plan is to determine the potential for water conservation opportunities and cost-saving measures consistent with Metro's environmental policies and its future implementation of an Environmental Management System. The Plan will inform other Metro projects as part of the overall sustainability program for water use to be strategically aligned with other resource elements (e.g., fuel use, greenhouse gas emissions, etc.).

Assembly Bill 939

Assembly Bill (AB) 939 requires every city and county to divert 50% of its waste from landfills through such means as recycling, source reduction, and composting. In addition, AB 939 requires each county to prepare a countywide siting element for a 15-year period, specifying areas for transformation or disposal sites to provide capacity for solid waste generated in the county that cannot be reduced or recycled. AB 939 requires that a Solid Waste Diversion Program be implemented and the diversion of at least 50% of the solid waste generated during construction and operations activities from landfills to recycling facilities.

Assembly Bill 1327

AB 1327, or the California Solid Waste and Reuse and Recycling Act, directed the California Integrated Waste Management Board to approve of a model ordinance for local agencies to adopt mandating the use of recyclable materials in development projects.

CALGreen Building Code

California Green Building Standards (CALGreen) is Part 11, Title 24 of the California Building Code. CALGreen establishes green building standards in an effort to meet the goals of AB 32, which established a program to reduce the State's greenhouse gases to 1990 levels by 2020. CALGreen requires projects to recycle and/or salvage for reuse a minimum 65% of the nonhazardous construction and demolition waste or meet a local construction and demolition waste management ordinance, whichever is more stringent.

Los Angeles Regional Water Quality Control Board Basin Plan

Region specific water quality regulations are contained in Water Quality Control Plans (Basin Plans). The Los Angeles Region Water Quality Control Board's (LARWQCB) Basin Plan has jurisdiction over the coastal drainages between western Ventura County and the eastern Los Angeles County Boundary and is the applicable Basin Plan for the Proposed Project. The following wastewater policies applicable to the Proposed Project are listed in the Los Angeles Region Basin Plan:

> Efficient wastewater management is dependent upon a balanced program of source control of environmentally hazardous substances, treatment of wastewaters, reuse of reclaimed water, and proper disposal of effluent and residuals;

> Wastewater reclamation and reuse systems that ensure maximum benefit from available freshwater resources shall be encouraged. Reclamation systems must be an appropriate integral part of the long-range solution to the water resources needs of an area and incorporate provisions for salinity control and disposal of non-reclaimable residues;

> Beneficial use will be made of wastewaters that would otherwise be discharged to marine or brackish receiving waters or evaporation ponds.

3.11-1.3 Local Regulations

City of Lawndale

The Conservation Element of the City of Lawndale General Plan contains goals and policies that focus on utilities, and service systems described in Table 3.11-1 below.

Table 3.11-1. City of Lawndale – Relevant Regulations

Code/Goal/Policy	Description
City of Lawndale General Plan Conservation Element	
Goal 1	Conserve water resources in the City through retention of the existing drainage system, the protection of limited groundwater resources, and domestic water conservation measures.
Policy 1a	New construction and development shall conserve water through conservation techniques relating to water usage and waste.
Policy 1g	Examine and initiate where appropriate and feasible, the use of alternative water conservation systems, such as greywater and reclaimed water usage.
Policy 1h	Provide additional storm drainage facilities, and improve existing deficient facilities, where necessary as determined by the Los Angeles County Department of Wastewater Management and/or the City of Lawndale.
Goal 5	Promote source reduction as well as the safe and efficient transportation and disposal of the City's municipal solid waste.
Policy 5a	Prepare, adopt, and implement an Integrated Solid Waste Management Plan which includes a Source Reduction and Recycling Element per the provisions of Chapter 2 and commencing with Chapter 6 of the California Integrated Waste Management Act of 1989, AB 939.

Source: City of Lawndale, 1992f

City of Redondo Beach General Plan

The Utilities and Solid Waste Management and Recycling Elements of the City of Redondo Beach General Plan contain goals and policies that focus on utilities and service systems, described in Table 3.11-2 below.

Table 3.11-2. City of Redondo Beach – Relevant Regulations

Code/Goal/Policy	Description
City of Redondo Beach General Plan Utilities Element	
Goal 6a	Conserve water Establish and maintain adequate planning, construction, maintenance, and funding for sanitary sewer collection and treatment facilities to support and serve the various land uses and intensities of development in the city and protect public health and safety; upgrading existing deficient systems, and expanding the system, where necessary. The services shall be provided and systems operate in an ecologically-sensitive manner.es in the City through retention of the

Code/Goal/Policy	Description
	existing drainage system, the protection of limited groundwater resources, and domestic water conservation measures.
Policy 6.1.2	Provide for the adequate operation and maintenance of existing sanitary sewer collection and treatment facilities serving the city.
Policy 6.1.4	Provide for the construction of upgraded and expanded sanitary sewer and treatment improvements to adequately support new and existing development throughout the city.
Policy 6.1.5	Require that the approval of new development in the city be contingent upon the ability of the project to be served with adequate sanitary sewer infrastructure and service.
Goal 6c	Ensure adequate planning, maintenance, and operation of a modern, safe, and effective system of supply, distribution, transmission, and storage of water to meet the needs of the community; encouraging the upgrading of existing deficient systems and expansion, where necessary, in the city. The services shall be provided and system operated in an ecologically-sensitive manner.
Policy 6.3.1	Ensure the provision of adequate water supply, transmission, distribution, and storage, throughout the city to serve the community's residential, industrial, commercial, and recreational needs.
Policy 6.3.2	Ensure the provision and construction of upgraded and expanded water supply, transmission, distribution, and storage facilities throughout the city to support existing and future development.
Policy 6.3.3	Ensure the maintenance and replacement of existing water supply, transmission, distribution, and storage facilities, as necessary to adequately serve the city's water needs.
Policy 6.3.4	Require that the approval of new development in the city be contingent upon the ability of the project to be served with adequate water infrastructure and service.
Policy 6.3.14	Require that large scale development projects evaluate the feasibility and where feasible incorporate gray water re-capture, storage, and distribution systems.
Goal 6d	Provide an adequate, safe, and orderly supply of electrical energy to support various existing and future land uses and development intensities in the city. The services shall be provided and system operated in an ecologically-sensitive manner.
Policy 6.4.1	Improve and enhance cooperation and communication with the Southern California Edison Company (or any future purveyors of electricity to the city) to promote effective planning and maintenance of the city's electricity supply system and facilities.
Policy 6.4.2	Require that the approval of new development in the city be contingent upon the ability of the project to be served with adequate electrical infrastructure and service.
Policy 6e	Provide an adequate, safe, and orderly supply of natural gas to support the various existing and future land uses and development intensities in the city. The services shall be provided and system operated in an ecologically-sensitive manner.
Policy 6.5.2	Require that the approval of new development in the city to be served by natural gas be contingent upon the ability of the project to be served with adequate natural gas infrastructure and service.
Policy 6.5.4	Work with the Southern California Gas Company to develop a program for the future protection and conservation of natural gas resources, as supplies warrant into the future.
Goal 6f	Ensure the availability, operation, and maintenance of an adequate, modern telecommunications system (i.e., telephone, facsimile, cellular telephone, cable

Code/Goal/Policy	Description
	television, and satellite television/communication) to support the needs of existing and future land uses and development intensities in the city.
Policy 6.6.1	Provide for the continued development, expansion, and modernization of the telecommunications systems (i.e., telephone, facsimile, cellular telephone, cable television, and satellite television/communication) [including fiber optics systems] as feasible, to ensure and enhance communication between entities in the City.
City of Redondo Beach General Plan Solid Waste Management and Recycling Element	
Goal 7a	Promote, develop, and maintain a comprehensive plan and strategy to manage the City's solid waste collection, transportation, and management in an efficient and environmentally-sensitive manner, and in accordance with all applicable state laws.
Policy 7.1.3	The City of Redondo Beach (principally through the Department of Public Works) shall continue to encourage, support, and monitor the efforts and activities of the City's Environmental and Utilities Commission relative to solid waste removal and management and the creation and adoption of a comprehensive solid waste management plan. This body was appointed by the City Council to develop, adopt, and implement the City of Redondo Beach Solid Waste Management Plan, as mandated by the State Legislature in AB 939.

Source: City of Redondo Beach, 1993g; 1993h

City of Torrance

The Circulation and Infrastructure and Community Resources Elements of the City of Torrance General Plan contain objectives and policies that focus on utilities and service systems described in Table 3.11-3:

Table 3.11-3. City of Torrance – Relevant Regulations

Code/Goal/Policy	Description
City of Torrance General Plan Circulation and Infrastructure Element	
Objective CI.9	Infrastructure systems that support current and future development.
Policy CI.9.1	Require that developers, prior to issuance of building permits, demonstrate that adequate infrastructure exists or will be provided to serve proposed development and not diminish services to existing uses.
Policy CI.9.4	Require that new development to assume the full fair-share costs of construction and expansion of water, sewer, and storm drain system improvements necessitated by that development.
City of Torrance General Plan Community Resources Element	
Objective CR.23	To continue to reduce the percent of the overall waste stream that enters regional landfills.
Policy CR.23.4	Establish a construction waste recycling program that mandates the recycling of a high percentage of construction and demolition waste.
Objective CR.24	To encourage and promote green building methods and practices within Torrance.
Policy CR.2.1	Encourage sustainable construction practices and the use of energy-saving technology. Consider establishing a green building program that draws from the LEED (Leadership in Energy & Environmental Design) standards.

Source: City of Torrance, 2010b; 2010c

3.11-2 Methodology

Section 3.11-4 addresses the potential for significant utilities and service systems impacts of the Proposed Project based on an analysis of the utilities and service systems described in Section 3.11-3, including water, wastewater treatment, stormwater drainage, solid waste, electrical power, natural gas, and telecommunications facilities. The analysis evaluates the potential construction and operational impacts of the Proposed Project and the Trench and Hawthorne Options on the utilities and service systems in the resource study area (RSA).

The analysis identifies utilities and service systems whose services could be impacted by the Proposed Project. As discussed below in Section 3.11-2.2, the RSAs include the utilities and service systems which service the jurisdictions of the Cities of Lawndale, Redondo Beach, and Torrance. Utilities within these jurisdictions were identified and geolocated using ArcGIS. An assessment for each type of utilities and service system was conducted based on the Proposed Project's potential to require the relocation or construction of utilities and service systems facilities. The assessment analyzed the potential for impacts based on factors related to utility usage demand, including the potential for water supply provision in the foreseeable future, the potential for project demand to exceed existing utility provider commitments and capacity and the potential for compliance with regulations regarding solid waste.

3.11-2.1 Determination of Impacts to Utilities and Service Systems

The following sections describe the methodology used to determine impacts to utilities and service systems. Although the Trench and Hawthorne Options are defined as the segment from the Redondo Beach (Marine) Station to 190th Street (see Chapter 2, Project Description), many utilities are linear and extend far beyond the option segment boundaries. Therefore, the analysis of the options was conducted "end-to-end" (from the Redondo Beach (Marine) Station to Torrance Transit Center [TC]).

Water Facilities

To determine impacts to water service utility providers, the estimated annual water consumption for the Proposed Project is analyzed in the context of the West Basin's projected future water supply and demand as displayed in Table 3.11-5 and Table 3.11-6. The Proposed Project would have a significant impact if water consumption would increase the demand for water in excess of future water supply, resulting in the water provider being unable to adequately serve the Proposed Project water demand in future years.

Wastewater

Impacts to wastewater are determined by estimating the annual wastewater discharge from the Proposed Project as a share of the Joint Water Pollution Control Plant (JWPCP) wastewater processing capacity and demand. JWPCP is the applicable wastewater treatment provider servicing the Proposed Project. Wastewater discharge from the Proposed Project would have a significant impact if JWPCP would have insufficient capacity to serve the Proposed Project's demand in addition to JWCP's existing commitments.

Stormwater

Impacts to stormwater drainage systems are addressed qualitatively based on the Proposed Project potential to increase the amount of stormwater runoff.

Electricity

Southern California Edison (SCE) would be the electrical power provider to the Proposed Project. The Proposed Project's estimated electricity consumption during construction and operations is analyzed as a share of annual electricity consumption by all Metro facilities as well as the total electrical power consumed in the service area. The Proposed Project would have a significant impact related to electrical power if its electricity consumption would require or result in the relocation or construction of new or expanded electrical power facilities, the construction or relocation of which could cause significant environmental effects.

Natural Gas

The Southern California Gas Company (SoCal Gas) would service natural gas to the Proposed Project. The Proposed Project would have a significant impact related to natural gas if its demand for natural gas would necessitate the construction of new or expanded natural gas facilities, the construction or relocation of which could cause significant environmental effects.

Solid Waste

The Proposed Project's estimated solid waste production during construction and operations is analyzed as a share of the annual solid waste disposal tonnage by the jurisdictions of the Cities of Lawndale, Redondo Beach, and Torrance as shown in Table 3.11-10. Solid waste is analyzed in the context of the future capacity of landfills to adequately serve the Proposed Project's projected demand in addition to the providers' existing commitments.

Telecommunications

Impacts to telecommunications services are assessed by determining whether the Proposed Project demand for telecommunication services would require the relocation or construction of new or expanded telecommunication facilities, the construction of which could cause significant environmental effect.

3.11-2.2 Resource Study Area

The RSA for utilities is the service area of the utilities and service systems servicing the jurisdictions through which the Proposed Project traverses in the Cities of Lawndale, Redondo Beach, and Torrance.

For water facilities, the RSA encompasses the service area of the West Basin, and the City of Torrance. These entities purchase their water supply from the Metropolitan Water District of Southern California, which services numerous jurisdictions in the Southern California Region (MWD, 2022b).

For wastewater and stormwater, the RSA includes the storm drainage system maintained and operated by the Los Angeles County Flood Control District (LACFCD) and the public works departments for the Cities of Lawndale, Redondo Beach, and Torrance (LACDPW, 2022a).

The RSA for electrical power generation is the SCE service area, which encompasses an area of 50,000 square miles, including 15 million people, 15 counties, and 180 incorporated cities, including the Cities of Lawndale, Redondo Beach, and Torrance (SCE, 2022b).

Regarding natural gas, the RSA includes the service area for SoCal Gas, which is the primary provider of natural gas to the Southern California region, servicing over 21.8 million customers throughout Central and Southern California (SoCalGas, 2022).

Regarding solid waste, the RSA encompasses the service areas of the municipal waste management services provided to the Cities of Lawndale, Redondo Beach, and Torrance. The RSA includes multiple landfill and hazardous waste disposal facilities which service Los Angeles County.

The telecommunication services RSA includes the Cities of Lawndale, Redondo Beach, and Torrance, which are serviced by private telecommunications networks (CPUC, 2022b).

3.11-2.3 Significance Thresholds

Based upon the thresholds of significance contained in Appendix G of the CEQA Guidelines, implementation of the Proposed Project would result in a significant impact if the Proposed Project would:

a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.

b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years.

c. 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.

d. Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.

e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

3.11-2.4 Project Features

As described in Chapter 2, Project Description, a number of features have been incorporated into the project to ensure compliance with the laws, guidelines, or best practices of federal, state, local, and regional agencies. The following project features have been developed for utilities and service systems.

PF-US-1. Utility Identification and Coordination

Per Metro standard practice, prior to the start of any demolition or construction activities, the construction contractor will verify the locations of existing utilities potentially affected by construction activities. This will include coordinating with all existing utility providers for wet and dry utilities (water, sewer, gas, electric, and telecommunications) to obtain documentation of existing utility locations. Field verification (i.e., potholing and other methods as appropriate) shall be conducted to document the locations of all utilities within proximity to the guideway and station foundations of the guideway and station foundations, and other project elements that may affect utilities. Based on the information from the field investigations, the construction contractor will be responsible for coordinating with the appropriate utility owners/operators to determine specific setback requirements for each utility line and the need for any stabilization for protection in place or relocation measures.

PF-US-2. Service Interruption Notification

Per Metro standard practice, prior to the start of any demolition or construction activities, the construction contractor will be responsible for coordinating with utility and service providers regarding potential utilities service interruptions due to relocation of existing utilities. The construction contractor

will develop a construction plan in coordination with utilities and service providers to minimize interruptions of utilities systems to the greatest extent feasible, including providing temporary connection for services that must be disconnected for extended periods of time. Further, the construction contractor will develop a contingency plan in cooperation with the utility providers for emergency repairs of any utilities unexpectedly found or that disintegrated because of age during excavations. The public would be notified of areas where temporary utilities service interruptions are anticipated.

3.11-3 Affected Environment / Existing Conditions

3.11-3.1 Water Facilities

West Basin Municipal Water District

The Metropolitan Water District of Southern California (MWD) is a regional wholesaler that provides water for 26-member public agencies in Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. The MWD imports water from the Colorado River and Northern California to supplement local supplies, and helps its member agencies develop increased water conservation, recycling, storage, and other resource-management programs (MWD, 2022a). The West Basin is the member agency of the MWD which serves the Cities of Lawndale, Redondo Beach, and Torrance, in the RSA. The City of Torrance is also a member city of the MWD (MWD, 2022b).

Two private water companies serve and provide water purchased from the West Basin and the West Coast Groundwater Basin (WCGB) to the cities within the RSA: Golden State Water Company (GSWC) and California Water Service Company (CWSC). The Southwest Customer Service Area of the GSWC provides water to all of Lawndale and Redondo Beach (GSWC, 2022). The Rancho Dominguez District of the CWSC includes two sub-systems serving the RSA (California Water Services, 2022):

- Hermosa-Redondo system, which serves the Cities of Hermosa Beach, Redondo Beach, and portions of the City of Torrance;
- Dominguez system, which serves portions of the City of Torrance.

Table 3.11-4 shows the water usage by supply type for the GSWC and the two sub-divisions of the CWSC in acre feet per year (AFY) for fiscal year 2020-2021.

Table 3.11-4. West Basin Water Use 2020-2021 (AFY)

Water Supply	West Basin	GSWC – Southwest	CWSC - Dominguez	CWSC – Hermosa-Redondo
Groundwater	24,936	4,878	4,074	1,120
Desalted Water	362	-	362	-
Imported Water	103,955	16,628	22,037	10,056
Recycled Water	27,589	495	5,182	224
Seawater Barrier	5,139	-	-	-
Total	**161,980**	**22,000**	**31,655**	**11,401**

Source: West Basin, 2021
GSWC = Golden State Water Company; CWSC = California Water Service Company

Table 3.11-5 indicates that although West Basin's service area population is projected to increase, the overall baseline potable demand in AFY is expected to decrease given further water use efficiency and recycled water program implementation.

Table 3.11-5. Projected West Basin Service Area Retail Demand (AFY)

Year	2020	2025	2030	2035	2040	2045
Retail Demand	141,327	151,521	151,257	151,554	151,159	151,261
Groundwater Supplies	20,556	25,330	30,100	30,100	30,100	30,100
Net Retail Demand[1]	120,770	126,190	121,160	121,450	121,060	121,160

Source: West Basin, 2021

[1]Net retail demand is the service area retail demand minus the groundwater supply. It includes recycled water and imported water demand.

The 2020 UWMP projects the West Basin's water supplies through 2045. Table 3.11-6 shows the West Basin is projecting to increase current recycled water supplies.

Table 3.11-6. Projected West Basin Service Area Retail Water Supplies (AFY)

Water Supply	2025	2030	2035	2040	2045
Purchased or Imported Water	95,890	89,460	89,750	89,360	89,460
Recycled Water[1]	30,300	31,700	31,700	31,700	31,700
Recycled Water[2]	20,000	29,000	39,000	44,600	44,600
West Basin Supply Subtotal	**146,190**	**150,160**	**160,450**	**165,660**	**165,760**
Local Groundwater[3]	25,330	30,100	30,100	30,100	30,100
West Basin Service Area Supply Total	**171,520**	**180,260**	**190,550**	**195,760**	**195,860**

Source: West Basin, 2020

[1]Delivery in the West Basin Service Area only

[2]For Saltwater Barrier Replenishment

[3]Total volume extracted within West Basin's Service Area

As stated in 2020 UWMP, the West Basin has developed a drought risk assessment (DRA) to consider five consecutive dry years from 2021 through 2025. The DRA is a comprehensive water shortage contingency plan to provide reliable water supplies under stressed hydrologic conditions. The DRA indicates that the West Basin's supply capabilities are expected to exceed its projected water use for years 2022, 2024, and 2025. However, there could be a possible shortage of 10% of water usage in 2021 and 2023. This anticipated shortage can be mitigated through the use of water storage, executing flexible supplies, implementing voluntary demand reductions, and implementing MWD's Water Supply Allocation Plan (WSAP). Other water shortage contingency planning measures include the expansion of the West Basin's water use efficiency programs, further developing recycled water, and adding ocean water desalination supplies to improve immediate, near- and long-term reliability of supplies. Therefore, the West Basin's water supplies are anticipated to be reliable, and no shortfalls are expected from 2021 to 2025, even when assuming a driest five-year scenario (West Basin, 2020).

West Coast Groundwater Basin

The WCGB provides groundwater to approximately eleven cities and unincorporated areas of Los Angeles County, accounting for approximately 20% of total retail demands. The WCGB is adjudicated and is administrated by the California Department of Water Resources (DWR), which serves as Watermaster to account for all water rights and groundwater extraction amounts per year within the WCGB. Each year, the Water Replenishment District of Southern California (WRD) determines the amount of supplemental recharge that is needed for the Basin based upon annual groundwater

extractions and groundwater levels. The WCGB is managed and maintained through the coordination of the Los Angeles County Public Works Department, DWR, and WRD (West Basin, 2022).

The West Basin supplies WRD with recycled and imported water to meet groundwater demands, which are expected to continue through 2040. Projected groundwater supply and replenishment levels for the GSWC and the three sub-divisions of CWSC are displayed in Table 3.11-7.

Table 3.11-7. Assumed Groundwater Pumping Distribution[1] under Scenarios 1a, 1b, and 1c (AFY)

Purveyor/ Pumpers	Water Right	Current (based on last 3 years)	Distribute to Major Water Rights Holders & LA			Differential from Current Pumping		
			Scenario 1a	Scenario 1b	Scenario 1c	Scenario 1a	Scenario 1b	Scenario 1c
Golden State Water Co.	7,502	13,500	14,000	500	13,000	(500)	14,000	500
CWSC (Hermosa-Redondo)	4,070	1,000	2,000	1,000	2,000	1,000	2,000	1,000
CWSC (Dominguez)	10,417	7,000	16,000	9,000	14,000	7,000	16,000	9,000
City of Torrance	5,639	2,400	11,000	8,600	9,000	6,600	11,000[2]	8,600
Total	**27,628**	**23,900**	**29,000**	**19,060**	**38,000**	**14,100**	**8,500**	**19,100**

Source: WRD, 2016

[1]For planning purposes only to assess the range in potential distribution of pumping that could develop in the future. Actual distribution will be determined (outside of this study) by pumper needs, lease market, and economics.

[2]Extraction by City of Torrance eliminated from existing well locations and replaced with pumping from saline plume. Volumes pumped may or may not use water rights depending on the total dissolved solids of the extracted groundwater.

Projections of future groundwater consumption and replenishment levels are based on a set of scenarios with three distinct pumping patterns and assume that future consumption levels do not exceed adjudicated water rights. Scenario 1a assumes additional extraction by large water rights holders (except oil companies); it also assumes that the City of Los Angeles extracts its 1,500 AFY of adjudicated rights (which it has not been doing for the past 30 years). Scenario 1b assumes additional extraction by large water rights holders (except oil companies) as well as by the City of Los Angeles in excess of its adjudicated rights (that is, to 7,500 AFY). Under Scenario 1c, pumping is redistributed with the goal to contain and remove the saline plume in the Silverado aquifer. Thus, extraction for these three pumpers was shifted from their current well locations to seven new desalters in the Silverado aquifer (WRD, 2016).

3.11-3.2 Wastewater

Wastewater includes stormwater runoff, sewage, and other non-potable water. Stormwater runoff means surface water runoff and drainage related to precipitation events, or water emanating from on-site sources that may drain on- or off-site, such as water for landscaping purposes. Stormwater runoff is generally collected via on-street drainages as well as stormwater sumps. Sewage is defined as liquid and water-carried industrial and/or domestic wastes generated from facilities, including, but not limited to, dwellings, commercial buildings, industrial facilities, agricultural activities, hospitals, medical facilities, and other institutions. Both stormwater runoff and sewage are collected and transported through underground municipal sewage systems and are then processed and treated through municipal

wastewater treatment facilities. This section addresses wastewater both in the form of stormwater runoff and sewage.

Stormwater Drainage

The stormwater within the RSA drains indirectly to Dominguez Creek and South Santa Monica Bay through the Los Angeles County Storm Drain System, which is regulated and maintained by the Los Angeles Flood Control District (LACFCD) (LACDPW, 2022a). Most of the drainage networks within the RSA are controlled by storm drains. The outlier is the City of Torrance, which has a series of sumps and storm drain systems. Therefore, the following discussion focuses on the drainage system in the City of Torrance.

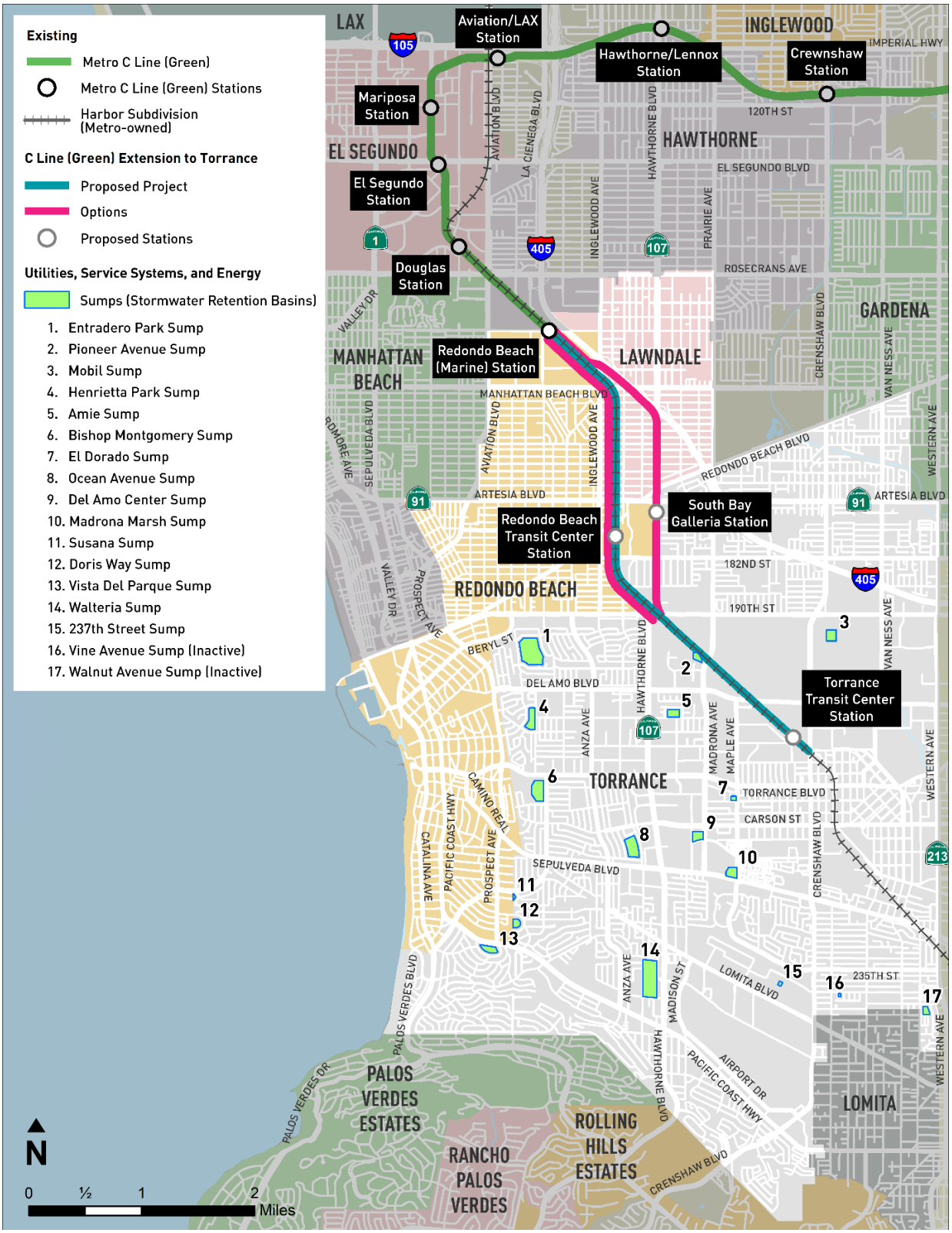
Sumps are a local term for shallow depressions that are used for flood control and retention basins. Torrance has a total of 17 sumps (also called stormwater retention basins) and detention basins that control stormwater runoff and prevent localized ponding and flooding (sumps hold water after a storm but have no outlet, while detention basins have an outlet and retain the water for a period of time), 14 of which are owned and operated by the City of Torrance (City of Torrance, 2022d). These features are also required to prevent stormwater with bacteria from being discharged to the Santa Monica Bay. Stormwater in the City of Torrance drains into four receiving systems: groundwater retention basins, the Dominguez Channel, the Santa Monica Bay, and Harbor Lakes (City of Torrance, 2015b). The City of Torrance is in the process of improving these basins in order to provide natural treatment systems, improve groundwater recharge, and provide the community more opportunities for recreational uses (City of Torrance, 2022b). Sumps within the RSA are shown in Table 3.11-8 and Figure 3.11-1.

Table 3.11-8. Water Sumps (Stormwater Retention Basins) within the RSA

Key to Figure 3.11-1	Water Sump or Basin	Status
1	Entradero Park Sump	Active
2	Pioneer Avenue Sump	Active
3	Mobil Sump	Active
4	Henrietta Park Sump	Active
5	Amie Sump	Active
6	Bishop Montgomery Sump	Active
7	El Dorado Sump	Active
8	Ocean Avenue Sump	Active
9	Del Amo Center Sump	Active
10	Madrona Marsh Sump	Active
11	Susana Sump	Active
12	Doris Way Sump	Active
13	Vista Del Parque Sump	Active
14	Walteria Sump	Active
15	237th Street Sump	Active
16	Vine Avenue Sump	Inactive
17	Walnut Avenue Sump	Inactive

Source: City of Torrance, 2022b

Figure 3.11-1. Sumps (Stormwater Retention Basins)



Source: City of Torrance, 2015b; TAHA, 2022

Wastewater Treatment

The Sanitation Districts of Los Angeles County (LACSD) is the regional agency responsible for the collection and treatment of wastewater in Los Angeles County. The RSA lies within the Los Angeles County Sanitation District #5. Wastewater from the RSA is treated at the JWPCP, which is operated and maintained by the LACSD. It is located in the City of Carson, approximately four miles southeast of the RSA. This plant serves communities throughout the entire South Bay, as well as communities located as far east as Downey and as far north as Inglewood. According to LACSD, JWPCP treats an average of 260 million gallons of wastewater per day and is capable of processing 400 million gallons per day (LACSD, 2022).

3.11-3.3 Solid Waste

The RSA is serviced by several private solid waste collectors. Lawndale is serviced by Republic Services, and Redondo Beach is serviced by Western Waste Industries. Torrance's residential trash and recycling collection is handled by the City's Sanitation Division, while businesses and multi-family homes are serviced by other private haulers.

According to the Los Angeles County Department of Public Works (LACDPW), the following regional landfills service the solid waste infrastructure of the cities in the RSA: the Antelope Valley Recycling and Disposal Facility, located approximately 47 miles northeast of the RSA; the Azusa Land Reclamation, located approximately 30 miles northeast of the RSA; Chiquita Canyon Landfill, located approximately 40 miles northwest of the RSA; Lancaster Landfill, located approximately 60 miles north of the RSA; and Sunshine Canyon City/County Landfill, located approximately 30 miles north of the RSA (CalRecycle, 2022). There are no active landfills in Los Angeles County which operate as contaminated soil transfer/processing. The nearest landfill to the Proposed Project which actively processes contaminated soil is the Hazmat TSDF facility, located approximately 58 miles to the east of the Proposed Project. An additional contaminated soil facility, Soil Safe of California Incorporated, is located approximately 70 miles to the northeast of the Proposed Project. Table 3.11-9 displays the current and future capacity of these landfills. Table 3.11-10 displays the waste disposal activity in these landfills by jurisdiction for calendar year 2021. The project may also encounter hazardous waste associated with homeless encampments, if found throughout the ROW.

Table 3.11-9. Current and Future Capacity for Landfills Servicing the RSA

Landfill Facility	Max Permitted Throughput (in tons per day)	Maximum Capacity (in cubic yards)	Remaining Capacity (in cubic yards)	Cease Operation Date
Antelope Valley Public Landfill	5,548	30,200,000	17,911,225	4/1/2044
Azusa Land Reclamation Landfill (Solid Waste)	8,000	80,571,760	51,512,201	1/1/2045
Chiquita Canyon Sanitary Landfill	12,000	110,366,000	60,408,000	1/1/2047
Lancaster Landfill	5,100	27,700,000	14,514,648	3/1/2044
Savage Canyon Landfill	3,350	19,337,450	9,510,833	12/31/2055
Southeast Resource Recovery Facility	2,240	2,240	-	-
Sunshine Canyon City/County Landfill	12,100	140,900,000	77,900,000	10/31/2037
Soil Safe of California Inc.	5,000	400,000	N/A[1]	-
Hazmat TSDF Landfill	250	177,777	N/A[2]	-

Source: CalRecycle, 2022

[1]Soil Safe of California recycles and treats contaminated soil for use at approved end uses. Therefore, remaining capacity is not reported.

[2]The Hazmat TSDF transfers contaminated soils, but the ultimate storage and processing destination is South Yuma County Landfill in Arizona. Therefore, remaining capacity is not reported by the landfill.

Table 3.11-10. Solid Waste Disposal Activity Report by Jurisdiction of Origin

Total Received from January 2021 – December 2021 (in tons)			
Landfill Facility	**Lawndale**	**Redondo Beach**	**Torrance**
Antelope Valley Recycling and Disposal Facility	-	40.41	6,025.71
Azusa Land Reclamation	116.11	331.53	2,095.68
Chiquita Canyon Landfill	88.93	5,014.56	51,058.59
Lancaster Landfill	-	4.75	73.31
Savage Canyon Landfill	-	-	47.66
Southeast Resource Recovery Facility	-	-	-
Sunshine Canyon City/County Landfill	1,554.49	672.90	63,245.40
Total	**1,759.53**	**6,064.15**	**122,546.35**

Source: LACDPW, 2022b

3.11-3.4 Telecommunications

Telephone services in the RSA are provided by AT&T. Telecommunications (fiber/internet) in the RSA are provided by Frontier Communications and Spectrum (formerly Charter Communications). There are existing telephone, telecommunication, and cable television lines and facilities throughout the RSA (CPUC, 2022b). According to the CPUC, there are no planned capital projects related to the upgrade of telecommunications systems that service customers or residents within the RSA (CPUC, 2022c).

3.11-3.5 Electric Power Generation

Electricity is provided to the RSA by SCE. In 2015, SCE delivered more than 87 billion kWh of electricity to its service area (SCE, 2022). In 2020, SCE energy sources consisted of 42% unspecified sources, 30.9% renewable sources, 15.2% natural gas, 3.3% hydroelectric, and 8.4% nuclear (California Energy

Commission [CEC], 2022a). According to CEC data, SCE customers consumed approximately 83,533 million kilowatt hours of electricity in 2020 (CEC, 2022b).

According to Metro's 2019 Energy and Resources Report, Metro is on track to meet its goals for 33% renewable energy consumption by 2020. In 2018, 31% of Metro's electricity came from renewable resources. Metro's current energy reduction plans include targets to reduce facility electricity consumption by 17% from the 2030 Business as Usual Scenario and increase annual on-site renewable energy generation by 7.5 megawatts (Metro, 2022b).

3.11-3.6 Natural Gas and Oil Facilities

In 2020, SoCal Gas customers consumed approximately 5,231 million therms of natural gas energy according to the CEC database (CEC, 2022c). In 2018, vehicle fuel consumption represented 80% of Metro's energy footprint, including a mix of compressed natural gas (CNG) that powers its fleet (Metro, 2018). There are numerous privately-owned oil pipelines located within the RSA. Owners of the oil pipelines are Crimson Pipeline, Chevron, Shell, and Plains All American. There are no publicly owned oil pipeline utility infrastructures in the RSA.

3.11-4 Environmental Impacts

3.11-4.1 Would the Proposed Project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

3.11-4.1.1 Construction Impacts

Less than Significant Impact. The RSA contains numerous utilities which could potentially interact with and conflict with the Proposed Project. Overall, the Proposed Project would have a **less than significant impact** during construction related to water, stormwater drainage, electric, and natural gas and oil facilities, and telecommunication, and **no impact** to wastewater facilities. The following sections describe the impacts in detail for each type of facility.

Water Facilities

Less than Significant Impact. Construction of the Proposed Project would not require substantial consumption of potable water. Water use would occur primarily through water trucks required for dust control, which would not require the expansion or construction of new water facilities. However, the Proposed Project would likely require the relocation of three water lines prior to the start of construction. These units would likely be relocated near existing facilities, typically within a few feet of existing locations. The relocation efforts could potentially result in environmental effects related to construction and the temporary disruption of services, including generating construction emissions, disrupting roadway circulation, and temporarily decreased capacity of the water treatment system. These potential impacts are included in the assessments of construction-related impact in the relevant resource sections of this Draft EIR. Pursuant to PF-US-1, Utility Identification and Coordination, if relocations are required, the construction contractor would verify the locations of existing utilities potentially affected by construction activities and determine specific relocation and setback and, pursuant to PF-US-2, Service Interruption Notification, the construction contractor would develop a construction plan which minimizes interruptions to utilities services to the greatest extent feasible and notify the public if/when interruptions may occur. Therefore, construction of the Proposed Project would result in a **less than significant impact** related to water facilities.

Wastewater Treatment

No Impact. Construction activities would generate minimal wastewater through the use of temporary worker restrooms, which would have no potential to necessitate the construction of new or expanded wastewater facilities. Wastewater treatment facilities would not be required to be relocated during construction of the Proposed Project. Existing sewer lines would be protected in place and would not require relocation. Therefore, **no impact** would occur related to wastewater facilities.

Stormwater Drainage Facilities

Less than Significant Impact. Stormwater runoff may be increased in the RSA as a result of construction. The Proposed Project may require the minor modifications to storm drain infrastructure and the relocation of one storm drain pipeline. As described in Section 3.10, Hydrology and Water Quality, any drainage pattern impacts from construction would be minor and temporary, minimizing the potential for exceeding stormwater drainage systems. PF-HWQ-1, SWPPP Implementation per Construction General Permit and MS4 Permit, would help reduce stormwater runoff velocity, thereby limiting its capacity to cause stormwater drainage systems exceedance. If necessary, new stormwater drainage facilities constructed at stations or along the alignment would comply with design requirements established by state and local regulations, including those from California State Water Resources Control Board Construction Stormwater General Permit (2009-009) and Los Angeles County Department of Public Works. Additionally, the Redondo Beach Municipal Code (RBMC) (Section 5-7.107) requires the contractor to pay storm drain impact fees to the City Engineer prior to the start of construction, while Section 50-7.113 requires new development projects to issue a Standard Urban Stormwater Mitigation Plan (SUSMP) and Low Impact Development (LID) requirements. The City of Lawndale has adopted the LA County Plumbing Code, which contains specifications for storm drainage facility design in Chapter 11. The Torrance Municipal Code (TMC) (Section 410.1.070) requires the preparation of a stormwater pollution prevention plan prior to issuance of construction permits. For additional information regarding state and local regulations governing stormwater pollution prevention, refer to Section 3.10, Hydrology and Water Quality. Compliance with these state and local regulations would reduce construction related impacts to stormwater drainage facilities. Therefore, a **less than significant impact** would occur related to stormwater drainage facilities.

Electric Power Facilities

Less Than Significant Impact. Construction of the Proposed Project has no potential to require new or expanded electric power facilities. Minimal electricity would be used to power field offices for the construction contractor. However, 46 pieces of power distribution infrastructure would likely be required to be relocated, including overhead power lines, underground power lines, and power poles. The relocation efforts could potentially result in environmental effects related to construction and the temporary disruption of services, including generating additional construction emissions, disrupting roadway circulation and temporarily decreased capacity of the SCE electrical system. These potential impacts are included in the assessments of construction-related impacts in the relevant resource sections of this Draft EIR. Pursuant to PF-US-1, if relocations are required, the construction contractor would verify the locations of existing utilities potentially affected by construction activities and determine specific relocation and setback, and pursuant to PF-US-2, the construction contractor would require the construction contractor to develop a construction plan which minimizes interruptions to utilities services to the greatest extent feasible and notify the public if/when interruptions may occur. Therefore, construction of the Proposed Project would result in a **less than significant impact** related to electric power facilities.

Natural Gas and Oil Facilities

Less Than Significant Impact. Construction of the Proposed Project has no potential to require new or expanded natural gas or oil facilities. There are no publicly owned oil facilities in the RSA that are anticipated to be affected by the Proposed Project. However, should a publicly owned oil or gas infrastructure be required to be relocated, the relocation efforts could potentially result in environmental effects related to construction and the temporary disruption of services, including generating additional construction emissions, disrupting roadway circulation, and decreasing SoCal Gas' pipeline capacity. These potential impacts are included in the assessments of construction-related impacts in the relevant resource sections of this Draft EIR. Minimizing the duration of relocation efforts would ensure that their impacts are less than significant. Pursuant to PF-US-1, if relocations are required, the construction contractor would verify the locations of existing utilities potentially affected by construction activities and determine specific relocation and setback, and pursuant to PF-US-2, the construction contract would require the construction contractor to develop a construction plan which minimizes interruptions to utilities services to the greatest extent feasible and notify the public if/when interruptions may occur. Therefore, construction of the Proposed Project would result in a **less than significant impact** related to natural gas and oil infrastructure.

Telecommunication Facilities

Less than Significant Impact. Construction activities would have no potential to necessitate the construction of new or expanded telecommunication facilities. It is not expected that any telecommunication facilities would need to be relocated. Existing telecommunication facilities would be protected in place, but if additional facilities are identified as the design progresses, they would either be protected in place or relocated if necessary. Pursuant to PF-US-1, if relocations are required, the construction contractor would verify the locations of existing utilities potentially affected by construction activities and determine specific relocation and setback, and pursuant to PF-US-2, the construction contract would require the construction contractor to develop a construction plan which minimizes interruptions to utilities services to the greatest extent feasible and notify the public if/when interruptions may occur. Therefore, **a less than significant impact** would occur related to telecommunication facilities.

TRENCH OPTION

Less than Significant Impact. The Trench Option would be constructed within the same extent as the Proposed Project and would result in similar impacts to utilities and service systems. However, due to the deeper and more extensive excavation required for the trench, there is increased potential for conflicts with subterranean utilities. Overall, the Trench Option would have a **less than significant impact** during construction related to water service systems, stormwater drainage, electric, and natural gas and oil facilities, and telecommunication and **no impact** to wastewater facilities. The following sections describe the impacts in detail for each type of facility.

Water Facilities

Less Than Significant Impact. Construction of the Trench Option would not require substantial consumption of potable water. Water use would occur primarily related to water trucks required for dust control, which would not require the expansion or construction of new water facilities. Up to 31 water lines would likely need to be relocated due to conflicts. These units could typically be relocated within a few feet of existing facilities, although some relocations may not be possible adjacent to the existing location. This will be determined during the final design process. Similar to the Proposed

Project, the relocation efforts could potentially result in environmental effects related to construction and the temporary disruption of water services. These potential impacts are included in the assessments of construction-related impacts in the relevant resource sections of this Draft EIR. Pursuant to PF-US-1, if relocations are required, the construction contractor would verify the locations of existing utilities potentially affected by construction activities and determine specific relocation and setback, and pursuant to PF-US-2, the construction contractor would develop a construction plan which minimizes interruptions to utilities services to the greatest extent feasible and notify the public if/when interruptions may occur. Therefore, construction of the Trench Option would result in a **less than significant impact** related to water facilities.

Wastewater Treatment

No Impact. Construction activities would generate minimal wastewater through the use of temporary worker restrooms, which would have no potential to necessitate the construction of new or expanded wastewater facilities. Wastewater treatment facilities would not be required to be relocated during construction of the Trench Option. Existing sewer lines would be protected in place and would not require relocation. Therefore, **no impact** would occur related to wastewater facilities.

Stormwater Drainage Facilities

Less than Significant Impact. Stormwater runoff may be increased in the RSA as a result of construction. The Trench Option would likely require the relocation of one existing storm drainage infrastructure (located in the area south of 190th Street where the Proposed Project alignment continues from the southern end of Trench Option). The relocation could potentially result in environmental effects related to construction and temporary disruption of services, including generating additional construction emissions, disrupting vehicular circulation, increasing stormwater runoff, and degrading water quality. These potential impacts are included in the assessments of construction-related impacts in the relevant resource sections of this Draft EIR. Pursuant to PF-US-1, if relocations are required, the construction contractor would verify the locations of existing utilities potentially affected by construction activities and determine specific relocation and setback, and pursuant to PF-US-2, the construction contractor would develop a construction plan which minimizes interruptions to utilities services to the greatest extent feasible and notify the public if/when interruptions may occur. Additionally, as described in Section 3.10, Hydrology and Water Quality, PF-HWQ-1 would help reduce stormwater runoff velocity, thereby limiting its capacity to cause stormwater drainage systems exceedance. PF-HWQ-4, Trench Construction Runoff Collection and Treatment and PF-HWQ-5, Temporary Storm Drain Inflow Rerouting, would also be implemented, which would also avoid exceedances of existing storm drain capacity. Therefore, construction of the Trench Option would result in a **less than significant impact** related to stormwater drainage facilities.

Electric Power Facilities

Less Than Significant Impact. Construction of the Trench Option has no potential to require new or expanded electric power facilities. Minimal electricity would be used to power field offices for the construction contractor. Up to 42 pieces of power distribution infrastructure under the Trench Option which would likely be required to be relocated, including overhead power lines, underground power lines, and power poles, four of which would be located in the area south of 190th Street where the Proposed Project alignment continues from the southern end of Trench Option. Similar to the Proposed Project, the relocation efforts could potentially result in environmental effects related to construction and the temporary disruption of services. These potential impacts are included in the assessments of construction-related impacts in the relevant resource sections of this Draft EIR. Pursuant to PF-US-1, if

relocations are required, the construction contractor would verify the locations of existing utilities potentially affected by construction activities and determine specific relocation and setback, and pursuant PF-US-2, the construction contractor would develop a construction plan which minimizes interruptions to utilities services to the greatest extent feasible and notify the public if/when interruptions may occur. Therefore, construction of the Trench Option would result in a **less than significant impact** related to electric power facilities.

Natural Gas and Oil Facilities

Less Than Significant Impact. Construction of the Trench Option has no potential to require new or expanded natural gas or oil facilities. There are no publicly owned oil facilities in the RSA that are anticipated to be affected by the Trench Option. However, similar to the Proposed Project, should a publicly owned oil or gas infrastructure be required to be relocated, the relocation efforts could potentially result in environmental effects during construction such as the temporary disruption of services. Pursuant to PF-US-1, if relocations are required, the construction contractor would verify the locations of existing utilities potentially affected by construction activities and determine specific relocation and setback, and pursuant to PF-US-2, the construction contractor would develop a construction plan which minimizes interruptions to utilities services to the greatest extent feasible and notify the public if/when interruptions may occur. Therefore, construction of the Trench Option would result in a **less than significant impact** related to natural gas and oil infrastructure.

Telecommunication Facilities

Less than Significant Impact. Construction activities would have no potential to necessitate the construction of new or expanded telecommunication facilities. Construction of the Trench Option is not anticipated to require the relocation of any telecommunication facilities. Existing telecommunication facilities would be protected in place, but if additional facilities are identified as the design progresses, they would either be protected in place or relocated if necessary. Pursuant to PF-US-1, if relocations are required, the construction contractor would verify the locations of existing utilities potentially affected by construction activities and determine specific relocation and setback, and pursuant to PF-US-2, the construction contract would require the construction contractor to develop a construction plan which minimizes interruptions to utilities services to the greatest extent feasible and notify the public if/when interruptions may occur. Therefore, **a less than significant impact** would occur related to telecommunication facilities.

HAWTHORNE OPTION

Less than Significant Impact. Unlike the Proposed Project and the Trench Option, the Hawthorne Option would be primarily constructed along Hawthorne Boulevard. The majority of the Hawthorne Option route would be constructed on elevated guideway, and some excavation would be needed for the column piles. Overall, the Hawthorne Option would have a **less than significant impact** during construction related to water, wastewater, stormwater drainage, electric, natural gas and oil, and telecommunication facilities. The following sections describe the impacts in detail for each type of facility.

Water Facilities

Less Than Significant Impact. Construction of the Hawthorne Option would not require substantial consumption of potable water. Water use would occur primarily related to water trucks required for dust control, which would not require the expansion or construction of new water facilities. Two water lines would likely need to be relocated due to conflicts, including one in the area south of 190th Street

where the Proposed Project alignment continues from the southern end of Hawthorne Option. These units could typically be relocated within a few feet of existing facilities, although some relocations may not be possible adjacent to the existing location. This will be determined during the final design process. Similar to the Proposed Project, the relocations could potentially result in environmental effects related to construction and temporary disruption of services. These potential impacts are included in the assessments of construction-related impacts in the relevant resource sections of this Draft EIR. Pursuant to PF-US-1, if relocations are required, the construction contractor would verify the locations of existing utilities potentially affected by construction activities and determine specific relocation and setback, and pursuant to PF-US-2, the construction contractor would develop a construction plan which minimizes interruptions to utilities services to the greatest extent feasible and notify the public if/when interruptions may occur. Therefore, construction of the Hawthorne Option would result in a **less than significant impact** related to water facilities.

Wastewater Treatment

Less Than Significant Impact. Construction activities would generate minimal wastewater through the use of temporary worker restrooms, which would not necessitate the construction of new or expanded wastewater facilities. One sewer line would likely need to be relocated under the Hawthorne Option. This unit could be relocated near existing facilities, typically within a few feet of existing locations. Similar to the Proposed Project, the relocations could potentially result in environmental effects related to construction and temporary disruption. These potential impacts are included in the assessments of construction-related impacts in the relevant resource sections of this Draft EIR. Pursuant to PF-US-1, if relocations are required, the construction contractor would verify the locations of existing utilities potentially affected by construction activities and determine specific relocation and setback, and pursuant to PF-US-2, the construction contractor would develop a construction plan which minimizes interruptions to utilities services to the greatest extent feasible and notify the public if/when interruptions may occur. Therefore, construction of the Hawthorne Option would result in a **less than significant impact** related to wastewater facilities.

Stormwater Drainage Facilities

Less than Significant Impact. As with the Proposed Project, construction of the Hawthorne Option would comply with the NPDES permit and incorporate best management practices (BMP) to minimize any resulting stormwater runoff. The Hawthorne Option would likely require the relocation of 26 pieces of existing storm drainage infrastructures, one of which is located the area south of 190th Street where the Proposed Project alignment continues from the southern end of Hawthorne Option, which could potentially result in environmental effects related to construction and temporary disruption of services. Pursuant to PF-US-1, if relocations are required, the construction contractor would verify the locations of existing utilities potentially affected by construction activities and determine specific relocation and setback, and pursuant to PF-US-2, the construction contractor to develop a construction plan which minimizes interruptions to utilities services to the greatest extent feasible and notify the public if/when interruptions may occur. Additionally, as described in Section 3.10, Hydrology and Water Quality, PF-HWQ-1 would help reduce stormwater runoff velocity, thereby limiting its capacity to cause stormwater drainage systems exceedance. PF-HWQ-5 would also be implemented, which would also avoid exceedances of existing storm drain capacity. Therefore, construction of the Hawthorne Option would result in a **less than significant impact** related to stormwater drainage facilities.

Electric Power Facilities

Less Than Significant Impact. As with the Proposed Project, construction of the Hawthorne Option has no potential to require new or expanded electric power facilities. However, 20 pieces of power distribution infrastructure would likely be required to be relocated during construction, four of which are located in the area south of 190th Street where the Proposed Project alignment continues from the southern end of Hawthorne Option. They include overhead power lines, as well as two sets of overhead transmission lines which would be required to be raised. Similar to the Proposed Project, these efforts could potentially result in environmental effects related to construction and temporary disruption of services. These potential impacts are included in the assessments of construction-related impact in the relevant resource sections of this Draft EIR. Pursuant to PF-US-1, if relocations are required, the construction contractor would verify the locations of existing utilities potentially affected by construction activities and determine specific relocation and setback, and pursuant to PF-US-2, the construction contractor would develop a construction plan which minimizes interruptions to utilities services to the greatest extent feasible and notify the public if/when interruptions may occur. Therefore, construction of the Hawthorne Option would result in a **less than significant impact** related to electric power facilities.

Natural Gas and Oil Facilities

Less Than Significant Impact. As with the Proposed Project, construction of the Hawthorne Option has no potential to require new or expanded natural gas or oil facilities. There are no publicly owned oil facilities in the RSA that are anticipated to be affected by the Hawthorne Option. However, similar to the Proposed Project, should a publicly owned oil or gas infrastructure be required to be relocated, pursuant to PF-US-1, the construction contractor would verify the locations of existing utilities potentially affected by construction activities and determine specific relocation and setback, and pursuant to PF-US-2, the construction contractor would develop a construction plan which minimizes interruptions to utilities services to the greatest extent feasible and notify the public if/when interruptions may occur. Therefore, construction of the Hawthorne Option would result in a **less than significant impact** related to natural gas and oil infrastructure.

Telecommunication Facilities

Less Than Significant Impact. On-site workers during construction of the Hawthorne Option would intermittently utilize telecommunication services, but such activity has no potential to require new or expanded telecommunications provider facilities. However, under the Hawthorne Option, five pieces of telecommunications infrastructure would likely be required to be relocated. These relocation efforts could potentially result in environmental effects related to construction and temporary disruption of services, including generating additional construction emissions, disrupting roadway circulation, and decreasing the capacity of the telecommunications networks. These potential impacts are included in the assessments of construction-related impacts in the relevant resource sections of this Draft EIR. Pursuant to PF-US-1, if relocations are required, the construction contractor would verify the locations of existing utilities potentially affected by construction activities and determine specific relocation and setback, and pursuant to PF-US-2, the construction contractor would develop a construction plan which minimizes interruptions to utilities services to the greatest extent feasible and notify the public if/when interruptions may occur. Therefore, construction of the Hawthorne Option would result in a **less than significant impact** related to telecommunication infrastructure.

3.11-4.1.2 Operational Impacts

Less than Significant Impact. Overall, the Proposed Project would have a **less than significant impact** during operation related to stormwater drainage and electric facilities, and **no impact** to water, wastewater, natural gas and oil, and telecommunication facilities. The following sections describe the impacts in detail for each type of facility.

Water Facilities

No Impact. The Proposed Project does not include a significant long-term, permanent source of water use. The Proposed Project would not construct station restroom facilities nor a new maintenance and storage facility (MSF). Some water use may be needed to clean stations or wash trains. This minimal water use would not interfere with the existing and planned capacity of water facilities. In addition, station perimeters would include drought tolerant landscaping requiring nominal amounts of water consumption. There is no potential for operational activities to necessitate new or expanded water facilities. Therefore, **no impact** would occur related to operational activities.

Wastewater Treatment

No Impact. The Proposed Project does not include a long-term, permanent source of wastewater. Stations would not include restrooms. Some wastewater may be needed to clean stations or wash trains. It is reasonable to acknowledge that this minimal wastewater generation would not interfere with the existing and planned capacity of wastewater facilities. There is no potential for operational activities to necessitate new or expanded wastewater facilities. Therefore, **no impact** would occur related to wastewater facilities.

Stormwater Drainage Facilities

Less Than Significant Impact. The Proposed Project increase impervious surface areas, resulting in a potential increase in stormwater runoff during operations. However, stormwater runoff during operational activities would be minimized through compliance with the NPDES permit and incorporation of BMPs during construction. Stormwater drainage facilities that may be constructed for the Proposed Project would comply with existing stormwater runoff code – including RBMC Section 5-7.107, Chapter 11 of the LA County Plumbing Code, and TMC Section 410.1.070 – and their operational capacity would be adequate to convey stormwater to water treatment facilities. Additionally, TMC Section 411.1.070, RBMC Section 5-7.113, and LMC Section 13.16.060 require the preparation of a SUSMP and compliance with LID strategies to retain stormwater runoff on site during operations, as described in PF-HWQ-6, LID BMPs per Regional Requirements within Section 3.10, Hydrology and Water Quality. Retainment of most stormwater runoff within the Proposed Project Footprint and preservation of existing discharge locations reduces the potential for exceeding stormwater drainage systems. Proposed stations would be designed with landscaping around the station perimeters as a component of stormwater runoff retention infrastructure. Finally, Metro's Environmental Compliance and Sustainability Department would ensure environmental compliance related to stormwater drainage and runoff during operations. Operational activities associated with the Proposed Project are not anticipated to increase stormwater runoff beyond the capacity of stormwater drainage facilities in the RSA. The stormwater within the RSA drains indirectly to Dominguez Creek and South Santa Monica Bay through the Los Angeles County Storm Drain System, which is regulated and maintained by the Los Angeles Flood Control District, which would not be affected by the Proposed Project. Therefore, Proposed Project operations would result in a **less than significant impact** related to stormwater drainage facilities.

Electric Power Facilities

Less Than Significant Impact. The Proposed Project would require 6,946,500 kWh (6,946.5 MWh) of annual electricity use to power the extension. Refer to Section 3.12, Energy Resources, for additional details related to electricity consumption for the Proposed Project. Electricity would be provided to the light rail line by traction power substation units and to stations by traditional distribution connection facilities (e.g., power poles, underground wires, transmission lines, and distribution lines). SCE delivered more than 87 billion kWh (87,000,000 MWh) of electricity to its service area in 2015 and would reasonably accommodate the additional 0.00008% increase of electricity use required by the Proposed Project (SCE, 2022). The Proposed Project would involve the construction of power poles, transmission lines, and connections to the existing grid, but would not require the expansion of existing generation facilities. To offset electricity consumption levels across the Metro rail system, Metro constructed photovoltaic installations in 2018, which generated 2.9 million kWh in 2018; additional photovoltaic systems to generate renewable energy are expected in the future (Metro, 2018a). Therefore, operation of the Proposed Project would result in a **less than significant impact** related to electric power facilities.

Natural Gas and Oil Facilities

No Impact. The electrically powered transit line would not use oil or natural gas. It is not anticipated that natural gas would be utilized to maintain or store trains at the existing facility. There would be no potential for the Proposed Project to require new or expanded natural gas or oil facilities. Therefore, **no impact** would occur related to natural gas and oil facilities.

Telecommunication Facilities

No Impact. Operational activities associated with the Proposed Project have no potential to interfere with telecommunication facilities, which would be entirely outside of the alignment. Therefore, **no impact** would occur related to telecommunication facilities.

TRENCH OPTION

Less than Significant Impact. The Trench Option would operate within the same extent as the Proposed Project and would result in similar impacts to utilities and service systems during operations. Specific to storm drainage infrastructure, the trench would be designed to direct stormwater into the existing conveyance system. The trench would have a concrete slab and walls as opposed to the at-grade construction, which would include exposed earth. The exposed earth would typically absorb more stormwater and be less impervious than concrete slab associated with the Trench Option. Therefore, it is anticipated that the Trench Option would result in increased run-off compared to the Proposed Project. As discussed for the Proposed Project, the Trench Option would comply with local regulations reflated to stormwater runoff and the design would accommodate the stormwater potential such that the trench would not flood. As described in Section 3.10, Hydrology and Water Quality, the increase in runoff generated by the increased impervious surfaces within the Trench Option Footprint would be mostly contained on site per PF-HWQ-6, LID BMPs per Regional Requirements. Retainment of most stormwater runoff within the Trench Option Footprint and preservation of existing discharge locations reduces the potential for exceeding stormwater drainage systems. The stormwater within the RSA drains indirectly to Dominguez Creek and South Santa Monica Bay through the Los Angeles County Storm Drain System, which is regulated and maintained by the Los Angeles Flood Control District, which would not be affected by the Trench Option.

Similar to the Proposed Project, operation of the Trench Option would have a **less than significant impact** related to water, wastewater, storm water drainage, electric power, natural gas or oil, and telecommunication facilities.

HAWTHORNE OPTION

Less than Significant Impact. As previously discussed, the Hawthorne Option would operate along Hawthorne Boulevard predominantly via an elevated guideway. Specific to storm drainage infrastructure, the elevated structure would be constructed of concrete and would result in a general increase in impervious surfaces. However, the Hawthorne Option would be designed to direct stormwater to the existing conveyance system. As described in Section 3.10, Hydrology and Water Quality, the increase in runoff generated by the increased impervious surfaces within the Hawthorne Option footprint would be mostly contained on site per PF-HWQ-6. Retainment of most stormwater runoff within the Hawthorne Option Footprint and preservation of existing discharge locations reduces the potential for exceeding stormwater drainage systems. The stormwater would drain to the same storm drain system as described above.

Similar to the Proposed Project, operation of the Hawthorne Option would have a **less than significant** impact related to water, wastewater, stormwater drainage, electric power, natural gas or oil, and telecommunication facilities.

3.11-4.2 Would the Proposed Project have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years?

3.11-4.2.1 Construction Impacts

Less than Significant Impact. Construction of the Proposed Project would not require substantial consumption of potable water. Water use would occur primarily related to water trucks required for dust control. This short-term use would require minimal water supplies when compared to regional supplies. Water supplies would not be impacted by limited water use during construction activities. Therefore, construction of the Proposed Project would result in a **less than significant impact** related to water supplies.

TRENCH OPTION

Less than Significant Impact. Similar to the Proposed Project, water use during construction would occur primarily related to water trucks required for dust control. Water supplies would not be impacted by limited water use during construction activities. Therefore, construction of the Trench Option would result in a **less than significant impact** related to water supplies.

HAWTHORNE OPTION

Less than Significant Impact. As with the Proposed Project, the minimal water use during construction of the Hawthorne Option would not impact water supplies. Therefore, construction of the Hawthorne Option would result in a **less than significant impact** related to water supplies.

3.11-4.2.2 Operational Impacts

Less than Significant Impact. The Proposed Project does not include a significant long-term, permanent source of water use. The Proposed Project would not construct station restroom facilities nor a new MSF. Some water use may be needed to clean stations or wash trains. This minimal water use would not interfere with the existing and planned capacity of water facilities. In addition, station perimeters would include drought tolerant landscaping requiring nominal amounts of water consumption. There is no

potential for the Proposed Project to interfere with regional water supply services. Therefore, operations of the Proposed Project would result in a **less than significant impact** related to water supplies.

TRENCH OPTION

Less than Significant Impact. As with the Proposed Project, the Trench Option does not include station restroom facilities, an MSF facility, or any other facilities which include a significant long-term, permanent source of water use. Intermittent water usage would be used to water drought-tolerant landscaping along stations perimeters. Therefore, operations of the Trench Option would result in a **less than significant impact** related to water supplies.

HAWTHORNE OPTION

Less than Significant Impact. As with the Proposed Project, the Hawthorne Option does not include station restroom facilities, an MSF facility, or any other facilities which include a significant long-term, permanent source of water use. Intermittent water usage would be limited to water station perimeter landscaping. Therefore, operations of the Hawthorne Option would result in a **less than significant impact** related to water supplies.

3.11-4.3 Would the Proposed Project 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?

3.11-4.3.1 Construction Impacts

Less than Significant Impact. The Proposed Project would generate wastewater during construction through the use of temporary worker restrooms and limited construction uses. Any wastewater generated during construction would be transported to wastewater facilities via vacuum service trucks. LACSD operates the JWPCP that serves the entire South Bay community for wastewater treatment. The JWPCP currently treats 260 million gallons of wastewater per day and is capable of processing 400 million gallons per day (Los Angeles County Sewer Districts, 2022). Wastewater generated by temporary worker restrooms for construction of the Proposed Project would represent a negligible proportion of the daily wastewater processed by the JWPCP, and the facility is anticipated to have adequate capacity to serve the Proposed Project. Therefore, construction of the Proposed Project would result in a **less than significant impact** related to wastewater treatment capacity.

TRENCH OPTION

Less than Significant Impact. The Trench Option would generate wastewater in similar quantities to the Proposed Project. Wastewater generated during construction of the Trench Option would represent a negligible proportion of the daily wastewater processed by the JWPCP, and the facility is anticipated to have adequate capacity to serve the Trench Option. Therefore, construction of the Trench Option would result in a **less than significant impact** related to wastewater treatment capacity.

HAWTHORNE OPTION

Less than Significant Impact. As with the Proposed Project, construction of the Hawthorne Option would generate a negligible quantity of the daily wastewater processed by the JWPCP, and the facility is anticipated to meet the needs of the Hawthorne Option. Therefore, construction of the Hawthorne Option would result in a **less than significant impact** related to wastewater treatment capacity.

3.11-4.3.2 Operational Impacts

No Impact. The Proposed Project does not include a significant source of wastewater. Restrooms would not be provided at the stations. Some wastewater may be needed to clean stations or wash trains. This minimal wastewater generation would not interfere with the existing and planned capacity of wastewater facilities. Therefore, **no impact** would occur related to wastewater treatment capacity.

TRENCH OPTION

No Impact. As with the Proposed Project, the Trench Option does not include a significant source of wastewater. Restrooms would not be provided at the stations. Some wastewater may be needed to clean stations or wash trains. This minimal wastewater generation would not interfere with the existing and planned capacity of wastewater facilities. Therefore, **no impact** would occur related to wastewater treatment capacity.

HAWTHORNE OPTION

No Impact. As with the Proposed Project, operation of the Hawthorne Option does not include restrooms or other significant sources of wastewater. Any wastewater generated from cleaning stations or washing trains would not interfere with the existing and planned capacity of wastewater facilities. Therefore, **no impact** would occur related to wastewater treatment capacity.

3.11.1.1 *Would the Proposed Project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?*

3.11-4.3.3 Construction Impacts

Less than Significant Impact. Construction of the Proposed Project would generate solid waste related to discarded construction material. Solid waste would be hauled to regional landfills which have a remaining approximate capacity of 231,756,907 cubic yards (CY). As stated in Section 3.9, Hazards and Hazardous Materials, construction of the Proposed Project would require soil to be imported; soil excavated during construction (approximately 88,113 CY) would be reused on-site for fill. However, contaminated soil, which is assumed to be 10% of the excavated amount (i.e., approximately 8,811 CY), would be disposed of at a permitted landfill per the specifications of the Department of Toxic Substances Control (DTSC) or RWQCB or other agencies overseeing construction of the Proposed Project. There are no active landfills in Los Angeles County that accept contaminated soil. The nearest landfill which actively processes contaminated soil is the Hazmat TSDF facility, located approximately 58 miles to the east in San Bernardino County. The facility is permitted to accept 250 tons of hazardous materials per day. There is an additional regional facility that accepts contaminated soils should the Hazmat TSDF facility not be available for the Proposed Project. The facility is Soil Safe of California Incorporated located in San Bernardino County with a daily throughput capacity of 5,000 tons. These facilities process and recycle contaminated soils to be used again at approved end uses (e.g., highway road construction) and therefore don't report remaining capacity. The combined daily processing capacity of the two sites is 5,250 tons. The total annual processing capacity is approximately 1,873,000

tons.[1] Based on the processing capacity of the two sites, they would be able to adequately process the small amount of contaminated soil anticipated to be generated by the Proposed Project. The Proposed Project would not generate a substantial amount of solid waste during construction that would result in the exceedance of remaining regional capacity. Additionally, construction of the Proposed Project would be required to comply with all applicable federal, state, and local statutes and regulations pertaining to solid waste disposal. The construction contractor would comply with AB 939, which requires a Solid Waste Diversion Program and diversion of at least 50% of the solid waste generated during construction activities from landfills to recycling facilities. Regional facilities have capacity for construction-related solid waste. Therefore, construction of the Proposed Project would result in a **less than significant impact** related to compliance with solid waste standards and capacity.

TRENCH OPTION

Less than Significant Impact. Construction of the Trench Option has potential to encounter more contaminated soil than the Proposed Project. As stated in Section 3.9, Hazards and Hazardous Materials, construction of the Trench Option would require approximately 340,000 CY of soil to be excavated, some of which would be reused on-site as fill. Approximately 202,600 CY (approximately 328,000 tons) of soil would need to be exported, and 10% (i.e., approximately 3,280 CY) of excavated soil is assumed to be contaminated. Contaminated soil and waste would be disposed of at a permitted landfill per the specifications of DTSC or RWQCB or other agencies overseeing construction of the Trench Option. As described above for the Proposed Project, the nearest landfills which actively processes contaminated soil are the Hazmat TSDF facility and Soil Safe of California Incorporated, located in San Bernardino County. Based on the processing capacity of the two sites they would be able to adequately process the contaminated soil anticipated to be generated by the Trench Option. Construction of the Trench Option would be required to comply with all applicable federal, state, and local statutes and regulations pertaining to solid waste disposal, including AB 939. As described above, regional facilities that process contaminated soil should have the capacity for construction related solid waste. Therefore, construction of the Trench Option would result in a **less than significant impact** related to compliance with solid waste standards and capacity.

HAWTHORNE OPTION

Less than Significant Impact. Construction of the Hawthorne Option would primarily consist of construction an elevated guideway, and there would be limited excavation required. The Hawthorne Option is anticipated to excavate approximately 67,700 CY of soil, most of which would be reused onsite as fill. Approximately 450 CY (approximately 730 tons) of soil would need to be exported, of which 10% (i.e., approximately 73 CY) is assumed to be contaminated. As previously stated, contaminated soil and waste would be disposed of at a permitted landfill per the specifications of DTSC or RWQCB or other agencies overseeing construction of the Hawthorne Option. As described above for the Proposed Project, the nearest landfills which actively process contaminated soil are the Hazmat TSDF facility Soil Safe of California Incorporated, located in San Bernardino County. Based on the processing capacity of the two sites, they would be able to adequately process the small amount of contaminated soil

[1] The max permit capacity of the Hazmat TSDF site is 48,000 tons per year while the Soil Safe site only has a maximum throughput capacity which was multiplied by 365 days.

anticipated to be generated by the Hawthorne Option. Construction of the Hawthorne Option would be required to comply with all applicable federal, state, and local statutes and regulations pertaining to solid waste disposal, including AB 939. Therefore, construction of the Hawthorne Option would result in a **less than significant impact** related to compliance with solid waste standards and capacity.

3.11-4.3.4 Operational Impacts

No Impact. The Proposed Project does not include a direct operational source of solid waste. Indirectly, solid waste would be generated by transit users. Stations would include waste bins that would be managed by Metro. The solid waste from waste bins at each station would have no potential to affect landfill capacity or solid waste reduction goals. Therefore, **no impact** would occur related to compliance with solid waste standards and capacity.

TRENCH OPTION

No Impact. Similar to the Proposed Project, the Trench Option would generate minimal solid waste. The solid waste from waste bins at each station would have no potential to affect landfill capacity or solid waste reduction goals. Therefore, **no impact** would occur related to compliance with solid waste standards and capacity.

HAWTHORNE OPTION

No Impact. As with the Proposed Project, operation of the Hawthorne Option would generate minimal solid waste and would have no potential to affect landfill capacity or solid waste reduction goals. Therefore, **no impact** would occur related to compliance with solid waste standards and capacity.

3.11.1.2 *Would the Proposed Project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?*

3.11-4.3.5 Construction Impacts

No Impact. The Proposed Project would generate typical construction waste such as wood, concrete, and asphalt. Additionally, because the Proposed Project would be constructed within the existing Metro ROW, the Proposed Project is anticipated to encounter contaminated soil. As described above, regional permitted facilities are anticipated to have the capacity to process all contaminated and non-contaminated construction related solid waste. The Proposed Project would fully comply with all federal, state, and local statutes and regulations regarding proper disposal, including AB 939 and AB 1327. Additionally, CalGreen requires construction projects to recycle and/or salvage for reuse a minimum 65% of the nonhazardous construction and demolition waste or meet a local construction and demolition waste management ordinance, whichever is more stringent. There is no element of construction activities that would be outside of compliance. Therefore, **no impact** would occur related to compliance with solid waste regulations.

TRENCH OPTION

No Impact. Construction of the Trench Option is anticipated to generate typical construction waste as well as export approximately 202,600 CY of excavated soil, including contaminated soil. As described above, regional permitted facilities are anticipated to have the capacity to process all contaminated and non-contaminated construction related solid waste. Similar to the Proposed Project, the Trench Option would comply with all applicable federal, state, and local statutes and regulations pertaining to solid waste disposal. Therefore, **no impact** would occur related to compliance with solid waste regulations.

HAWTHORNE OPTION

No Impact. Construction of the Hawthorne Option is anticipated to generate typical construction waste as well as generate 450 CY of excavated soil, including contaminated soil, which regional landfills and processing facilities are expected to have the capacity to accept and process. As with the Proposed Project, construction of the Hawthorne Option would comply with all applicable federal, state, and local statutes and regulations pertaining to solid waste disposal. Therefore, **no impact** would occur related to compliance with solid waste regulations.

3.11-4.3.6 Operational Impacts

No Impact. Similar to the to the analysis of construction activities, solid waste generated during operational activities associated with the Proposed Project would comply with AB 939 and AB 1327. The Proposed Project would fully comply with all federal, state, and local statutes and regulations regarding proper disposal. There is no element of operational activities that would be outside of compliance. Therefore, **no impact** would occur.

TRENCH OPTION

No Impact. Similar to the Proposed Project, operation of the Trench Option would comply with all applicable federal, state, and local statutes and regulations pertaining to solid waste disposal. Therefore, **no impact** would occur.

HAWTHORNE OPTION

No Impact. Similar to the Proposed Project, operation of the Hawthorne Option would comply with all applicable federal, state, and local statutes and regulations pertaining to solid waste disposal. Therefore, **no impact** would occur.

3.11-5 Mitigation Measures

No mitigation measures are required, as there are no significant impacts on utilities and service systems.

3.11-6 Project Impacts Remaining After Mitigation

As described in Section 3.11-5, no mitigation measures are required to reduce construction and operation impacts to a level below significance.

3.11-7 Cumulative Impacts

The methodology for cumulative analysis and a description of relevant projects and projections are included in Section 3.0, Introduction.

The geographic scope of the cumulative analysis for water, wastewater, electric power, and natural gas is the service area for the various providers. The geographic scope of the cumulative analysis for stormwater and telecommunications is the RSA described in Section 3.11-2.2. All probable future projects described in the project list in Section 3.0, Introduction, fall within the scope of the cumulative analysis.

3.11-7.1 Proposed Project

Water Facilities

The MWD is a regional wholesaler that provides water for 26-member public agencies in Los Angeles County. The MWD imports water from the Colorado River and Northern California to supplement local supplies, and helps its member agencies develop increased water conservation, recycling, storage, and

other resource-management programs. As discussed above and stated in 2020 UWMP, the West Basin has developed a DRA to consider five consecutive dry years from 2021 through 2025. The DRA is a comprehensive water shortage contingency plan to provide reliable water supplies under stressed hydrologic conditions. The DRA indicates that the West Basin's supply capabilities are expected to exceed its projected water use for years 2022, 2024, and 2025. However, there could be a possible shortage of 10% of water usage in 2021 and 2023. This anticipated shortage can be mitigated through the use of water storage, executing flexible supplies, implementing voluntary demand reductions, and implementing MWD's WSAP. Other water shortage contingency planning measures include the expansion of the West Basin's water use efficiency programs, further developing recycled water, and adding ocean water desalination supplies to improve immediate, near- and long-term reliability of supplies. Therefore, the West Basin's water supplies are anticipated to be reliable, and no shortfalls are expected from 2021 to 2025, even when assuming a driest five-year scenario. However, development of the Proposed Project and probable future projects could cumulatively increase demands on water services post 2025, thereby creating shortages.

Construction of the Proposed Project would not require substantial consumption of potable water. Water use would occur primarily related to water trucks required for dust control. This short-term use would require minimal water supplies when compared to regional supplies. Water supplies would not be impacted by limited water use during construction activities. The Proposed Project does not include a significant long-term, permanent source of water use. The Proposed Project would not construct station restroom facilities nor a new MSF. Although some water use may be needed to clean stations or wash trains, this minimal water use would not interfere with the existing and planned capacity of water facilities. In addition, station perimeters would include drought tolerant landscaping requiring nominal amounts of water consumption. There is no potential for the Proposed Project to interfere with regional water supply services. For these reasons, the Proposed Project's incremental contribution to cumulatively significant water service impacts would not be cumulatively considerable during construction or operation.

Wastewater

The LACSD is the regional agency responsible for the collection and treatment of wastewater in Los Angeles County. Wastewater from the RSA is treated at the JWPCP, which is operated and maintained by the LACSD. This plant serves communities throughout the entire South Bay, as well as communities located as far east as Downey and as far north as Inglewood. According to LACSD, JWPCP treats an average of 260 million gallons of wastewater per day and is capable of processing 400 million gallons per day. While LACD has not identified an existing cumulative impact at JWPCP, development of past, present, and probable future projects could cumulatively increase demands on the existing wastewater infrastructure system.

Construction activities would generate minimal wastewater through the use of temporary worker restrooms, which would have no potential to necessitate the construction of new or expanded wastewater facilities. Wastewater treatment facilities would not be required to be relocated during construction of the Proposed Project. Existing sewer lines would be protected in place and would not require relocation. The Proposed Project does not include a long-term, permanent source of wastewater. Stations would not include restrooms. While some wastewater may be needed to clean stations or wash trains, this minimal wastewater generation would not interfere with the existing and planned capacity of wastewater facilities. There is no potential for operational activities to necessitate new or expanded wastewater facilities. The Proposed Project's incremental contribution to cumulatively

significant impacts to wastewater would therefore not be cumulatively considerable during construction or operation.

Stormwater Drainage

The stormwater within the RSA drains indirectly to Dominguez Creek and South Santa Monica Bay through the Los Angeles County Storm Drain System, which is regulated and maintained by the LACDPW. Most of the drainage networks within the RSA are controlled by storm drains. The outlier is the City of Torrance, which has a series of sumps and storm drain systems. While a cumulative stormwater impact has not been identified by LACDPW, development of the Proposed Project in combination with past, present, and probable future projects could cumulatively increase demands on the existing stormwater infrastructure system.

Project-related construction activities may increase stormwater runoff in the RSA. Compliance with the NPDES permit local regulations, and incorporation of BMPs would minimize stormwater runoff during construction the Proposed Project. If necessary, new stormwater drainage facilities constructed at stations or along the alignment would comply with design requirements established by state and local regulations. Project design components and compliance with legal regulations would ensure that the project-related runoff combined with probable future projects would not result in runoff that would inundate the stormwater system. The Proposed Project's incremental contribution to cumulatively significant impacts to stormwater facilities would therefore not be cumulatively considerable during construction.

The Proposed Project would increase impervious surface areas, resulting in a potential increase in stormwater runoff during operations. However, stormwater runoff during operational activities would be minimized through compliance with the NPDES permit and incorporation of BMPs during construction. Proposed stations would be designed with landscaping around the station perimeters as a component of stormwater runoff retention infrastructure. Finally, Metro's Environmental Compliance and Sustainability Department would ensure environmental compliance related to stormwater drainage and runoff during operations. Operational activities associated with the Proposed Project are not anticipated to increase stormwater runoff beyond the capacity of stormwater drainage facilities in the RSA. The Proposed Project's incremental contribution to cumulatively significant impacts to stormwater facilities would not be cumulatively considerable during operation.

Solid Waste

The RSA is serviced by several private solid waste collectors. Lawndale is serviced by Republic Services, and Redondo Beach is serviced by Western Waste Industries. Torrance's residential trash and recycling collection is handled by the City's Sanitation Division, while businesses and multi-family homes are serviced by other private haulers. According to the LACDPW, the following regional landfills service the solid waste infrastructure of the cities in the RSA: the Antelope Valley Recycling and Disposal Facility, located approximately 47 miles northeast of the RSA; the Azusa Land Reclamation Landfill, located approximately 30 miles northeast of the RSA; Chiquita Canyon Landfill, located approximately 40 miles northwest of the RSA; Lancaster Landfill, located approximately 60 miles north of the RSA; and Sunshine Canyon City/County Landfill, located approximately 30 miles north of the RSA. There are no active landfills in Los Angeles County which operate as contaminated soil transfer/processing facilities if contaminated soil is encountered during construction activities. The nearest landfill to the Proposed Project which actively processes contaminated soil is the Hazmat TSDF facility, located approximately 58 miles to the east of the Project footprint. An additional contaminated soil facility, Soil Safe of California Incorporated is located approximately 70 miles to the northeast of the Project footprint. Development

of the Proposed Project and past, present, and probable future projects could cumulatively increase demands on solid waste facilities. While indicated landfills may reach capacity in unidentified future years, there is no indication that is an existing significant cumulative impact to regional landfill capacity.

Construction of the Proposed Project would generate solid waste related to discarded construction material, including contaminated soil, which is assumed to be 10% of the total excavation amount of 88,113 CY. Non-contaminated solid waste would be hauled to regional landfills which have a remaining approximate capacity of 231,756,907 CY. As previously described, the regional facilities that process contaminated soil should have the capacity for construction related solid waste. The Proposed Project would not generate a substantial amount of solid waste during construction that would result in the exceedance of remaining regional capacity. Additionally, construction of the Proposed Project and past, present, and probable future projects would be required to comply with all applicable federal, state, and local statutes and regulations pertaining to solid waste disposal. The construction contractor would comply with AB 939, which requires a Solid Waste Diversion Program and diversion of at least 50% of the solid waste generated during construction activities from landfills to recycling facilities. The Proposed Project does not include a direct operational source of solid waste. Indirectly, solid waste would be generated by transit users. Stations would include waste bins that would be managed by Metro. The solid waste from waste bins at each station would have no potential to affect landfill capacity or solid waste reduction goals. The Proposed Project's incremental contribution to cumulatively significant impacts to solid waste facilities would therefore not be cumulatively considerable during construction or operation.

Electric Power

SCE provides electricity services to the RSA and many communities. SCE has not identified a cumulative impact associated with electricity in their service area. While development of the Proposed Project and past, present, and probable future projects would increase the demand for SCE services, neither construction nor operations of the Proposed Project would require significant electricity. Construction of the Proposed Project has no potential to require new or expanded electric power facilities. Minimal electricity would be used to power field offices for the construction contractor. For operations, it is estimates that the Proposed Project would require 6,946,500 kWh (6,946.5 MWh) of annual electricity use to power the extension. SCE delivered more than 87 billion kWh (87,000,000 MWh) of electricity to its service area in 2015 and would reasonably accommodate the additional 0.00008% increase of electricity use required by the Proposed Project. In addition, to offset electricity consumption levels across the Metro rail system, Metro constructed photovoltaic installations in 2018, which generated 2.9 million kWh in 2018; additional photovoltaic systems to generate renewable energy are expected in the future. Therefore, the incremental contribution of the Proposed Project to cumulatively significant impacts to electricity would not be cumulatively considerable during construction or operation.

Natural Gas and Oil Facilities

SoCal Gas provides natural gas services to the RSA and many communities. SoCal Gas has not identified a cumulative impact associated with a potential natural gas shortage in their service area. While development of the Proposed Project and past, present, and probable future projects would increase the demand for SoCal Gas services, neither construction nor operations of the Proposed Project would require significant natural gas. Construction of the Proposed Project would not require significant natural gas supplies and has no potential to require new or expanded natural gas facilities. The electrically powered transit line would not use natural gas for operations. It is not anticipated that natural gas would be utilized to maintain or store trains at the existing facility. There is no potential for

the Proposed Project to require new or expanded natural gas facilities thereby contributing to a cumulative effect. Therefore, the incremental contribution of the Proposed Project to cumulatively significant impacts to natural gas facilities would not be cumulatively considerable during construction or operation.

There are no publicly owned oil facilities in the RSA which would require relocation. There is no potential for the Proposed Project to require new or expanded oil facilities thereby contributing to a cumulative effect. Therefore, the Proposed Project would not result in a cumulatively considerable impact to oil facilities during construction or operation.

Telecommunication Facilities

Telephone services in the RSA are provided by AT&T. Telecommunications (fiber/internet) in the RSA are provided by Frontier Communications and Spectrum (formerly Charter Communications). There are existing telephone, telecommunication, and cable television lines and facilities throughout the RSA. There is no existing cumulative impact in the RSA related to telecommunication facilities. Construction activities would have no potential to necessitate the construction of new or expanded telecommunication facilities. Operational activities associated with the Proposed Project have no potential to interfere with telecommunication facilities, which would be entirely outside of the alignment. Regarding cumulative development, utility upgrades for the past, present, and probable future projects would be determined and completed by the appropriate utility service provider and would be subject to its procedures and requirements for construction and environmental clearance. The Proposed Project, combined with past, present, and past, present, and probable future projects would not result in a cumulatively significant impact to telecommunication facilities during construction or operation.

3.11.1.3 *Trench Option*

The potential for cumulative impacts from the Trench Option is similar to the analysis presented above for the Proposed Project. Although the Trench Option may result in incrementally different impacts to utilities and service systems, the Trench Option's potential for cumulative effects would largely be similar to that of the Proposed Project. The Trench Option, combined with past, present, and probable future projects, would not result in a cumulatively significant impact to utilities and service systems.

3.11-7.2 Hawthorne Option

Although the Hawthorne Option may result in incrementally different impacts to utilities and service systems than those analyzed under the Proposed Project, the Hawthorne Option would result in a similar potential for cumulative impacts. The Hawthorne Option, combined with past, present, and reasonably foreseeable projects would not result in a cumulatively significant impact to utilities and service systems.

3.12 ENERGY RESOURCES

This section of the Draft EIR provides an analysis of the potential impacts on energy resources. The analysis focuses on transportation fuels and electricity related to powering light rail. Refer to Section 3.11, Utilities, for analysis of natural gas and electricity facilities and 3.5, Greenhouse Gas Emissions for energy's effect on greenhouse gases (GHG).

3.12-1 Regulatory Framework

Federal, state, regional and local regulations concerning energy resources management are described in the following section.

3.12-1.1 Federal Regulations

The Energy Policy and Conservation Act of 1975

The Energy Policy and Conservation Act of 1975 was enacted to serve the nation's energy demands and promoting conservation methods. The Act mandated vehicle economy standards, extended oil price controls to 1979, and directed the creation of a strategic petroleum reserve. Part A of Title III of the Act established the Corporate Average Fuel Economy (CAFE) standards for automobiles, and automobiles were required to be labeled with their fuel economies, estimated fuel costs, and fuel economy comparisons to other comparable vehicle models. Part B of Title III of the Act established the Energy Conservation Program, which authorizes the Department of Energy to develop, revise, and implement minimum energy conservation standards for residential, commercial and industrial, lighting, and plumbing appliances and equipment.

Alternative Motor Fuels Act of 1988

The Alternative Motor Fuels Act amended a portion of the Energy Policy and Conservation Act to encourage the use of alternative fuels, including electricity. The Act directed the Secretary of Energy to ensure that the maximum practicable number of federal passenger automobiles and light duty trucks be alcohol-powered vehicles, dual energy vehicles, natural gas-powered vehicles or natural gas dual energy vehicles. The Act also directed the Secretary of Energy to conduct a study regarding such vehicles' performance, fuel economy, safety, and maintenance costs and report to Congress the results of a feasibility study concerning the disposal of such alternative-fueled federal vehicles.

Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and Congestion Mitigation and Air Quality (CMAQ) Improvement Program

The ISTEA was the first federal legislation regarding transportation planning and policy. This Act presented an intermodal approach to highway and transit funding with collaborative planning requirements, giving additional powers to state and local transportation decision-makers and metropolitan planning organizations. This Act also provided funds for non-motorized commuter trails, defined a number of High Priority Corridors to be part of the National Highway System, and called for the designation of up to five high-speed rail corridors.

The CMAQ Program was created under ISTEA. The program was reauthorized under the Transportation Equity Act for the 21st Century (TEA-21) in 1998 and again as part of the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users in 2005. The purpose of the CMAQ Program is to fund transportation projects or programs and related efforts that contribute to air quality improvements and provide congestion relief.

Transportation Equity Act for the 21st Century (TEA-21)

The TEA-21 was enacted in 1998 as the successor legislation to ISTEA and builds on its established initiatives. This Act reauthorized the CMAQ Program and authorized federal highway, highway safety, transit and other surface transportation programs over the next six years. It combined the continuation and improvement of current programs with new initiatives to meet the challenges of improving traffic safety, protecting and enhancing communities and the natural environment as transportation is provided, and advancing economic growth and competitiveness domestically and internationally through efficient and flexible transportation.

Moving Ahead for Progress in the 21st Century Act (MAP-21)

Signed by President Obama in July 2012, MAP-21 represented the first multi-year transportation authorization enacted since 2005, funding surface transportation programs with more than $105 billion for fiscal years 2013 and 2014. Among the provisions within MAP-21 that relate to energy is the scope of the state and metropolitan planning processes, which aim to "protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns." MAP-21 also authorized $70 million for a public transportation research program that focuses on energy efficiency and system capacity, among other items.

The funding mechanisms of MAP-21 were subsequently extended through the codification of several additional pieces of federal legislation:

> Highway and Transportation Funding Act of 2014 (Public Law 113-159): Extended surface transportation funding authorities through May 31, 2015, that would have otherwise expired after September 30, 2014;

> Highway and Transportation Funding Act of 2015 (Public Law 114-21): Extended surface transportation funding authorities through July 31, 2015, that would have otherwise expired after September 30, 2014;

> Surface Transportation and Veterans Health Care Choice Improvement Act of 2015 (Public Law 114-41): Extended surface transportation funding authorities through October 29, 2015, that would have otherwise expired after September 30, 2014;

> Surface Transportation Extension Act of 2015 (Public Law 114-73): Extended surface transportation funding authorities through November 20, 2015, that would have otherwise expired after September 30, 2014;

> Surface Transportation Extension Act of 2015, Part II (Public Law 114-73): Extended surface transportation funding authorities through December 4, 2015, that would have otherwise expired after September 30, 2014;

With the exception of the provisions of MAP-21, there is no other federal legislation related specifically to the subject of energy efficiency in public transportation project development and operation.

Energy Policy Act of 1992

The Energy Policy Act of 1992 reduces dependence on imported petroleum and improves air quality by addressing all aspects of energy supply and demand, including alternative fuels, renewable energy and energy efficiency. This Act encourages the use of alternative fuels through both regulatory and voluntary activities and through the approaches carried out by the U.S. Department of Energy. It requires federal,

state, and alternative fuel provider fleets to acquire alternative fuel vehicles. The U.S. Department of Energy's Clean Cities Initiative was established in response to the Energy Policy Act of 1992 to implement voluntary alternative fuel vehicle deployment activities.

Energy Policy Act of 2005

The Energy Policy Act necessitates the development of grant programs, demonstration and testing initiatives, and tax incentives that promote alternative fuels and advanced vehicles production and use. This Act also amends existing regulations, including fuel economy testing procedures and Energy Policy Act of 1992 requirements for federal, state, and alternative fuel provider fleets. The Energy Policy Act of 2005 addresses energy production in the United States, including: (1) energy efficiency; (2) renewable energy; (3) oil and gas; (4) coal; (5) Tribal 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 Independence and Security Act of 2007

The Energy Independence and Security Act consists of provisions designed to increase energy efficiency and the availability of renewable energy. Key provisions of this Act include:

> The CAFE, which sets a target of 54.5 miles per gallon for the combined fleet of cars and light trucks by model year 2025.

> The Renewable Fuels Standard, which sets a modified standard that starts at 9.0 billion gallons in 2008 and rises to 36 billion gallons by 2022.

> The Energy Efficiency Equipment Standards, which includes a variety of new standards for lighting and for residential and commercial appliance equipment.

> The Repeal of Oil and Gas Tax Incentives, which includes repeal of two tax subsidies in order to offset the estimated cost to implement the CAFE provision.

Executive Order (EO) 13123

Issued June 3, 1999, EO 13123 established goals for energy efficiency improvements. EO 13123 calls for Federal agencies to improve the energy efficiency of their buildings, promote the use of renewable energy, and reduce GHG emissions associated with energy use in their buildings, among other energy related requirements. It calls for each Federal agency to reduce its GHG emissions attributed to facility energy use by 30% by 2010 compared to 1990 emissions levels and to expand the use of renewable energy within Federal facilities, including 20,000 solar energy systems at Federal facilities by 2010.

Executive Order (EO) 14057

Issued by President Biden December 8, 2021, EO 14057 established a policy for the federal government to achieve a carbon pollution-free electricity sector by 2035 and net-zero emissions by no later than 2050, through a “whole-of-government approach.”

3.12-1.2 State and Regional Regulations

California Energy Commission (CEC)

The CEC is the state's primary energy policy and planning agency. Created by legislation in 1974, the CEC has seven major responsibilities: (1) advancing state energy policy, (2) achieving energy efficiency, (3) investing in energy innovation, (4) developing renewable energy, (5) transforming transportation, (6)

overseeing energy infrastructure, and (7) preparing for energy emergencies. SB 1389 (Chapter 568, Statutes of 2002) requires the CEC to prepare a biennial integrated energy policy report assessing major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors. The report also provides policy recommendations to conserve resources, protect the environment, and ensure reliable, secure and diverse energy supplies.

California Transportation Plan (CTP)

The CTP is a statewide, long-range transportation plan to meet future mobility needs. The CTP defines performance-based goals, policies, and strategies to comply with MAP-21 and to achieve an integrated, multimodal transportation system. The CTP is prepared in response to federal and state requirements and is updated every five years. The CTP addresses how the state will achieve maximum feasible emissions reductions, taking into consideration the use of alternative fuels, new vehicle technology and tailpipe emissions reductions. Caltrans must consult and coordinate with related state agencies, air quality management districts, public transit operators and regional transportation planning agencies. Caltrans must also provide an opportunity for general public input and submit a final draft of the CTP to the legislature and governor.

California Code of Regulations (CCR), Title 13

Sections 1956.1, 2020, 2023, 2023.1, and 2023.4 of Title 13 of the CCR include vehicle requirements for public transit agencies. The Fleet Rule for Transit Agencies includes stringent exhaust emission standards for new Urban Bus engines and vehicles. The regulation also promotes advanced technologies by providing for zero-emission bus demonstration projects and requiring zero emission bus acquisitions applicable to larger transit agencies.

California Code of Regulations (CCR), Energy Efficiency Standards

Energy consumption of new buildings in California is regulated by State Building Energy Efficiency Standards contained in the CCR, Title 24, Part 6, Chapter 2-53. Title 24 applies to all new construction of both residential and nonresidential buildings, and regulates energy `consumed for heating, cooling, ventilation, water heating, and lighting.

California Green Building Standards Code (CALGreen)

In 2007, the California Building Standards Commission adopted the statewide mandatory CALGreen Part 11 of Title 24, California Code of Regulations. The Code was updated in 2010, 2013, 2016 2019 and 2022 to require additional energy savings. CALGreen applies to the planning, design, operation, construction, use and occupancy of every newly constructed building or structure. CALGreen includes both Mandatory, and Voluntary measures; MBS established CALGreen Tier 2 as the standard for all its capital projects 10,000 SF or greater. CALGreen Tier 2 includes required Mandatory, Prerequisite and Elective reach code measures.

CALGreen – Tier 2 requires the following applicable project design features:

1. **CALGreen Tier 2 – Prerequisite Requirements**

   > To achieve CALGreen Tier 2 status, the Designer/Contractor shall meet the CALGreen Prerequisites. See A5.602.2 CALGreen Verification Guidelines and Tier 2 Checklist:

   - Stations to comply with **CALGreen Tier 2** (CCR, Title 24, Part 11, California Green Building Standards Code (CALGreen) Tier 2.

- Each station to be designed and constructed to comply with **CALGreen Tier 2 Prerequisite for Cool Roof**, Section A5.106.11.2.
- Each station to be designed and constructed to be "**Solar Ready"**[I] California Energy Code, CCR, Title 24, Part 6, Section 110.10 - Solar Readiness.
- Each station to be designed and constructed to be comply with **CALGreen Tier 2 Prerequisite for Outdoor Lighting,** Energy Performance of Outdoor lighting power 90% of Part 6, Section A5.203.1.1.1.
- Project to comply with **CALGreen Tier 2 Prerequisite for Construction and Demolition Waste reduction of** 80-percent of construction and demolition waste in Section A5.408.3.1.
- Project to comply with **CALGreen Tier 2 Prerequisite for Recycled Content** of 15 percent of materials based on estimated total cost or use two products from Table A5.405.4 for at least 75 percent by cost in Section A5.405.4.1.
- 2022 California Green Building Standards Code (CALGreen) Tier 2, California Building Standards Commission (Nonresidential), California Code of Regulations (CCR), Title 24, Part 11, (or current version at 100% design).

> CALGreen Tier 2 – Elective Requirements

- In addition to complying with applicable Mandatory measures in CALGreen Chapter 5 for nonresidential structures and buildings, and CALGreen Tier 2 Prerequisite measures, the project design and construction shall select additional Elective measures from Appendix A5 Nonresidential Voluntary Measures as described in A5.602.2 CALGreen Verification Guidelines Tier 2 Checklist, based on project design.

2. CALGreen - Documentation Author's / Responsible Designer's Declaration Statement and Compliance Verification Checklist.

> All occupied structures less than 10,000 square feet, the Designer/Contractor shall provide as part of each design package submittal a completed A5.602 CALGreen Mandatory CALGreen verification checklist, with signed Documentation Author's / Responsible Declaration Statement.

> All occupied structures greater than 10,000 square feet, the Designer/Contractor shall provide as part of each design package submittal a completed A5.602.2 CALGreen Tier 2 verification checklist with signed Documentation Author's / Responsible Declaration Statement.

> The Designer shall sign the Documentation Author's / Responsible Designer's Declaration Statement and provide completed verification checklist within the design and construction plans.

> The Designer's Declaration Statement, attests to the accuracy and completeness of the CALGreen Checklist, and projects meeting either Mandatory or CALGreen Tier 2 design compliance, based on structure size requirement.

Assembly Bill (AB) 118

AB 118 created the Alternative and Renewable Fuel and Vehicle Technology Program, to be administered by the CEC. This Program authorizes the CEC to award grants, revolving loans, loan guarantees and other appropriate measures to qualified entities to develop and deploy innovative fuel and vehicle technologies that will help achieve California's petroleum reduction, air quality and climate change goals, without adopting or advocating any one preferred fuel or technology. In addition to funding alternative fuel and vehicle projects, this Program also funds workforce training to prepare the workforce required to design, construct, install, operate, produce, service and maintain new fuel vehicles. The statue was amended in 2008 and 2013, which authorized the CEC to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the state's climate change policies.

Assembly Bill (AB) 2076

The CEC and the CARB are directed by AB 2076, Reducing Dependence on Petroleum (passed in 2000) to develop and adopt recommendations for reducing dependence on petroleum. A performance-based goal is to reduce petroleum demand to 15% less than 2003 demand by 2020.

Assembly Bill (AB) 1493

AB 1493 amended the Clean Car Standards (Chapter 200, Statutes of 2002) that require reductions in GHG emissions in new passenger vehicles from 2009 through 2016. The Advanced Clean Cars program extends AB 1493 for model years 2017 to 2025 and the Advanced Clean Cars II Program covers model years 2026 through 2035. This program promotes clean fuel technologies (i.e., plug-in hybrids, battery electric vehicles, compressed natural gas vehicles, hydrogen powered vehicles), reduces smog, and provides fuel saving costs.

Senate Bill (SB) 1389, Chapter 568, Statutes of 2002

The CEC is responsible for forecasting future energy needs for the state and developing renewable energy resources and alternative renewable energy technologies for buildings, industry, and transportation. SB 1389 requires the CEC to prepare a biennial integrated energy policy report assessing major energy trends and issues facing the state’s electricity, natural gas, and transportation fuel sectors. The report is also intended to provide policy recommendations to conserve resources, protect the environment, and ensure reliable, secure, and diverse energy supplies. The 2021 Integrated Energy Policy Report (IEPR) is the most recent iteration published under SB 1389, and it focused on four primary components of forecasting the state’s energy future (CEC, 2022b): building decarbonization, energy reliability, decarbonizing the state’s natural gas system, and preparing the California energy demand forecast.

The 2021 IEPR outlined key findings and recommendations related to each topic that would help facilitate the state’s transition to carbon-free technologies. The mid-case electricity forecast projects electricity sales to reach almost 280,000 gigawatt-hours (GWh) by 2035 (an annual growth rate of approximately 0.7%) and projects transportation electrification to reach 35,000 GWh by 2035 (representing approximately 12% of total load). The managed peak forecast for the California Independent System Operators grows at a rate of approximately 0.9% annually and is anticipated to be 52,400 megawatts (MW) by 2035.

Senate Bill (SB) 743

SB 743 encourages land use and transportation planning decisions and investments to reduce vehicle miles traveled (VMT) that contribute to GHG emissions. Pursuant to SB 743, the Office of Planning and Research adopted CEQA Guidelines, section 15064.3, which establishes that, generally, VMT shall be used to measure the significance of transportation impacts in CEQA documents.

California's Renewables Portfolio Standard (SBs 1078/107/X 1-2/100)

SBs 1078 and 107, California's Renewables Portfolio Standard (RPS), obligated investor-owned energy service providers and Community Choice Aggregations to procure an additional one percent of retail sales per year from eligible renewable sources until 20% was reached (by 2010). The California Public Utilities Commission (CPUC) and CEC are jointly responsible for implementing the program.

SB X 1-2, called the California Renewable Energy Resources Act, obligated all California electricity providers to obtain at least 33% of their energy from renewable resources by 2020. SB 350 requires retail seller and publicly owned utilities to procure 50% of their electricity from eligible renewable energy resources by 2030.

SB 100—The 100 Percent Clean Energy Act of 2018 (2018)—updates the state's RPS to ensure that by 2030 at least 60% of statewide electricity is renewably sourced, and set a goal of powering all retail electricity sold in the state and supporting state agency electricity needs with renewable and zero-carbon resources by 2045. SB 100 also requires annual Joint Agency Reports to be prepared to track progress on expanding the availability of renewable resources and to assess the potential of emerging technologies in aiding the State's efforts to reduce GHG emissions from the energy sector. The first Joint Agency Report was published in 2021 and determined that approximately 63% of California's electricity retail sales in 2019 came from non-fossil fuel sources thanks to a combination of renewables, hydroelectric, and nuclear generation

California Energy Management Executive Orders

The California Governor's Office has issued a series of EO's related to energy resources management and the expansion of statewide renewable energy infrastructure. Table 3.12-1 summarizes the most directly applicable EOs that involve or address the generation and distribution of energy throughout California.

Table 3.12-1. California Energy Management Executive Orders

Executive Order	Date	Summary
S-01-07	January 2007	Established a Low-Carbon Fuel Standard and directed the Secretary of the Cal/EPA to develop and propose protocols for measuring the life-cycle carbon intensity of transportation fuels.
S-13-08	November 2008	Directed state agencies to complete analysis of the effects of sea level rise in California, prepared in the California Sea Level Rise Assessment Report through coordination with the National Academy of Sciences.
S-14-08	November 2008	Established renewable energy generation share target for retail sellers of electricity of 33% renewably sourced by 2020.
B-16-12	March 2012	Directed state agencies to encourage the commercialization of zero emission vehicles (ZEVs), set goal of one million ZEVs in use statewide by 2020.
B-30-15	April 2015	Established a mid-term goal for 2030 of reducing GHG emissions by 40% below 1990 levels and required CARB to update its current AB 32 Scoping Plan to identify the measures to meet the 2030 target.
B-55-18	September 2018	Established a goal to achieve statewide carbon neutrality by 2045.
N-79-20	September 2020	Established a target to make all vehicles in the state emission free: cars and passenger trucks by 2035, medium and heavy duty trucks by 2045.

Southern California Association of Governments (SCAG) Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)

With more than 19 million people as of 2019, the SCAG region is the second-most populated metropolitan area in the United States. Growth in population is expected to result in greater demands on the region's transportation system. State and federal mandates require SCAG to prepare a regional transportation plan every four years. The Connect SoCal 2020-2045 RTP/SCS provides a long-range vision for regional transportation goals and policies and predicts transportation challenges and the region's future transportation strategy. Connect SoCal establishes the following strategies relevant to the Proposed Project:

> Preserving and optimizing our current and future transportation system.

> Capital improvements of multiple transportation modes to create a complete mobility system.

As part of the 2020-2045 RTP/SCS, SCAG continues to work towards reducing regional energy use and consumption. Strategies to implement this include, but are not limited to, working with local jurisdictions and energy providers, through its Energy and Environment Committee, and administration of the Clean Cities program, Sustainability Planning grants program, and other SCAG energy-related planning activities, to encourage energy efficient building development. Additional measures include, pursuing partnerships with SCE, municipal utilities, and the CPUC to promote energy efficient development in the SCAG region, through coordinated planning, data and information sharing activities.

Metro Energy and Sustainability Policy

Metro spends approximately $30 million per year on utility costs for electricity, gas, and water alone, with $26 million of those costs being just for electricity. Metro also expects that these costs will rise in future years, and thus is committed to embracing sustainability, energy efficiency, conservation, and renewable energy sources as a primary pathway towards reducing Metro's energy costs. In June 2007, the Board adopted the Energy and Sustainability Policy to control energy consumption and embrace energy efficiency, energy conservation, and sustainability.

The purpose of the Energy and Sustainability Policy is to control energy consumption and embrace energy efficiency, energy conservation, and sustainability to:

> Avoid unnecessary expenditure; help in protecting the environment; improve cost effectiveness, productivity, and working conditions; prolong the useful life of fossil fuels by using resources more efficiently.

> Gain more control over our energy consumption by aggressively pursuing renewable energy sources, take advantages of rebates and subsidies for energy and water conservation wherever feasible, conduct energy audits of Metro divisions and facilities, and implement energy conservation measures where they are feasible and fiscally prudent.

Metro's immediate objectives are to:

> Gain more control over our energy consumption by aggressively pursuing renewable energy sources, take advantages of rebates and subsidies for energy and water conservation wherever feasible, conduct energy audits of Metro divisions and facilities, and implement energy conservation measures where they are feasible and fiscally prudent.

> Construct all new facilities and projects, including new transit corridor projects, using energy efficiency and conservation strategies. For buildings or structures over 10,000 square feet, projects must be constructed to achieve leadership in Energy and Environmental Design Silver certification, at minimum.

Metro's long term objectives are to:

> Reduce, whenever possible, Metro's use of fossil fuels through the use of ambient and renewable energy sources.

> Buy fuels and electricity at the most economic cost.

> Use fuels and electricity as efficiently as possible.

> Reduce the amount of emissions, especially carbon dioxide (CO_2), caused by our required consumption

Metro Sustainability Implementation Plan (MSIP)

The Sustainability and Energy Policy adopted in June 2007 was an attempt to capture the essence of sustainability, as the term applies to the planning, construction, operations, and procurement practices. The creation of the Ad-Hoc Sustainability and Climate Change Committee in July 2007 provided the basis to develop an agency-wide plan of sustainability implementation. Since September 2007, staff have reported accomplishments to the Ad-Hoc Sustainability and Climate Change Committee and have coordinated efforts with the Clean Air Task Force. The Sustainability Mission and Vision Statements were

adopted by members of the Ad-Hoc Sustainability and Climate Change Committee at the January 2008 meeting.

The purpose of MSIP is to demonstrate to employees, stakeholders, customers and the general public, our continuing commitment to sustainability through fiscal responsibility, social equity and environmental stewardship. Similar to other transportation plans, the MSIP has a short-term and a long-term set of actions. The short-term plan identifies four specific projects for continued implementation or commencement: Metro and Countywide GHG Emissions Management, Energy Sustainability Initiatives, Development of Sustainability Design Guidelines, and Development and Implementation of Sustainable and Environmental Management Systems.

Metro Construction and Demolition Debris Recycling and Reuse Policy

The Construction and Demolition Debris Recycling and Reuse Policy was adopted in December 2007 and required Metro to give preference to recycled and recyclable products in selecting construction materials to the maximum extent feasible. It stated that Metro would use landfills and recycling facilities that maintain documentation that indicated their legitimacy for disposal or diversion.

Metro Green Construction Policy

The development and implementation of a Green Construction Policy was approved by the Metro Board on December 9, 2010. Under the Policy, Metro will only use greener, less polluting construction equipment and vehicles; and implement best practices to meet or exceed air quality emission standards in all construction projects performed on Metro properties and rights-of-way. Phase the implementation of this policy, through a collaborative process, for implementation by other jurisdictions that receive/program Metro funding (in whole or in part) for construction projects. The Policy provides requirements for 1) identifying and mitigating air emission impacts on human health, environment, and climate of on-road and off-road construction equipment and generators used in our construction and development activities; 2) implementing appropriate Best Management Practices (BMP) to complement equipment mitigations; and 3) implementing strategies to ensure compliance with this policy.

Off-road construction equipment shall incorporate, where feasible, emissions-reducing technology such as hybrid drives and specific fuel economy standards; must restrict engine idling to a maximum of 5 minutes; all off-road diesel-powered construction equipment greater than 50 horsepower (hp) shall meet Tier-4 off-road emission standards at a minimum; all construction equipment shall be outfitted with Best Available Control Technology devices certified by California Air Resources Board (CARB); and any emissions control device used by the Contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.

On-road construction equipment hauling material must be fully covered while operating at, to and from the construction site; must restrict engine idling to a maximum of 5 minutes; and all heavy-duty diesel trucks or equipment with a gross vehicle weight rating of 19,500 pounds or greater shall comply with U.S. Environmental Protection Agency (USEPA) 2007 on-road emission standards for PM and NO_X (0.01 grams per brake hp-hour and at least 1.2 grams per brake hp-hour, respectively).

In addition to equipment requirements, BMP intended to reduce emissions and energy consumption during construction are imposed on all construction projects that performed on Metro properties and rights-of-way.

Metro Energy Conservation and Management Plan (ECMP)

In recent years, Metro has implemented several policies and plans to enhance energy efficiency throughout its system. In 2011, Metro published its ECMP to serve as a strategic blueprint for proactively guiding energy use in a sustainable, cost-effective, and efficient manner. The ECMP complements Metro's 2007 Energy and Sustainability Policy, focusing on electricity for rail vehicle propulsion, electricity for rail and bus facility purposes, natural gas for rail and bus facility purposes, and the application of renewable energy. The ECMP addresses current and projected energy needs based on 2010 utility data and existing agency plans to meet increasing ridership through system expansion and new facility construction incorporating Measure R initiatives.

The ECMP examines both supply and demand aspects of energy consumption and analyzes energy use profiles and the various procurement options in terms of rate structures and supply contracts available to the agency. It also identifies opportunities to reduce energy consumption and realize cost savings through the implementation of low-cost operational initiatives and cost-effective capital retrofits. The ECMP includes an evaluation of an optimal organizational structure for its implementation and provides recommended strategies for achieving the objectives set forth. The ECMP strategies follow a process of Plan-Do-Check-Act by establishing the Energy Management Action Plan (EMAP), implementing the EMAP, conducting annual reviews, and adjusting or modifying the EMAP based on gathered feedback and documented performance. In the short term, the ECMP called for expansion of utility data collection and sub-metering of buildings and propulsion injection points to enhance the accuracy of system analyses and identify primary opportunities for improvements.

Following publication of the ECMP, Metro began preparing annual Energy and Resource Reports to provide evaluations on the effectiveness of ECMP strategies. The 2019 Energy and Resource Reports, which analyzes the sustainability and environmental performance of Metro operational activities during the 2018 calendar year, showed Metro reduced total energy consumption by 7.9% compared to 2017 as a result of reduced vehicle fuel consumption by buses and support vehicles. In 2018, 31% of Metro's electricity came from renewable energy sources, including its own solar photovoltaic (PV) systems. These strategies actively reduce GHG emissions, 95% of which are derived from energy use. Per Metro's 2022 American Public Transportation Association Sustainability Performance Report, in 2021 Metro reduced its energy consumption by 0.4% compared to 2020. Onsite renewable energy capacity went unchanged in 2019 or 2020, and remains at. However, we expect this number to increase by 2023, at which point multiple new solar PV installations are expected to be installed and come online (Metro, 2022). Metro is increasing its focus on energy efficiency in buildings as operations grow to meet the demands of a larger transit system. Integrated lighting controls, advanced energy management systems and reliance on renewable energy are included in design requirements to ensure new facilities will be equipped with efficient and effective technologies. Additionally, Metro has recently committed to electrifying its directly-operated bus fleet by 2030.

Metro's Sustainable Rail Plan

The Sustainable Rail Plan (Metro, 2013) supports the implementation of the ECMP by identifying strategies that directly reduce energy used by rail operations, auxiliary systems, propulsion, and facilities. Specifically, the plan provides detailed recommendations that apply to the ECMP sections regarding key equipment upgrades and powerful sustainability and investment-grade opportunities to explore. While the ECMP addresses Metro's broader energy use and procurement strategy, this plan specifically addresses the rail system and analyzes in detail the energy efficiency opportunities within Metro's rail equipment and operations.

Metro's Climate Action and Adaptation Plan

To advance its goals of creating a climate-resilient organization and transit system equipped to meet future regional needs, Metro published a Climate Action and Adaptation Plan (CAAP) (Metro, 2019b) that outlined a path to achieving net zero systemwide greenhouse gas emissions by 2050. Among the actions identified by Metro to reduce emissions, the CAAP included the following measures related to energy resource management:

- Switch directly operated buses to battery-powered technologies;
- Deploy battery-powered buses in the contracted fleet;
- Switch vanpool vehicles to battery-powered vehicles;
- Replace non-revenue vehicles with battery-powered vehicles;
- Install systems to store energy captured from trains;
- Buy 100% renewable energy;
- Install photovoltaic systems;
- Install water-saving fixtures;
- Install non-potable recycled water systems;
- Install light-emitting diode (LED) lights at facilities;
- Install electric heating systems;
- Replace facility appliances with more efficient electric appliances;
- Install electric vehicle (EV) charging at Metro facilities and implement an employee EV outreach plan.

Metro's Moving Beyond Sustainability Strategic Plan

The Metro Board of Directors adopted a new 10-year sustainability strategic plan – the Moving Beyond Sustainability Strategic Plan (MBSSP) (Metro, 2020f) – which updates and consolidates the principles established in Metro's prior sustainability planning documents, including Vision 2028, Long Range Transportation Plan, Equity Platform Framework, and the 2019 CAAP. The MBSSP includes objectives related to energy resource management, water quality and conservation, emissions and pollution control, materials and construction/operations, climate adaptation and resiliency, and equity in economic/workforce development, and establishes CALGreen Tier 2 as a standard for its capital projects. Targets related specifically to energy resource management included reducing energy consumption by 17% at facilities relative to the 2030 Business-as-Usual scenario and increasing onsite renewable energy generation to 7.5 MW. The following strategies related to energy resource management are outlined in the MBSSP:

- **E1:** Implement projects identified in the energy conservation project portfolio;
- **E2:** Optimize building management systems at all divisions and Gateway facility;
- **E3:** Implement an agency-wide facility commissioning and retro-commissioning program;
- **E4:** Expand the onsite renewable energy portfolio by completing identified solar photovoltaic projects, expanding photovoltaic operations and maintenance program, and identifying new opportunities for onsite renewable energy generation facilities;

> **E5:** Developing supporting infrastructure for electric transportation.

3.12-1.3 Local Regulations

City of Lawndale

The Conservation Element of the City of Lawndale General Plan (1992f) is intended to promote the protection, maintenance, and use of the state's natural resources; prevent the wasteful exploitation, destruction, and neglect of the state's natural resources; and recognize that natural resources must be maintained for their ecological value as well as for their direct benefits to the public. The goals and policies listed in Table 3.12-2 apply to energy.

Table 3.12-2. City of Lawndale – Relevant Regulations

Code/Goal/Policy	Description
City of Lawndale General Plan Conservation Element	
Goal 3	Minimize negative environmental effects of supplying and using energy by reducing the community's reliance upon traditional energy resources through initiation of energy conservation practices and the utilization of available energy technology.
Policy 3c	Encourage innovative building, site design and orientation techniques which minimize energy use.
Policy 1g	Examine and initiate where appropriate and feasible, the use of alternative water conservation systems, such as greywater and reclaimed water usage.

Source: City of Lawndale, 1992f

City of Redondo Beach

The Utilities Element of the City of Redondo Beach General Plan (1993h) inventories and describes the existing jurisdictions, facilities, and operation of the critical utilities (i.e., sanitary sewer, storm drainage, water, electricity, natural gas, and telecommunications) that are provided within the City of Redondo Beach. The goals and policies of the Utilities Element list in Table 3.12-3 apply to energy.

Table 3.12-3. City of Redondo Beach – Relevant Regulations

Code/Goal/Policy	Description
City of Redondo Beach General Plan Utilities Element	
Goal 6d	Provide an adequate, safe, and orderly supply of electrical energy to support the various existing and future land uses and development intensities in the city.
Policy 6.4.1	Improve and enhance cooperation and communication with the Southern California Edison Company (or any future purveyor of electricity to the city) to promote effective planning and ensure the most efficient and environmentally sensitive operation and maintenance of the city's electricity supply system and facilities.

Source: City of Redondo Beach, 1993h

City of Torrance

The Community Resources Element of the General Plan (2010c) states objectives and policies to reduce dependence upon and conserve fossil fuels, minimize pollutant emissions, and implement the principles of sustainability within the City of Torrance. The objectives and policies of the Community Resources Element listed in Table 3.12-4 apply to energy.

Table 3.12-4. City of Torrance – Relevant Regulations

Code/Goal/Policy	Description
City of Torrance General Plan Community Resources Element	
Objective CR.21	Pursue the efficient use and conservation of energy resources to reduce consumption of natural resources and fossil fuels
Policy CR.21	Promote energy-efficient design features, including appropriate site orientation, use of light-colored roofing and building materials, and use of trees to reduce fuel consumption for heating and cooling

Source: City of Torrance, 2010c

3.12-2 Methodology

The CEQA Guidelines state that the assessment of potential impacts to energy resources should consider both direct and indirect effects of a project. Direct impacts to energy resources are those that result immediately from construction and operation of a project, such as station electricity and natural gas use, or fuel consumed by vehicles making trips to and from a project site. Indirect energy impacts are typically further removed from construction and operations and refer to energy used to produce and supply electricity, natural gas, water, and transportation fuels to end uses.

3.12-2.1 Energy Resources Quantification

3.12-2.1.1 Construction

Construction of the Proposed Project would result in the temporary, one-time expenditure of petroleum-based transportation fuels (i.e., gasoline and diesel fuel) associated with off-road construction equipment and on-road construction equipment and vehicles. This fuel consumption would represent a direct energy impact of Proposed Project construction and was analyzed quantitatively. The construction activities would consume diesel fuel in off-road equipment engines and on-road truck engines, as well as gasoline in light duty automobile and truck engines used by crew workers. Construction-related fuel consumption (gallons of diesel fuel and gasoline combusted by off- and on-road equipment and vehicles) was estimated using fuel consumption factors from the CARB OFFROAD2017 – ORION Emissions Inventory Model (2022c) and equipment activity inventories provided by Metro, as well as the CARB mobile source EMission FACtor (EMFAC) inventory model. Indirect impacts related to construction materials manufacturing, electricity generation at remote facilities, and petroleum fuels refining and distribution are evaluated qualitatively in the context of regional energy resource trends (CARB, 2021c). The EMFAC model is developed considering adopted or codified requirements related to vehicle fuel efficiency and engine technologies as well as regional fleet turnover (i.e., the phasing out of older vehicles over time). The EMFAC model accounts for the gradual electrification of the regional vehicle fleet, and the emission factors used in the analysis reflect the best representation of what vehicle mix CARB forecasts to comprise the regional fleet in each scenario year analyzed. Metro acknowledges that inherent uncertainties regarding the vehicle fleet mix forecasts exist that cannot be resolved quantitatively at this stage of the planning process.

Equipment inventories were based on the Advanced Conceptual Engineering requirements for construction activities involved in Proposed Project implementation. Estimates of total expected construction equipment activity to complete each phase of the Proposed Project were used in conjunction with CARB OFFROAD2017 fuel consumption factors to estimate diesel fuel consumption from off-road equipment. The CARB OFFROAD2017 - ORION Model utilizes a fuel consumption factor of 0.0574 gallons per horsepower-hour (gal/bhp-hr.) for equipment with engines up to 100 hp and a fuel consumption factor of 0.0516 (gal/bhp-hr.) for engines larger than 100 hp. Diesel fuel consumption

during construction activities was calculated using the following equation for each type of equipment involved in each phase of construction:

$$FC_i = HP_i \times LF_i \times FCF_i \times DU_i \times AD$$

Where:

FC_i = Equipment fuel consumption (gallons)

i = Type of equipment

HP_i = Equipment horsepower (provided by Metro)

LF_i = Equipment load factor (provided by CalEEMod)

FCF_i= Equipment fuel consumption factor based on HP

DU = Equipment Daily Usage (hours per day)

AD = Activity Duration (days)

The diesel fuel required by off-road equipment to complete each construction activity was then summed across the construction schedule to estimate total off-road diesel consumption.

Construction of the Proposed Project would also require on-road vehicle trips for demolition debris and excavated material hauling, construction materials deliveries, and trips by crew workers that would directly consume energy resources in the form of petroleum-based transportation fuels. The California Emissions Estimator Model (CalEEMod), Version 2022.1 (CAPCOA, 2022a), was used to estimate the air pollutant and GHG emissions that would be generated by vehicle trips involved in Proposed Project construction. The CARB GHG emissions inventory relies on emission factors correlated to fuel consumption provided by the USEPA in preparing its calculations. The 2020 USEPA Emission Factors for GHG Inventories include mobile source carbon intensity factors by fuel type. Using the CalEEMod output for emissions of carbon dioxide (metric tons of CO_2) during each construction activity, fuel consumption by diesel-fueled trucks and gasoline-fueled light duty automobiles and trucks were estimated using factors of 10.21 kilograms CO_2 per gallon diesel ($kgCO_2$/gal-D) and 8.78 $kgCO_2$/gal-G, respectively (USEPA, 2022c). Total diesel fuel consumption and motor gasoline consumption were estimated for all activities comprising construction of the Proposed Project and Options.

3.12-2.1.2 Operation

Operation of the Proposed Project would result in direct and indirect expenditures of energy resources. Direct energy effects of Proposed Project implementation would include the electricity required for propulsion of the electric rail cars of the Metro C Line (Green) along the extended route, as well as the change in transportation fuels consumption by regional traffic due to displaced vehicle trips resulting from mode shift to transit in lieu of passenger vehicles. Although construction of the Proposed Project and Options would require the relocation of existing freight tracks along portions of the alignment, the shifts in the freight tracks are not anticipated to result in any substantive changes to the freight train trip lengths. The direct effects to energy resources were analyzed quantitatively using a combination of forecasting tools from Metro, CARB, and USEPA. The indirect energy impacts would be related to the consumption of resources to provide the electricity for railcar propulsion, which is addressed qualitatively.

Metro tracks its systemwide operations and publishes an annual Energy and Resource Report that discloses performance metrics related to operational efficiency, air quality, climate, energy, water, and waste. Data obtained from the Metro Energy and Resource Report technical appendix was used to estimate the annual electricity consumption associated with the additional light rail miles that would result with implementation of the Proposed Project. The Metro electric rail systems averaged approximately 9.17 kilowatt-hours (kWh) per vehicle mile (kWh/mile) accounting for both light rail and heavy rail. The annual operational electricity consumption for the proposed light rail extension was conservatively estimated using this average per-mile consumption factor. Annual electrical demand for operation of the Proposed Project was then converted to MJ using a factor of 3.6 MJ/kWh, consistent with Metro's Energy and Resource Report methodology. CalEEMod was used to estimate electricity demand for the two proposed stations and lighting along the corridor, using a two-acre unenclosed parking structure as a surrogate for each of the stations based on preliminary design blueprints.

In addition to electricity used for railcar propulsion and station and corridor lighting, indirect energy impacts would also occur through the displacement of on-road vehicle trips and associated transportation fuels consumption. Operation of the Proposed Project would increase transit ridership opportunities, and the use of public transit would reduce community reliance on passenger vehicles. Regional transportation modeling was used to produce datasets of daily VMT on the roadway network with and without implementation of the Proposed Project in the year of 2042. The daily transportation fuels consumption under the No Project and Proposed Project condition in 2042 was estimated using average fleet fuel consumption factors from the CARB EMFAC model in terms of gallons per mile. Based on the CARB mobile source emissions inventory, the Los Angeles County regional passenger vehicle fleet in 2042 would consume approximately 28.73 gallons of gasoline and 0.09 gallons of diesel fuel per 1,000 VMT. The daily VMT displacement estimates produced by regional transportation modeling for the Proposed Project and Options were multiplied by the corresponding fuel consumption factors and extrapolated by a factor of 347 to estimate annual fuel consumption with and without implementation of the Proposed Project (CARB, 2021c). Total fuel consumption was converted to MJ to standardize the energy resources analysis.

3.12-2.2 Resource Study Area

The RSA for this report is defined as the utilities and service systems and energy service areas within the cities that the Proposed Project and options' alignment traverses. This varies by utility and service system provider as there are multiple of each throughout the corridor, with many of their service areas extending well outside the South Bay.

3.12-2.3 Significance Thresholds

Based upon the thresholds of significance contained in Appendix G of the CEQA Guidelines, implementation of the Proposed Project would result in a significant impact if either of the following were a result of implementation:

a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation;
b. Conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

3.12-2.4 Project Features

As described in Chapter 2, Project Description a number of features have been incorporated into the project to ensure compliances with the laws, guidelines, and best practices of regulatory agencies. While

project features were not developed specifically for public services, Project Features (PF)-AQ-1, Metro Green Construction Policy, PF-AQ-3, Metro 2020 Moving Beyond Sustainability Strategic Plan, and PF-AQ-4 Metro Design Standards, as described in Section 3.4 Air Quality, Solar Readiness (CCR, Title 24, Part 6), and CALGreen Tier 2 (CCR, Title 24, Part 11) are relevant to energy in the RSA.

3.12-3 Affected Environment / Existing Conditions

Energy needs are typically measured in equivalent British Thermal Units (BTUs). A BTU is the standard measure of heat energy, in which it takes one BTU to raise the temperature of one pound of water by one degree Fahrenheit at sea level. Other units of energy can all be converted into equivalent BTU and, thus, the BTU is used as the basis for comparing energy consumption associated with different resources. Table 3.12-5 shows comparisons of various types of energy and their equivalent BTU.

Table 3.12-5. Energy Unit Comparisons

Energy Type	Energy Unit	Equivalent Megajoules (MJ)	Equivalent BTU
Electrical	Kilowatt-Hour	3.6	3,412
Natural Gas	Cubic Foot Therm	1.1 105	1,037 100,000
Heating Oil	Gallon	145	138,500
Motor Gasoline	Gallon	127	120,286
Diesel Motor Fuel	Gallon	145	137,381

Source: U.S. Energy Information Administration (EIA), 2022b.

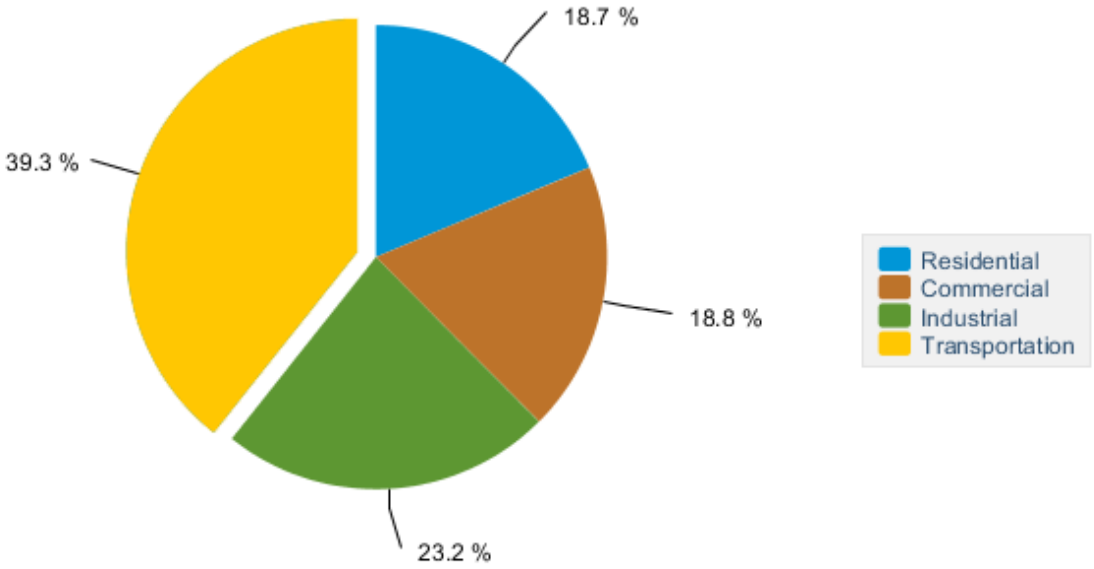
3.12-3.1 State Energy Use

According to the U.S Energy Information Administration (EIA) State Energy Profile, California is among the top states in the nation in net electricity generation from renewable resources, leading the nation in net electricity generation from solar, geothermal, and biomass. California is also a leading producer of electricity from conventional hydroelectric power and wind, ranking fourth in the nation in both. Substantial geothermal resources are also found in California's coastal mountain ranges and in the volcanic areas of northern California, as well as along the state's border with Nevada and near the Salton Sea.

Although California's wind power potential is widespread, especially along the state's eastern and southern mountain ranges, much of the state is excluded from development of this resource because of its wilderness areas, parks, or urban areas. California has one of the lowest per capita energy consumption rates in the country, partially attributable to energy-efficiency programs that have resulted in less energy consumption (EIA, 2022a). As part of the overall economy, the transportation sector is responsible for the most energy consumption of any sector within the state. More motor vehicles are registered in California than any other state, and commute times rank as some of the longest in the country.

California consumes more energy than any other state except Texas, yet the state has one of the lowest per capita energy consumption levels in the United States (EIA, 2022a). Current annual energy consumption in California (including transportation) is approximately 7,802 trillion BTUs, or approximately 8% of the nation’s energy consumption. As shown in Figure 3.12-1 California’s energy consumption by end use is 18.7% residential sector uses, 18.8% commercial sector uses, 23.2% industrial sector uses, and 39.3% transportation sector uses.

Figure 3.12-1. California Energy Consumption by End-Use Sector (2019)

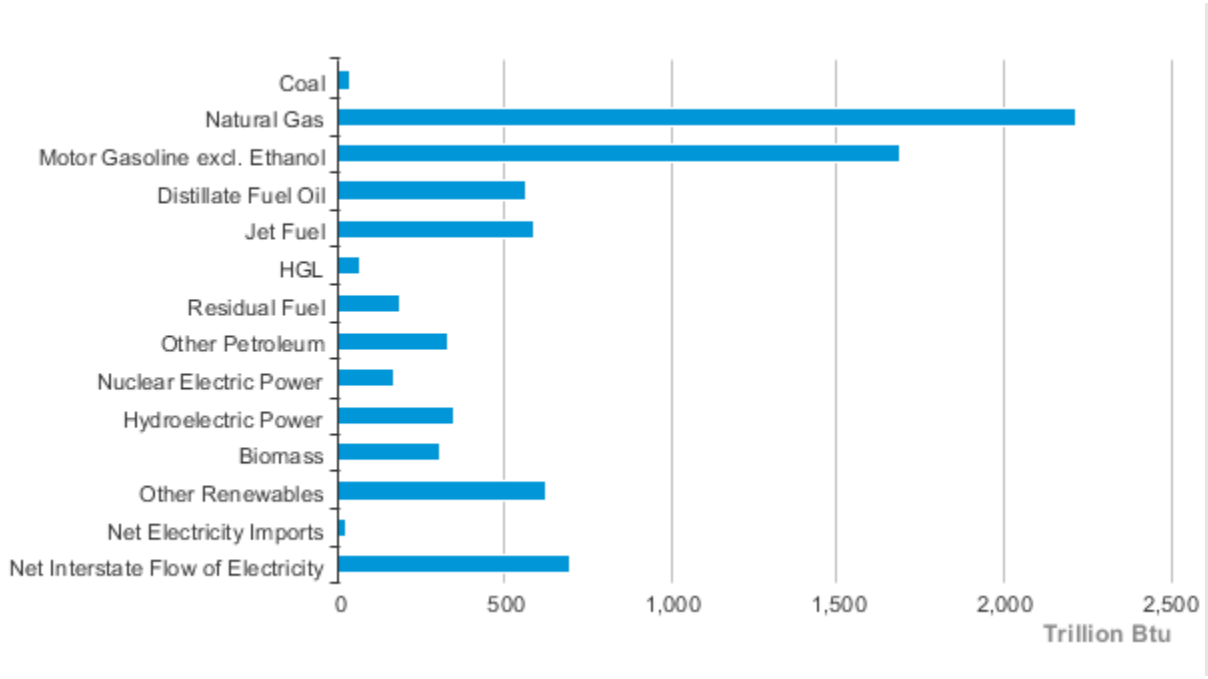


Source: EIA, 2022a

California's consumption by source is shown in Figure 3.12-2. Natural gas and gasoline are the most consumed resources and account for 27.6% and 21.5% of all energy consumption, respectively, followed by jet fuel at 8.6%. Other renewables (solar, wind, etc.) account for approximately 7.7% of all energy consumption (EIA, 2022a). Other petroleum fuel accounts for approximately 4.2% of all energy consumption, followed by biomass at 3.7%, hydroelectric power at 3.0%, and nuclear electric power at 2.4%. A reduction in VMT due to the implementation of alternative modes of transportation could reduce energy use within the region.

Transporting water in California is another major consumer of energy. The California State Water Project is the single largest user of energy in the state and is maintained by the Department of Water Resources. The State Water Project uses approximately six billion kWh (approximately 20.5 trillion BTU) of electricity annually, which is equal to two to three percent of the total electricity consumed in California (California Department of Water Resources, 2020). Water-related energy consumes approximately 20% of the total electricity in California.

Figure 3.12-2. California Energy Consumption by Source (2019)



Source: EIA, 2022a

3.12-3.2 Regional Energy Use

Southern California's energy consumption differs from the state as a whole in that a greater proportion of the energy consumed in the region is for the purposes of transportation, in relation to the high proportion of the population that relies on freeways and local roads for mobility, two major ports that serve as a hub for the movement of goods, and three large airports. Table 3.12-6 shows energy consumption for the SCAG region by energy use. Transportation accounts for approximately 45.1% of all energy use followed by commercial energy consumption at 25.8, and then residential energy consumption at 15.8%.

Table 3.12-6. SCAG Region Energy Consumption

Energy Use	Native Unit[1]	Btu in Trillions	Percent of Total Energy Consumption
Residential Electricity	42,722 GWh	350	15.8%
Residential Natural Gas	2 billion therms	200	9.0%
Commercial Electricity	49,881 GWh	571	25.8%
Commercial Natural Gas	0.5 billion Therms	50	2.3%
Water-Related Energy Use	13,040 GWh	45	2.0%
Transportation	8.3 Billion Gallons of Petroleum	998	45.1%

Source: SCAG, 2020b

[1] Each Gigawatt hours (GWh) is equivalent to one million kWh.

Transportation energy use is related to the number of VMT within the region. According to the SCAG 2020-2040 RTP/SCS, approximately 23.2 daily miles per capita were driven daily under the 2016 base year, approximately 21.8 daily miles per capita would be driven under 2045 baseline conditions and approximately 20.7 daily miles per capita are expected to be traveled under the 2045 plan conditions,

resulting in a 5% reduction compared to the baseline 2045 condition (SCAG, 2020b). A reduction in VMT due to the implementation of alternative modes of transportation could reduce VMT and therefore energy use within the region. The SCAG region is expected to add approximately 3.7 million more people by 2045 relative to the base year, which is expected to pose serious transportation challenges for the region, as travel demand in California will likely increase (SCAG, 2020c).

Metro's contribution to regional energy consumption includes on-road vehicle fuel use (primarily compressed natural gas) and electricity for rail vehicle propulsion and maintenance and administrative facility operation. The Energy and Resource Report examined Metro's total energy use by fuel type for the 2019 calendar year.

Additionally, Metro's 2022 APTA Sustainability Performance Report provided an update on energy performance statistics during 2020–2021 (Metro, 2022a). The total systemwide energy consumption per VRM was 52.3 in 2020 and 52.1 in 2021, demonstrating a continued trend in Metro's enhanced energy efficiency.

Table 3.12-7 displays the Metro system energy consumption by end use between 2015 and 2019. In total, rail propulsion resulted in the consumption of approximately 217.1 million kWh of energy in the year 2019 (Metro, 2020d). To offset electricity consumption levels, Metro constructed PV installations in 2018, which generated 2.65 million kWh in 2019; additional PV systems to generate renewable energy are expected in the future (Metro, 2019a).

Additionally, Metro's 2022 APTA Sustainability Performance Report provided an update on energy performance statistics during 2020–2021 (Metro, 2022a). The total systemwide energy consumption per VRM was 52.3 in 2020 and 52.1 in 2021, demonstrating a continued trend in Metro's enhanced energy efficiency.

Table 3.12-7. Metro Energy Consumption by Fuel Type per Vehicle Revenue Mile (All Metro Modes)

End Use	2015		2016		2017		2018		2019	
	MJ	BTU	MJ	BTU	MJ	BTU	MJ	BTU	MJ	BTU
Vehicle Fuel	45.2	42,810	43.8	41,488	45.3	42,944	41.9	40,721	43.0	40,789
Rail Propulsion	5.6	5,312	5.5	5,227	6.1	5,751	6.4	5,941	6.3	5,976
Facility Energy	5.0	4,746	5.1	4,857	4.4	4,187	3.9	4,015	4.2	3,984
Total	**55.8**	**52,868**	**54.4**	**51,572**	**55.8**	**52,882**	**52.2**	**50,677**	**53.5**	**50,749**

Source: Metro, 2020d

In 2019, the Metro system accrued 124.7 million revenue miles while consuming approximately 52.2 MJ of energy per revenue mile on average across transportation modes, for a total of 6,667 million megajoules. On-road vehicle fuel consumption accounts for approximately 80% of the systemwide energy use, and electricity for rail propulsion represents approximately 12%. Metro facilities account for the remaining 8% of energy use. Metro has prioritized generating system energy from alternative fuels in recent years. In 2019, approximately 30% of Metro's electricity was generated by renewable sources (Metro, 2020).

3.12-3.3 Local Energy Use

The SCAG 2020-2045 RTP/SCS forecasts changes in demographics, population, number of households, and number of jobs within the SCAG region for baseline year 2045. Compared to the base year 2016, all

of the Cities within the RSA are anticipated to grow along each of these factors. Table 3.12-8 shows the forecasted growth of Lawndale, Redondo Beach, and Torrance between 2016 and 2045.

Table 3.12-8. Local Population, Households, and Employment Growth Trends 2016-2045

City Name	Change in Population	Change in Households	Change in Employment
Lawndale	3.0%	5.2%	12.2%
Redondo Beach	6.9%	6.5%	11.4%
Torrance	4.1%	3.1%	5.7%

Source: SCAG, 2020c

SCAG does not provide VMT related data for individual cities within the SCAG region. As discussed in Section 3.12-3.2, the increase in population, households, and employment would be anticipated to result in an increase in daily and annual VMT within the RSA. Transportation energy use is related to VMT, and thus, the transportation energy demands of the applicable cities is anticipated to increase through 2045.

3.12-3.4 Effects of the COVID 19-Pandemic

Since 2020, the COVID-19 pandemic has impacted society through modifications in activity organization, changes to employment and travel, and the use of information and communication technologies. The most material effects of the pandemic on energy resources are related to patterns of regional mobility. According to a study by the University of California, Davis (UC Davis, 2022), in Fall of 2019, approximately 87% of workers within the SCAG region physically commuted to work at least one time each month, while approximately 13% exclusively worked remotely. During 2020 and 2021, the proportion of exclusively remote workers increased to 36% (Fall 2020) and 22.5% (Summer 2021), respectively. By the Summer of 2022, the percent of workers that physically commuted at least once per month rebounded to 88%, similar to pre-pandemic levels. However, the average monthly frequency of physical commutes among all workers in 2022 (12.8 days per month) remained considerably below the pre-pandemic level of 15.6 days per month. By Summer of 2021, the average number of monthly commuting trips was still 29% lower compared to the months before the pandemic.

Transit ridership also decreased substantially during the years 2020 and 2021 in tandem with a decrease in on-road vehicle trips. Commuting trips by rail within the SCAG region were 21% lower in the Summer of 2021 than during pre-pandemic conditions, and non-commuting trips decreased by 18%. As time goes on, further investigations into the long-term repercussions of the COVID-19 pandemic will be better understood. Eventually, it is anticipated that regional growth projections and regional transportation activities will recover to levels predicted prior to the COVID-19 pandemic. However, studies on the effects of the pandemic on regional transportation patterns and forecasted growth between existing conditions and the opening year of the Proposed Project and Options in the mid-2030s, or the horizon year of 2042 are not presently available. This impact analysis uses the best available data, including those described in preceding sections.

3.12-4 Environmental Impacts

3.12-1.1. Would the Proposed Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

3.12-4.1.1 Construction Impacts

Less than Significant Impact. Diesel fuel for construction vehicles and equipment would be the primary source of energy use during the construction period. Construction activities would comply with Metro's Green Construction Policy and construction equipment would be maintained in accordance with manufacturers' specifications. As shown in Table 3.12-9, a one-time expenditure of approximately 1,314,000 gallons of diesel fuel and 102,000 gallons of gasoline would be needed to construct the Proposed Project over the approximately five-year duration. Annual average consumption would be approximately 239,000 gallons of diesel fuel and 18,000 gallons of gasoline throughout Proposed Project construction.

Table* 3.12-9*. Proposed Project Construction Energy Consumption

Construction Phase	Off-Road Equipment Fuel (Diesel Gallons)	On-Road Heavy-Duty Truck Fuel (Diesel Gallons)	Total Diesel Consumption (Diesel Gallons)	Construction Crew Vehicle Fuel (Gasoline Gallons)
Early Utility Relocation	155,163	30,069	185,232	14,398
Project Start-Up	7,457	80,901	88,358	4,972
Final Utility Relocations	70,149	20,470	90,619	12,001
Freight Track Bridges	20,574	25,465	46,039	4,992
Freight Retaining Walls	59,432	80,999	140,431	8,874
LRT Retaining Walls	83,000	53,379	136,379	6,329
Freight At-Grade Crossings	16,839	5,583	22,422	2,035
LRT Guideway Bridges	213,586	72,870	286,456	12,526
Freight Trackwork (BNSF)	14,670	50,245	64,915	3,037
Stations and Access	57,953	18,119	76,072	13,953
LRT Trackwork	50,072	78,648	128,720	11,614
Systems Construction	30,775	6,660	37,435	4,354
Testing/Commissioning	11,015	0	11,015	2,567
Proposed Project Construction Totals (Gallons)			**1,314,093**	**101,652**
Approximate Annual Average			***238,926***	***18,483***
Energy Unit Standardization				
Conversion Factor (MJ/Gal)			0.0088	0.0076
Total Energy (MJ)			**11,564**	**773**
Annual Average (MJ/year)			***2,103***	***141***

Source: STV, 2022; TAHA, 2022

All equipment and vehicles that would be used in construction activities would comply with applicable CARB regulations, the Pavley and Low Carbon Fuel Standards, and the CAFE Standards. Construction would not place an undue burden on available petroleum-based fuel resources. Based on the CARB EMFAC mobile source inventory and the USEPA GHG emissions factors database, the one-time expenditure of energy associated with diesel fuel and gasoline consumption would be offset by operations within one year through transportation mode shift. The temporary additional transportation fuels consumption does not require additional capacity provided at the local or regional level. CEC transportation energy demand forecasts indicate that gasoline and diesel fuel production is anticipated

to increase between 2021 and 2035, while demand for both gasoline and diesel transportation fuels is projected to decrease over the same time period (CEC, 2022b). Therefore, construction vehicles and equipment activities would not place an undue burden on available petroleum fuel resources during construction of the Proposed Project and Options.

Construction activities may include lighting for security and safety in construction zones. Lighting would be sparse and would not require additional capacity provided at the local or regional level.

As part of PF-AQ-1, Metro Green Construction Policy, the Proposed Project would control and minimize fuel consumption to the maximum extent feasible. All equipment and vehicles would be maintained in accordance with manufacturer specifications and would be subject to idling limits. As required by the CALGreen Code Tier 2, at least 80% of the nonhazardous construction debris generated by demolition activities will be diverted from landfills. Also, CALGreen includes the mandatory requirement to reuse or recycle all clean soil that would be displaced during construction of the Proposed Project. Furthermore, PF-AQ-3, Metro 2020 MBSSP, and PF-AQ-4, Metro Design Criteria and Standards requiring high-efficiency LED lighting would also hold construction activities to use energy efficiently.

Based on the substantiation provided above, construction would not result in wasteful, inefficient, or unnecessary consumption of energy resources. Therefore, the Proposed Project would result in a **less than significant impact** related to construction activities.

TRENCH OPTION

Less than Significant Impact. The types of construction activities for the Trench Option would be similar to the Proposed Project, although Trench Option construction would take two more years to complete and involve increased excavation and hauling of soil for the trench along with wall shoring activities, as well as the elimination of at-grade rail crossings for the new light rail alignment. Construction activities involved in implementation of the Trench Option are anticipated to last approximately seven years. Construction activities would comply with Metro's Green Construction Policy and construction equipment would be maintained in accordance with manufacturers' specifications. Table 3.12-10 summarizes the petroleum fuels consumption that would occur during construction of the Trench Option.

Table* 3.12-10*. Trench Option Construction Energy Consumption

Construction Phase	Off-Road Equipment Fuel (Diesel Gallons)	On-Road Heavy-Duty Truck Fuel (Diesel Gallons)	Total Diesel Consumption (Diesel Gallons)	Construction Crew Vehicle Fuel (Gasoline Gallons)
Early Utility Relocation	155,163	30,852	186,015	14,398
Project Start-Up	7,457	32,615	40,072	4,972
Final Utility Relocations	70,149	20,470	90,619	11,827
Freight Track Bridges	22,310	28,795	51,105	3,975
Freight Retaining Walls	89,148	77,865	167,013	13,876
LRT Retaining Walls	83,000	51,126	134,126	5,364
LRT Guideway Bridges	279,305	104,897	384,202	14,883
Freight At-Grade Crossings	16,839	5,387	22,226	1,891
LRT Guideway Trench	256,841	170,323	427,164	27,409
Freight Trackwork (BNSF)	95,490	58,472	153,962	19,235
Stations and Access	70,840	22,625	93,465	16,810
LRT Trackwork	50,072	75,906	125,978	11,355
Systems Construction	30,775	6,758	37,533	4,434
Testing/Commissioning	11,015	0	11,015	2,451
Proposed Project Construction Totals (Gallons)			**1,924,495**	**152,880**
Approximate Annual Average			***296,077***	***23,520***
Energy Unit Standardization				
Conversion Factor (MJ/Gal)			0.0088	0.0076
Total Energy (MJ)			**16,936**	**1,162**
Annual Average (MJ/year)			***2,606***	***212***

Source: STV, 2022; TAHA, 2022
Note: Calculations include energy consumption for the Proposed Project south of 190th Street.

Like the Proposed Project, PF-AQ-1, PF-AQ-3, and PF-AQ-4 would hold construction activities for the Trench Option to use energy efficiently. As shown in Table 3.12-10, a one-time expenditure of approximately 1,900,000 gallons of diesel fuel and 153,000 gallons of gasoline would be needed to construct the Trench Option over the seven-year duration. Similar to discussed above for the Proposed Project, construction would not result in wasteful, inefficient, or unnecessary consumption of energy resources. Furthermore, Trench Option operations would offset the entire construction petroleum fuels energy consumption during the first year of operations due to displaced vehicle trips. Therefore, the Trench Option would result in a **less than significant impact** related to construction activities.

HAWTHORNE OPTION

Less than Significant Impact. The types of construction activities for the Hawthorne Option would be similar to the Proposed Project, with the primary deviation being that no at-grade rail crossings would be constructed and the guideway would be elevated along Hawthorne Boulevard, requiring additional structural work. Construction activities involved in implementation of Hawthorne Option are anticipated to last approximately five years, but would start later than the Proposed Project as coordination with Caltrans would be required prior to construction. Construction activities would comply with Metro's Green Construction Policy and construction equipment would be maintained in accordance with manufacturers' specifications. Table 3.12-11 summarizes the petroleum fuels consumption that would occur during construction of the Hawthorne Option.

Table* 3.12-11*. Hawthorne Option Construction Energy Consumption

Construction Phase	Off-Road Equipment Fuel (Diesel Gallons)	On-Road Heavy-Duty Truck Fuel (Diesel Gallons)	Total Diesel Consumption (Diesel Gallons)	Construction Crew Vehicle Fuel (Gasoline Gallons)
Early Utility Relocation	155,163	27,228	182,391	13,397
Project Start-Up	7,457	60,039	67,496	4,803
Final Utility Relocations	70,149	19,197	89,346	11,622
LRT Guideway Bridges	312,152	209,305	521,457	16,819
Freight Retaining Walls	29,716	47,698	77,414	4,568
LRT Retaining Walls	83,000	6,758	89,758	6,146
Freight Trackwork (BNSF)	29,395	23,996	53,391	6,092
Stations and Access	74,041	17,924	91,965	17,252
LRT Trackwork	50,072	76,004	126,076	10,484
Systems Construction	30,775	6,660	37,435	4,429
Testing/Commissioning	11,015	0	11,015	2,393
		Total Construction	**1,347,744**	**98,005**
		Annual Average	***224,624***	***16,335***
Energy Unit Standardization				
		Conversion Factor (MJ/Gal)	0.0088	0.0076
		Total Energy (MJ)	**11,861**	**745**
		Annual Average (MJ/year)	***1,977***	***125***

Source: STV, 2022; TAHA, 2022
Note: Calculations include energy consumption for the Proposed Project south of 190th Street.

Like the Proposed Project, PF-AQ-1, PF-AQ-3, and PF-AQ-4 would hold construction activities for the Hawthorne Option to use energy efficiently. As shown in Table 3.12-11, a one-time expenditure of approximately 1,300,000 gallons of diesel fuel and 98,000 gallons of gasoline would be needed to construct the Hawthorne Option over the five-year duration. Similar to discussed above for the Proposed Project, construction would not result in wasteful, inefficient, or unnecessary consumption of energy resources. Additionally, the petroleum fuels combustion energy displacement that would occur through eliminated vehicle trips would more than offset the expenditure of fuels during construction of the Hawthorne Option, as summarized below in Table 3.12-12. Therefore, the Hawthorne Option would result in a **less than significant impact** related to construction activities.

3.12-4.1.2 Operational Impacts

Less than Significant Impact. The Proposed Project would directly result in the consumption of energy related to the light rail propulsion systems and lighting and accessory equipment at station platforms. Electricity would be provided to the light rail line by TPSS units and to stations by traditional distribution connection facilities (e.g., power poles, underground wires, and transmission lines). The Proposed Project would indirectly change regional energy consumption through changes in regional VMT by displacing vehicle trips for transit trips, which would reduce petroleum fuels consumption.

As shown in Table 3.12-12, the Proposed Project would reduce annual regional energy consumption from the future without Project condition by approximately 36.44 million MJ in the design/horizon year of 2042 when accounting for direct energy consumption and indirect fuels energy savings. Total electricity consumption to power the light rail extension would be 7,829 MWh (28,182,841 MJ), which would represent an increase of 0.4% of total Metro system and facilities annual electricity consumption as of 2019. This incremental increase in electricity demand would not place an undue burden on the existing electrical infrastructure and represents a miniscule fraction of the total Metro electricity use. All outdoor lighting fixtures at stations, parking facilities, and along the light rail corridor would comply with the CALGreen Tier 2 Prerequisite for Outdoor Lighting, which sets energy efficiency standards at 90 percent of allowed outdoor lighting power under Title 24 Part 6, Section A5.203.1.1.1. However, it is not currently practicable to estimate the resulting reduction in electricity consumption relative to the energy consumption rates that were used in the calculations.

Table* 3.12-12*. Operational Energy Consumption

Energy Resource	Units	Proposed Project	Trench Option	Hawthorne Option
Rail Propulsion Electricity	MWh/year	6,947	6,947	6,947
Station & Lighting Electricity	MWh/year	882	882	882
Total Operational Electricity	**MWH/year**	**7,829**	**7,829**	**7,829**
Unit Conversion	*MJ/MWh*	*3,600*	*3,600*	*3,600*
Electricity Energy	***MJ/year***	***28,182,841***	***28,182,841***	***28,182,841***
Vehicle Trip Displacement	VMT/year	(17,083,851)	(17,083,851)	(17,207,383)
Annual Fuel Savings	Gasoline-Gallon Equivalents (GGE)/year	(492,654)	(492,654)	(496,216)
Unit Conversion	*MJ/GGE*	131.2	131.2	131.2
Petroleum Fuels Energy	***MJ/year***	***(64,625,706)***	***(64,625,706)***	***(65,093,010)***
Net Total Operational Energy	**MJ/year**	**(36,442,865)**	**(36,442,8665)**	**(36,910,169)**

Source: TAHA, 2022

These reductions are consistent with objectives of regional planning strategies to reduce reliance on fossil fuels and non-renewable resources. The effects of Proposed Project operations on regional petroleum-based transportation would not constitute a wasteful or inefficient use of energy resources. On the contrary, implementation of the Proposed Project would improve regional transportation energy

efficiency. Therefore, the Proposed Project would result in a **less than significant impact** related to operational activities.

TRENCH OPTION

Less than Significant Impact. The Trench Option follows the same alignment as the Proposed Project and includes the same stations. The ridership and associated VMT displacements are identical for the Proposed Project and the Trench Option. Annual energy resource consumption for the Trench Option is summarized in Table 3.12-12. As described above, the Trench Option would result in a regional reduction in energy consumption equivalent to approximately 36.44 million MJ in 2042. Therefore, the Trench Option would result in a **less than significant impact** related to wasteful, inefficient, or unnecessary consumption of energy resources during operations.

HAWTHORNE OPTION

Less than Significant Impact. The Hawthorne Option would directly result in the consumption of energy related to the light rail propulsion systems and lighting and accessory equipment at station platforms. Electricity would be provided to the light rail line by TPSS units and to stations by traditional distribution connection facilities (e.g., power poles, underground wires, and transmission lines). The Hawthorne Option would indirectly change regional energy consumption through changes in regional VMT. Regional traffic modeling for the Hawthorne Option determined that the daily VMT displacement would be passenger vehicle miles. In estimating fuel consumption, it was assumed that all displaced vehicle trips that would have otherwise occurred without implementation of the Hawthorne Option would be passenger vehicles (i.e., non-trucks). As shown in Table 3.12-12, above, the Hawthorne Option operations would reduce annual regional energy consumption from the No Build Alternative by 36.91 million MJ. These reductions are consistent with objectives of regional planning strategies to reduce reliance on fossil fuels and non-renewable resources.

Additionally, Hawthorne Option operations would require an additional 7,829 MWh (25 million MJ) of electricity relative to the existing Metro system. This would represent an increase of only 0.4% relative to 2019 systemwide energy consumption and would not place an undue burden on the existing electrical infrastructure. The effects of Hawthorne Option operations on regional petroleum-based transportation would not constitute a wasteful or inefficient use of energy resources. Implementation of the Proposed Project would improve regional transportation energy efficiency. Therefore, the Hawthorne Option would result in a **less than significant impact** related to operational activities.

3.12-1.2. Would the Proposed Project conflict with or obstruct a State or local plan for renewable energy or energy efficiency?

3.12-4.1.3 Construction Impacts

Less than Significant Impact. Energy resources consumption during construction of the Proposed Project would be predominantly combustion of petroleum-based transportation fuels. Construction would result in a one-time expenditure of approximately 1,300,000 gallons of diesel fuel and 102,000 gallons of gasoline over the approximately five years of activities. Average annual fuel consumption would be approximately 239,000 gallons of diesel fuel and 18,000 gallons of gasoline. Implementation of Metro's Green Construction Policy as part of PF-AQ-1, the CALGreen Code, and Title 24 would ensure that construction would be consistent with State and local energy plans and policies to reduce energy consumption. PF-AQ-1 commits Metro contractors to using less-polluting construction equipment and vehicles and implementing best practices to reduce harmful diesel emissions. Best practices include Tier 4 emission standards for off-road diesel-powered construction equipment with greater than 50 hp and

restricting idling to a maximum of five minutes. Compliance with these provisions would limit excess petroleum fuels consumption during active use of off-road equipment and on-road vehicles. The CALGreen Code Tier 2 requires reduction, disposal, and recycling of at least 80% of nonhazardous construction materials and requires demolition debris to be recycled and/or salvaged, which would ultimately result in reductions of indirect energy use associated with waste disposal and storage. Therefore, the Proposed Project would result in a **less than significant impact** related to construction activities.

TRENCH OPTION

Less than Significant Impact. As summarized in Table 3.12-10, construction of the Trench Option would result in a one-time expenditure of approximately 1,900,000 gallons of diesel fuel and 153,000 gallons of gasoline. Average annual fuel consumption would be approximately 296,000 gallons of diesel fuel and 24,000 gallons of gasoline. Similar to the Proposed Project, implementation of PF-AQ-1, the CALGreen Code, and Title 24 would ensure that construction would be consistent with State and local energy plans and policies to reduce energy consumption. PF-AQ-1 commits Metro contractors to using less-polluting construction equipment and vehicles and implementing best practices to reduce harmful diesel emissions. Best practices include Tier 4 emission standards for off-road diesel-powered construction equipment with greater than 50 hp and restricting idling to a maximum of five minutes which would limit excess petroleum fuels consumption during active equipment and vehicle use. The CALGreen Code Tier 2 requires reduction, disposal, and recycling of at least 80% of nonhazardous construction materials and requires demolition debris to be recycled and/or salvaged. Additionally, all clean soil that would be excavated and displaced during construction of the Trench Option would be required to be reused or recycled under CALGreen requirements. Therefore, the Trench Option would result in a **less than significant impact** related to construction activities.

HAWTHORNE OPTION

As summarized in Table 3.12-11, construction of the Hawthorne Option would result in a one-time expenditure of approximately 1,348,000 gallons of diesel fuel and 98,005 gallons of gasoline. Average annual fuel consumption would be approximately 225,000 gallons of diesel fuel and 16,000 gallons of gasoline. Similar to the Proposed Project, implementation of PF-AQ-1, the CALGreen Code, and Title 24 would ensure that construction would be consistent with State and local energy plans and policies to reduce energy consumption. PF-AQ-1 commits Metro contractors to using less-polluting construction equipment and vehicles and implementing best practices to reduce harmful diesel emissions. Best practices include Tier 4 emission standards for off-road diesel-powered construction equipment with greater than 50 hp and restricting idling to a maximum of five minutes. The CALGreen Code requires reduction, disposal, and recycling of at least 50% of nonhazardous construction materials and requires demolition debris to be recycled and/or salvaged. Therefore, the Hawthorne Option would result in a **less than significant impact** related to construction activities.

3.12-4.1.4 Operational Impacts

Less than Significant Impact. The Proposed Project is a light rail system extension providing energy efficient mass transit to communities in need of enhanced accessibility options. The Proposed Project would reduce auto passenger vehicle trips and reduce reliance on petroleum-based transportation fuels. The Proposed Project would be considered by OPR as a "sustainable transportation project" that encourages the use of active transportation, transit, and ZEVs through the creation of multi-use trails and paths (OPR, 2021). The benefits of the Proposed Project are consistent with the goals, objectives, and policies of SCAG and the Cities of Lawndale, Redondo Beach, and Torrance as outlined in the local regulatory framework above. As the renewable energy portfolios of Metro and local jurisdictions expand over time, natural resources consumption to provide the electricity required for operations would become more energy efficient. The Proposed Project would not conflict with any adopted plan or regulation to enhance energy efficiency or reduce transportation fuels consumption and would support the initiatives of the Metro Climate Action and Adaptation Plan. In addition, the Proposed Project would not interfere with renewable portfolio targets and would not result in a wasteful or inefficient expenditure of energy resources. The Proposed Project would positively contribute to statewide, regional, and local efforts to create a more efficient and sustainable transportation infrastructure network. Therefore, the Proposed Project would result in a **less than significant impact** related to operational activities.

TRENCH OPTION

Less than Significant Impact. The Trench Option follows the same alignment as the Proposed Project and includes the same stations and operating pattern. As described above, the Proposed Project would not result conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Therefore, the Trench Option would result in a **less than significant impact**.

HAWTHORNE OPTION

Less than Significant Impact. The Hawthorne Option follows a similar alignment as the Proposed Project and includes the same number of stations and operating pattern. As described above, the Proposed Project would not result conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Therefore, the Hawthorne Option would result in a **less than significant impact**.

3.12-5 Mitigation Measures

No mitigation measures are required, as there are no significant impacts on energy resources.

3.12-6 Project Impacts Remaining After Mitigation

As described in Section 3.12-5, no mitigation measures are required to reduce construction and operation impacts to a level below significance.

3.12-7 Cumulative Impacts

The methodology for cumulative analysis and a description of relevant projects and projections are included in Section 3.0, Introduction.

The geographic scope of the cumulative analysis for energy resources is the service area for the various providers. All probable future projects described in the project list in Section 3.0 fall within the scope of the cumulative analysis.

Between the established year of existing conditions (2021) in this document and the design year of the Proposed Project and Options being analyzed (2042), significant changes in the regional transportation network, energy demands of transportation technologies, and the renewable profile of electricity generation at SCE facilities will occur. Metro is developing an array of projects and infrastructure improvements that will serve to assist the transition away from petroleum fossil fuels and the expansion of zero-emission transportation technologies. The discussions of project-specific and cumulative impacts considered the anticipated improvements in vehicle fuel efficiency, changes in engine technologies, and availability of cleaner electricity in the design year scenario. However, it would not provide informational value to speculate on how entities, organizations, and businesses outside of Metro would adapt to the changing energy resources landscape. Therefore, the discussion of cumulative impacts focuses on the projected supply of transportation fuels and electricity from regional producers and whether the effects of the Proposed Project and Options would be significant in terms of reducing or compromising the availability of those resources. The potential for wasteful or inefficient use of those resources was also evaluated.

3.12-7.1 Proposed Project

There is an existing cumulative impact related to energy resources. The cumulative setting is both regional and statewide. State, regional, and local agencies and jurisdictions have published a wide range of documents intended to reduce energy consumption and increase the use of renewable energy. The intent is typically to reduce the use of nonrenewable energy to reduce pollution that contributes to global warming. The Proposed Project combined with past, present, and reasonably probable future projects could contribute to the existing cumulative impact.

Regarding construction activities, as shown in Table 3.12-12, a one-time expenditure of approximately 1,831,849 gallons of diesel fuel and 101,652 gallons of gasoline would be needed to construct the Proposed Project over the approximately five-year duration. Annual average transportation fuels demand would be approximately 239,000 gallons of diesel fuel and 18,500 gallons of gasoline during construction of the Proposed Project between 2027–2033. Los Angeles County retail sales of diesel fuel and gasoline in 2020 were approximately 299 million gallons and 2,770 million gallons, respectively (CEC, 2021). Relative to existing petroleum-based transportation fuels consumption in Los Angeles County (in 2020), construction of the Proposed Project would temporarily increase annual diesel fuel consumption within the County by approximately 0.61% and would temporarily increase annual gasoline fuel consumption by approximately 0.002%. Data from the CARB EMFAC2021 mobile source emission inventory model project that on-road vehicles within the South Coast Air Basin portion of Los Angeles County will consume 572 million gallons of diesel fuel and 3,298 million gallons of gasoline in 2027 (CARB, 2022a). Construction of the Proposed Project would increase forecasted regional diesel fuel and gasoline consumption in the first year of construction by approximately 0.04% and by less than 0.001%, respectively. These increases would not place an undue burden on existing petroleum-based transportation fuels reserves or supply within Los Angeles County.

There are numerous State and regional regulatory measures designed to minimize excess transportation fuels consumption, as discussed in Section 3.12-1. All equipment and vehicles that would be used in construction activities would comply with applicable CARB regulations, the Pavley and Low Carbon Fuel Standards, and the Corporate Average Fuel Economy Standards. The Proposed Project would adhere to the provisions of the Metro Green Construction Policy to control and minimize emissions to the maximum extent feasible (Metro, 2011). Adherence to the energy reduction policies and the relatively low use of energy resources for construction ensure that the Proposed Project would not result in a significant impact. The Proposed Project would also be consistent with GHG reduction plans. Therefore,

the Proposed Project construction activities would not have a cumulatively considerable contribution to the existing cumulative impact.

Regarding operational activities, The Proposed Project would indirectly change regional energy consumption through changes in regional VMT. As shown in Table 3.12-9, the Proposed Project would reduce annual regional energy consumption by 40.73 million MJ relative to the future (2042) without Proposed Project conditions. The increase in operational electricity demand (7,829 MWh annually) would represent an increase of approximately 0.007% relative to forecasted SCE electricity demand in 2035 (CEC, 2022b). SCE is projected to have a systemwide demand of 107,031 GWh in 2035 and an available electricity supply of 112,539 GWh, with a net surplus of approximately 5,500 GWh. Thus, Proposed Project electricity demand would not place an undue burden on SCE's electricity supply. The increase in operational electricity demand (6,947 MWh annually) would represent an increase of 0.38% relative to existing Metro systemwide consumption.

The effects of Proposed Project operations would reduce regional petroleum-based energy consumption and would improve regional transportation energy efficiency. The Proposed Project is also considered a "sustainable transportation project" by the OPR definition of "transportation projects that encourage the use of active transportation, transit, and ZEVs" as it would create multi-use trails and paths for future patrons (OPR, 2021). Therefore, the Proposed Project operational activities would not have a cumulatively considerable contribution to the existing cumulative impact.

3.12-7.2 Trench Option

As summarized in Table 3.12-10, construction of the Trench Option would result in a one-time expenditure of approximately 1,924,500 gallons of diesel fuel and 152,900 gallons of gasoline during the seven year period. Average annual fuel consumption would be approximately 296,100 gallons of diesel fuel and 23,600 gallons of gasoline. These quantities represent incremental increases of approximately 0.05% and less than 0.001% relative to forecasted on-road vehicle fuel consumption within the South Coast Air Basin portion of Los Angeles County in 2027 (CARB, 2022b). Construction activities to implement the Trench Option would comply with applicable State and regional best management practices to minimize excess transportation fuels consumption. Construction of the Trench Option would result in less than significant cumulative impacts related to regional energy resources.

The long-term operational energy effects of the Trench Option are summarized in Table 3.12-12. Similar to the Proposed Project analysis, the Trench Option would result in an incremental increase of 7,829 MWh in electricity consumption on SCE's grid, and would displace approximately 64,626,000 MJ of transportation fuels energy, for a net energy benefit of 36.4 million MJ. Similar to the Proposed Project, operational electricity requirements would not place a strain on available SCE power supply, which is forecasted to have a net surplus of 5,500 GWh in 2035 (CEC, 2022b). Therefore, operation of the Trench Option would not have a cumulatively considerable contribution to the existing cumulative impact.

3.12-7.3 Hawthorne Option

Table 3.12-11 discloses that construction of the Hawthorne Option would result in a one-time expenditure of approximately 1,924,500 gallons of diesel fuel and 98,000 gallons of gasoline. Average annual fuel consumption would be approximately 224,700 gallons of diesel fuel and 16,400 gallons of gasoline over the approximately five-year duration. These quantities are similar to those analyzed for the Proposed Project and would not represent significant increases in regional transportation fuels demand. Furthermore, all construction activities would comply with applicable regulations and implement best management practices in accordance with the Metro Green Construction Policy to

minimize excess fuel consumption. As summarized in Table 3.12-12, operational energy use would be similar to what is presented above for the Proposed Project. Similar to the Proposed Project analysis, the Hawthorne Option would not have a cumulatively considerable contribution to the existing cumulative impact.

3.13 CULTURAL RESOURCES

This section of the Draft EIR provides an analysis of the potential impacts on cultural resources. Cultural resource topics covered in this report include historical and archaeological resources, and the disturbance of human remains. Paleontological resources are discussed in Section 3.8, Geology, Soils, and Paleontological Resources and tribal resources are further discussed in Section 3.14, Tribal Cultural Resources.

3.13-1 Regulatory Framework

Federal, state, regional and local regulations concerning cultural resources are described in the following section.

3.13-1.1 Federal Regulations

National Historic Preservation Act

The National Historic Preservation Act (NHPA) (16 United States Code [USC] 470) and its implementing regulations (36 Code of Federal Regulations [CFR] 800) establish a program for the preservation of historic properties throughout the United States and provide a framework for identifying and treating historical and archaeological resources under CEQA. Section 106 of the NHPA requires that federal projects or projects under federal jurisdiction consider the effect of an undertaking on properties eligible for or included in the National Register of Historic Places (NRHP). Historic properties that are listed in or eligible for the NRHP are considered historical resources for the purposes of CEQA.

The NHPA establishes the NRHP, which is "an authoritative guide to be used by federal, state, and local governments, private groups and citizens to identify the nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment" (36 CFR 60.2). To be eligible for listing in the NRHP, a property must be at least 50 years old (or have reached 50 years old by the project completion date) and possess significance in American history and culture, architecture, or archaeology to meet one or more of four established criteria (36 CFR 60.4):

- Association with events that have made a significant contribution to the broad patterns of our history;
- Association with the lives of persons significant in our past;
- Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; and/or
- Have yielded, or may be likely to yield, information important in prehistory or history.

Historical resources eligible for listing in the NRHP are considered "historic properties" and may include buildings, sites, structures, objects, and historic districts. A potential historic property less than 50 years of age may be eligible under NRHP Criteria Consideration G if it can be demonstrated that sufficient time has passed to understand its historic importance (National Register Bulletin 15, page 43). To be eligible for listing in the NRHP, a property must also have integrity, which is defined as "the ability of a property to convey its significance." The NRHP recognizes seven aspects or qualities that, in various combinations, define integrity: feeling, association, workmanship, location, design, setting, and materials (National Register Bulletin 15, pages 44–45).

The implementing regulations include a provision for early and effective communication with interested parties, such as Native American tribes. Under this provision (36 CFR 800.2[A]), the Lead Agency is

responsible for contacting local Native American representatives and informing them of the project's intent and nature. The Native American representative is then provided "a reasonable opportunity to identify its concerns about historic properties; advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance; articulate its views on the undertaking's effects on such properties; and participate in the resolution of adverse effects."

3.13-1.2 State and Regional Regulations

California Environmental Quality Act

CEQA is intended to prevent significant avoidable impacts to the environment by requiring feasible alternatives or mitigation measures. If cultural resources are identified within the resource study area (RSA) the sponsoring agency must take those resources into consideration when evaluating project effects. The level of consideration may vary with the importance of the cultural resource.

The CEQA Guidelines (Section 15064.5(a)) define a "historical resource" as the following:

- California properties formally determined eligible for, or listed in, the California Register of Historical Resources (CRHR).
- Those resources included in a local register of historical resources, as defined in Section 5020.1(k) of the PRC, or identified as significant in a historical resources survey meeting the requirements of Section 5024.1(g) of the PRC.
- Those resources that a lead agency determines to be historically significant provided the determination is based on substantial evidence.
- Resources not listed in or previously determined eligible for listing in the state or local registers but determined by a lead agency as historical resources as defined in Public Resources Code sections 5020.1(j) or 5024.1.

California Register of Historical Resources

The California Register of Historical Resources (CRHR) was designed to be used by state and local agencies, private groups, and citizens to identify existing historical resources within the state and to indicate which of those resources should be protected, to the extent prudent and feasible, from substantial adverse change. The CRHR consists of properties that are listed automatically as well as those that must be nominated through an application and public hearing process. Properties eligible for listing in the CRHR may include buildings, sites, structures, objects, and historic districts. It is possible that properties may not retain sufficient integrity to meet the criteria for listing in the NRHP, but they may still be eligible for listing in the CRHR. An altered property may still have sufficient integrity for the CRHR if it maintains the potential to yield significant scientific or historical information or specific data (California Code of Regulations Section 4852 (c)). To be eligible for listing in the CRHR, a property must be at least 45 years of age and possess significance at the local, state, or national level, under one or more of the following four criteria:

- It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;
- It is associated with the lives of persons important to local, California, or national history;
- It embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values; and/or

> It has yielded, or has the potential to yield, information important in the prehistory or history of the local area, California, or the nation.

Potential historical resources eligible for listing in the CRHR may include buildings, sites, structures, objects, and historic districts. A resource less than 45 years of age may be eligible if it can be demonstrated that sufficient time has passed to understand its historic importance. While the enabling legislation for the CRHR is less rigorous with regard to the issue of integrity, there is the expectation that properties reflect their appearance during their period of significance (PRC Section 4852).

California Public Resources Code

Archaeological and historical sites are protected pursuant to policies and regulations enumerated under the California Public Resources Code (PRC). California PRC Sections 5020–5029.5 continue the former Historical Landmarks Advisory Committee as the State Historical Resources Commission. California PRC Sections 5079–5079.65 define the functions and duties of the Office of Historic Preservation (OHP). The OHP is responsible for the administration of federally and state-mandated historic preservation programs in California and the California Heritage Fund. California PRC Sections 5097.9–5097.991 provide protection to Native American historical and cultural resources and sacred sites and identify the powers and duties of the Native American Heritage Commission (NAHC). It also requires notification to descendants of discoveries of Native American human remains and provides for treatment and disposition of human remains and associated grave goods. California PRC Section 21083.2(g) protects archaeological resources. California PRC Sections 21083.2(b) and 21083.2(c) and CEQA Guidelines Section 15126.4 provide information regarding the mitigation framework for archaeological and historical resources, including examples of preservation-in-place mitigation measures. Preservation in place is the preferred manner of mitigating impacts to significant archaeological sites because it maintains the relationship between artifacts and the archaeological context and may also help avoid conflict with religious or cultural values of groups associated with the archaeological site(s).

3.13-1.3 Local Regulations

County of Los Angeles

The Historic Preservation Ordinance establishes a local register and a Historical Landmarks and Records Commission (HLRC) to oversee the enforcement of preservation policies that relate to planning, demolition, alteration, and new construction. Actions to resources that are locally registered or eligible for registration are reviewed by the HLRC for appropriateness.

City of Lawndale

The City of Lawndale's General Plan (City of Lawndale, 1992a) includes policies that promote the preservation and rehabilitation of cultural and historical resources that are significant to the Lawndale community because of their age, architecture, history, or symbolism. The City prohibits the demolition or movement of historic structures without evaluation of the condition of the structure, the cost of rehabilitation, and the feasibility of preservation and conservation alternatives. While the General Plan contains an implementation program to create a Historic Preservation Ordinance, the City has not yet officially adopted one at this time.

City of Redondo Beach

The Preservation Ordinance (Municipal Code Title 10 Chapter 4) (City of Redondo Beach, 1989) establishes a local register and a Preservation Commission to oversee the enforcement of preservation policies that relate to planning, demolition, alteration, and new construction. Actions to resources that

are locally registered or eligible for registration are reviewed by the Preservation Commission for appropriateness.

City of Torrance

The Historic Preservation Ordinance (Municipal Code Division 9, Chapter 1, Article 50) (2018) establishes a local register and a Historic Preservation Commission to oversee the enforcement of preservation policies that relate to planning, demolition, alteration, and new construction. Actions to resources that are locally registered or eligible for registration are reviewed by the Preservation Commission for appropriateness.

3.13-2 Methodology

This section discusses the methodology for establishing the cultural resources RSAs and identifying cultural resources in the RSAs, and the significance thresholds used for evaluating impacts on historical and unique archaeological resources. The methodology for the cultural resources study included archival research, survey, resource evaluation, and analysis of impacts on significant historical and archaeological resources.

Archival research was conducted at the South Central Coastal Information Center (SCCIC) to identify previously conducted cultural resource investigations and previously recorded cultural resources within a half-mile buffer of the Proposed Project footprint. A Sacred Lands File search was requested from the NAHC on April 30, 2020. Legislatively mandated Assembly Bill 52 consultation is being conducted with California Native American tribes and is documented separately in Section 3.14, Tribal Cultural Resources of this Draft EIR. Local historical organizations were contacted for information regarding historical resources on November 30, 2020. Review of the SCCIC results, NAHC results, historic maps and aerial photographs, and other local historical sources informed the development of a prehistoric and historic setting for potential and known cultural resources in the Proposed Project vicinity. Previously recorded cultural resources in the RSAs were identified.

Pedestrian archaeological surveys were conducted within the limited areas of the RSA for archaeological resources with unpaved surfaces and ground visibility on November 5, 2020, and June 21, 2022.

Intensive built environment surveys of the RSA for historical resources were conducted on November 5, 2020 and June 21, 2022. To capture all potential historical resources through the duration of the Proposed Project, the survey included all buildings and structures that would be at least 45 years old at project completion, which is in approximately 2030. Therefore, all buildings and structures that were or appeared to be constructed by 1985 were included in the survey. Building construction dates were identified using Los Angeles County Tax Assessor information and verified in the field survey. Resources identified in the survey that appeared to have the potential for historical or architectural significance were evaluated under the NRHP and CRHR criteria for evaluation to determine eligibility. This included potential resources with demonstrable integrity in location, design, setting, materials, workmanship, feeling, and association. In addition, real estate acquisitions and/or any property or structure older than 45 years that would be altered by the Proposed Project, the Trench Option, or the Hawthorne Option were evaluated. Evaluated resources were recorded on California Department of Parks and Recreation (DPR) 523 Series Forms, which are inventory forms that include resource descriptions and significance evaluations. Resources not associated with significant historic events or persons, or demonstrating standardized materials, methods of construction, and architectural design associated with tract and commercial development, or significantly altered resources were not fully evaluated under NRHP and CRHR criteria due to the low potential for historical significance.

Potential impacts on historical and archaeological resources identified in the RSAs were assessed pursuant to CEQA Guidelines Section 15064.5, and the potential to disturb any human remains was also assessed.

3.13-2.1 Resource Study Areas

The RSAs for cultural resources, as shown in Figure 3.13-1 and in Appendix 3.13-A, Cultural Resource Study Area Maps**,** were delineated based on the proposed physical configuration of the Proposed Project, Trench Option, and Hawthorne Option, including areas where ground disturbance and property acquisitions may occur, and adjacent areas where the Proposed Project has the potential to indirectly impact historical resources. The RSA is defined as the area necessary to construct, operate, and maintain the Proposed Project, the Trench Option and Hawthorne Option, including all the areas of planned ground-disturbance (temporary or permanent), and property acquisitions.

The RSA (the Proposed Project and Trench Option) includes portions of the existing Metro-owned right-of-way (Metro ROW) and adjacent areas that would be used for project-related facilities, including stations, an overhead contact system, traction power substations, communications and signaling buildings, and temporary staging areas. All lay-down yards and other areas of temporary ground disturbance are considered part of the Proposed Project footprint.

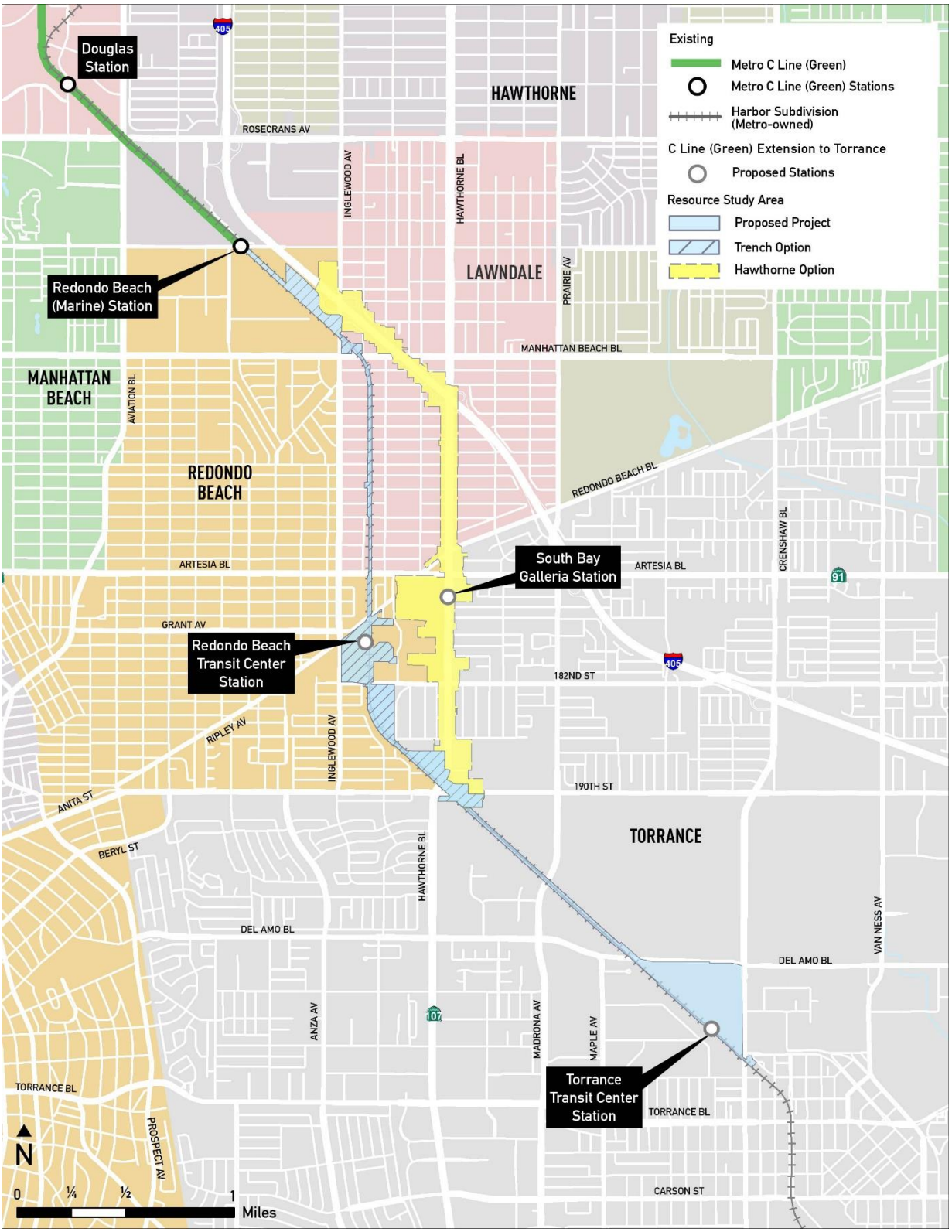
Where light rail infrastructure would be constructed at-grade within the Metro ROW (the Proposed Project and Trench Option), the RSA is limited to the extent of the Metro ROW, because the existing freight railroad infrastructure is already a component of the setting within the Metro ROW, and the introduction of similar infrastructure is unlikely to result in new indirect impacts on cultural resources in areas adjacent to the Metro ROW; i.e., changes to the freight railroad infrastructure at-grade within the Metro ROW would be considered replacement in kind.

Where new light rail infrastructure is constructed outside of the Metro ROW or would require above-grade elements, such as the overhead contact system, elevated structures, sound walls, stations, or other equipment, the RSA includes the first tier of parcels or buildings adjacent to the Metro ROW within a reasonable viewshed of the new construction; i.e., the introduction of new infrastructure would have the potential to cause new visual, audible, or atmospheric intrusions on the setting of adjacent cultural resources.

To differentiate the potential impacts of the Proposed Project, the Trench Option, and the Hawthorne Option separately, the RSA is further delineated for each Option footprint (see Figure 3.13-1 and Appendix 3.13-A, Cultural Resource Study Area Maps). The Proposed Project and the Trench Option share the same horizontal RSA due to a spatial similarity in construction and operational impact potential, with a vertical RSA difference.

The Hawthorne Option RSA differs from the Proposed Project and Trench Option RSAs, as the proposed elevated alignment would be located outside of the existing Metro ROW. The Hawthorne Option RSA includes the first tier of parcels or buildings adjacent to the Hawthorn Option alignment within a reasonable viewshed of the new construction; i.e., the viewshed within which the introduction of new infrastructure would have the potential to cause new visual, audible, or atmospheric (solar or energy) intrusions on the setting of adjacent cultural resources.

Figure 3.13-1. Cultural Resources Resource Study Area



Source: STV, 2022

3.13-2.2 Significance Thresholds

Based upon the thresholds of significance contained in Appendix G of the CEQA Guidelines, implementation of the Proposed Project would result in a significant impact if it would:

a. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5;

b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5;

c. Disturb any human remains, including those interred outside of formal cemeteries.

3.13-2.3 Project Features

As described in Chapter 2, Project Description, a number of features have been incorporated into the project to ensure compliance with the laws, guidelines, or best practices of federal, state, local, and regional agencies. There are no specific project features for Cultural Resources.

3.13-3 Affected Environment / Existing Conditions

3.13-3.1 Prehistoric Setting

The first evidence of human occupation in the Los Angeles area dates to at least 9000 years before present (B.P.) (McCawley, 1996). The broader peopling of the Los Angeles Basin is associated with the Millingstone period, beginning approximately 6500 B.P. (Wallace, 1955; Warren, 1968). Millingstone populations established stable settlements located primarily on the coast and in the vicinity of estuaries, lagoons, lakes, streams, and marshes where a variety of resources, including seeds, fish, shellfish, small mammals, and birds, were exploited. Early Millingstone occupations are typically identified by the presence of handstones (manos) and millingstones (metates).

By 3500 B.P., a number of socioeconomic changes occurred (Erlandson, 1994; Wallace, 1955; Warren, 1968) that are associated with the period known as the Intermediate Horizon (Wallace, 1955). Increasing population size necessitated the intensification of existing terrestrial and marine resources (Erlandson, 1994). The Intermediate Horizon marks a period in which specialization in labor emerged, trading networks became an increasingly important means by which both utilitarian and nonutilitarian materials were acquired, and travel routes were extended. Archaeological evidence suggests that the margins of numerous rivers, marshes, and swamps within the Los Angeles River drainage served as ideal locations for prehistoric settlement during this period. The Los Angeles River (Gumprecht, 1999) and the wetlands associated with its mouth have attracted human settlement for millennia.

The Late Prehistoric period spans from approximately 1500 B.P. to the Spanish mission era. A sharp increase in the number of components seems to indicate population growth at this time, and artifact assemblages reflect continued technological improvements. The bow and arrow first appear during this period, frequently occurring mortars and pestles signify the growing importance of acorn exploitation, and fishing kits include a wide variety of implements. Settlement at this time is believed to have revolved around a relatively limited number of permanent settlements that were located centrally with respect to a variety of resources. By the end of the Late Prehistoric, the patterns had emerged that are associated with the ethnohistoric Gabrielino (McCawley, 1996).

3.13-3.2 Historic Setting

3.13-3.2.1 Spanish Period

Spanish explorers made brief visits to Gabrielino territory in both 1542 and 1602, and, on both occasions, the two groups exchanged trade items. Sustained contact with Europeans did not commence until after 1769, when Gaspar de Portolá and a small Spanish contingent explored the California coast from San Diego to Monterey. A string of 21 missions was established in the years that followed the Portolá expedition, including Mission San Gabriel Archangel in 1771 and Mission San Fernando Rey in 1797. By the early 1800s, the majority of the surviving Gabrielino population had entered the mission system.

On September 4, 1781, El Pueblo de La Reina de Los Angeles was established; by 1786, the flourishing pueblo attained self-sufficiency, and funding by the Spanish government ceased (Gumprecht, 1999). While the Spanish missions and pueblos developed in the 1780s, the Spanish crown also rewarded land grants to veterans of the California occupation army. Between 1784 and 1821, the development of ranchero society and land use under the Spanish distributed some of the best agricultural and ranching lands in California to private individuals. At least 30 ranchos and land concessions were granted, under conditions of settlement to occupy and use the land (Robinson, 1948). The first was the 75,000-acre Rancho San Pedro, provisionally granted to Juan Jose Dominguez in 1784. The area once encompassed more than 120 square miles that included modern-day Torrance and portions of Redondo Beach.

3.13-3.2.2 Mexican Period

Alta California became a state when Mexico won its independence from Spain in 1821. In 1822, Rancho Sausal Redondo, the “Round Clump of Willows,” was provisionally granted to Antonio Ygnacio Avila (Dixon and Roberts, 2005). Rancho Sausal Redondo stretched from present-day Playa del Rey to Redondo Beach, including the modern-day Cities of El Segundo, Manhattan Beach, Hawthorne, Inglewood, Lawndale, and portions of Redondo Beach (Dixon and Roberts, 2005).

The authority of the California missions gradually declined, culminating with their secularization in 1834. Native Americans who had become dependent upon the missions were disenfranchised, and most Gabrielino neophytes either fled to the north or sought work as laborers from nearby private landowners. Former mission lands were quickly divided and granted to private citizens for use as agricultural and pastoral land (Reid, 1939 [1852]).

After 1834, the subdivision of lands into ranchos accelerated. As the possibility of a takeover of California by the United States loomed in the 1840s, Governor Pio Pico increased the number of land grants in a last-ditch effort to keep the land in Mexican hands. More than 600 rancho grants were made between 1833 and 1848.

3.13-3.2.3 Early American Period

The United States took control of California at the end of the Mexican-American War with the Treaty of Guadalupe-Hidalgo in 1848. The Dominguez Family held the title to Rancho San Pedro through the transition of California to statehood. President Buchanan signed the U.S. land patent for Rancho San Pedro in 1858. Although reduced to 25,000 acres due to sales and new surveys, Rancho San Pedro was still a massive holding into the nineteenth century. Antonio Avila retained the title to Rancho Sausal Redondo under the U.S. government after a court ruling in 1856. In 1868, Sir Robert Burnett acquired Rancho Sausal Redondo. Burnett leased 25,000 acres of the property to Catherine Freeman, the wife of Daniel Freeman, in 1873 (Freeman Family Papers, 2010).

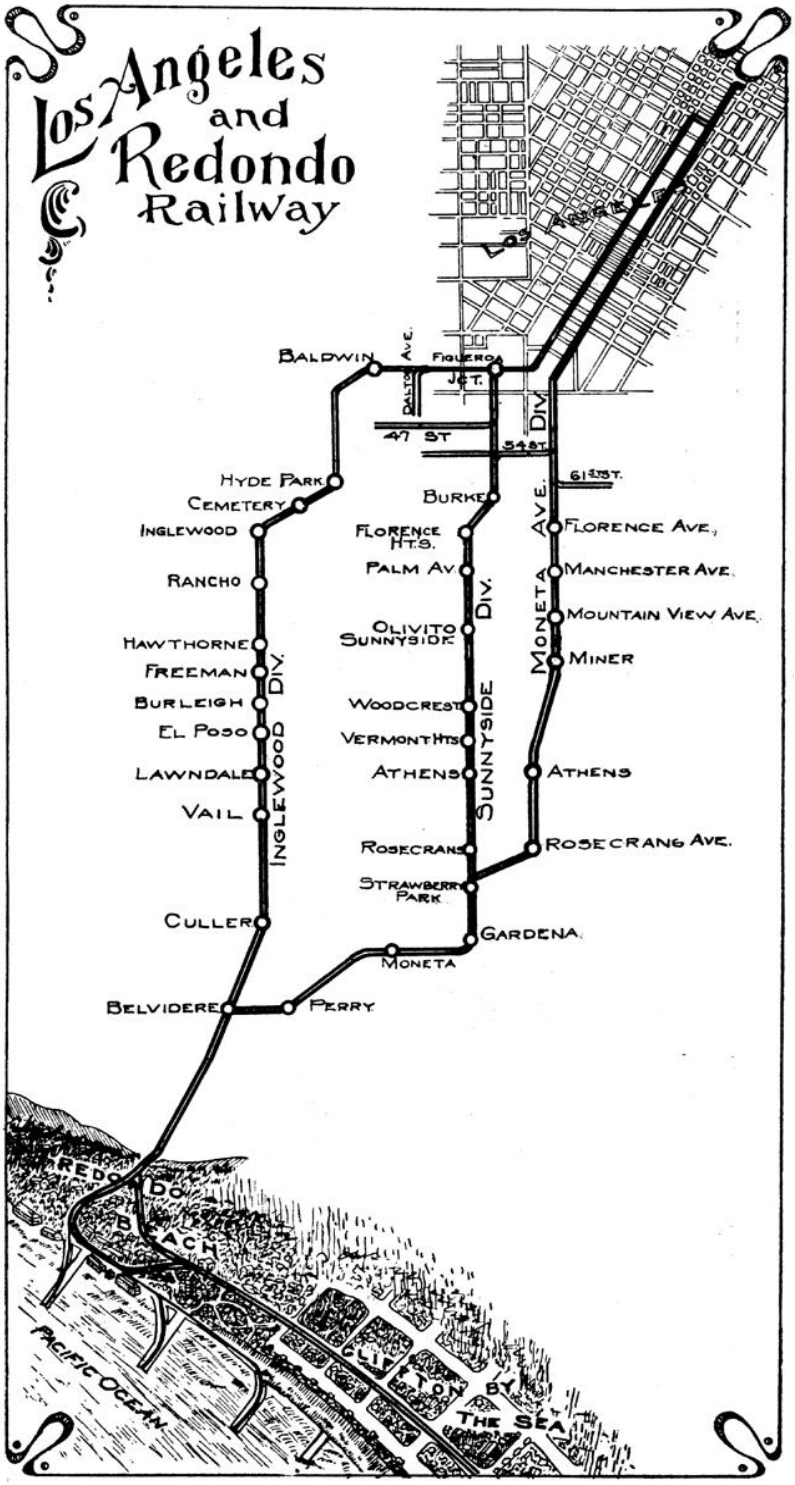
The RSAs are located in the former lands of Rancho San Pedro and Rancho Sausal Redondo, or Rancho Centinela. As these lands were sold and subdivided in the late nineteenth century and the early twentieth century, several factors influenced the patterns of land use and community development in the area. These factors included expansion of the transportation network and its accompanying real estate speculation, the discovery of oil and its exploitation, and the concentration of the aviation industry and its development into the military-industrial complex. As these factors affected the region, individual and distinctive communities grew within their influence.

Railroad Expansion and Real Estate Development

In the 1880s, the race to establish the Los Angeles seaport unfolded, drawing development through the South Bay to connect with the growing city. As part of the competitive process, plans were developed for a port using a deep marine canyon, the Redondo Submarine Canyon, discovered in 1887. Speculators grasped the opportunity to develop Redondo Beach on Rancho San Pedro lands after the U.S. Army Corps of Engineers reported "upon the Natural Advantages of Redondo Beach as a Commercial Seaboard Point" to the Redondo Beach Company (Redondo Beach Historical Society, 2020). The Redondo Beach Company built Wharf No. 1 at Port Redondo and cargo ships began using the port. At the same time, the company planned to build a railroad connecting the new wharf to Los Angeles, and the Redondo Railway Company (later the Los Angeles & Redondo Railway [LA&R]) was incorporated in 1889. The Atchison, Topeka and Santa Fe (AT&SF) Railway was also looking for a way to compete with the Southern Pacific Railroad, the monopoly that controlled all lines to the ports at San Pedro and Wilmington. By 1888, AT&SF established a route between Redondo Beach and Los Angeles (McCandless, n.d.).

By 1902, competition with electric lines, most notably Henry E. Huntington's Pacific Electric, spurred the LA&R to build a new Inglewood line that connected areas south of Inglewood to the Redondo line, as shown in Figure 3.13-2. The electric railroad network stimulated growth in the South Bay and throughout Southern California. In tandem with the consolidation of a reliable water supply system, the railroad inspired the development of new communities in the Los Angeles area in the early twentieth century (Electric Railway Historical Association, 1957), such as the Cities of Hawthorne and Lawndale.

Figure 3.13-2. Los Angeles and Redondo Railway



Source: Serpico, 1988

The City of Hawthorne developed as a real estate speculation on the promise of the construction of the LA&R. The town was platted, and lots went for sale in 1906, advertising a semi-rural life between the city and the sea. By 1907, Hawthorne had more than 100 homes and continued to grow with the success of the LA&R. Industry in Hawthorne was dominated by aviation after Northrop Aircraft Incorporated (now Northrop Grumman) was founded in 1939. Northrop began manufacturing warplanes during World War II (WWII) and continued to develop aviation, aerospace, electronics, and information systems technology.

Just south of Hawthorne, the LA&R extended through the town of Lawndale, founded in 1905. The development was promoted as a place where residents could have a poultry ranch and plentiful garden in the temperate climate. The 1910 U.S. Census recorded only 142 residents living in Lawndale. Agriculture was the primary industry in early Lawndale until oil was locally discovered in the 1920s. An oil boom ensued, with a corresponding real estate and population boom related to oil drilling activities. Oil derricks were constructed, with the major field located to the southwest of the town center. Oil production peaked between 1927 and 1929, and then faced a rapid decline. The oil derricks were removed, and there is currently little trace of the oil industry in Lawndale. Lawndale remained semi-rural through WWII despite the rapid population and commercial growth in surrounding communities. Following WWII, it developed residentially with several tracts built for returning veterans. The area was still zoned for agriculture until 1958. The construction of the Harbor Freeway also contributed to Lawndale's postwar growth. Lawndale was finally incorporated in 1959 and remains a largely residential city.

The plan for the original City of Torrance, known as the Olmsted Tract, owes its origins to a movement that begin in England in the late nineteenth century (City of Torrance, 2013b). Torrance developed as a model industrial city on former Rancho San Pedro land in 1912 under the auspices of the Dominguez Land Company (Serpico 1988; Shanahan and Elliott, 1984). The town of Torrance was laid out in 1912 by John C. and Frederick Law Olmstead, Jr., and master architect Irving Gill created design guidelines. Torrance was planned with paved streets, a water distribution plant, a sewer system, street lighting, more than 100 houses, six brick commercial blocks and a railway passenger depot (Shanahan and Elliott 1984). The buildings Irving Gill designed for the new City of Torrance were a departure from the popular arts and crafts and classical revival styles of the day (City of Torrance, 2013b). The historic period of significance for the Olmsted Tract in Torrance spans from 1912 to 1940. Residential and commercial designs from WWII and the postwar era changed significantly abandoning a specific stylist approached in favor of utilitarian minimalist design devoid of character-defining detailing (City of Torrance, 2013b).

Several companies, including Union Tool Company and Pacific Electric Railway, built factories in Torrance. Industrial war production, including chemical manufacturing, exponentially expanded during WWII. In the postwar period, the population of Torrance grew rapidly in the 1950s. Other large companies that moved to Torrance included Dow Chemical and Reynolds Metals Company. A total of 78,000 new residents moved to Torrance between 1950 and 1960. By 1970, Torrance, with 134,584 people, was the third-largest city in Los Angeles County and the 11th most populous city in California. Although the population declined after 1970, housing increased. Economic revitalization efforts began during the 1980s, with new residential developments and new manufacturing corporations (Shanahan and Elliott, 1984).

The Oil Industry

Attempts to extract oil in the Los Angeles area began in the 1860s, but it was not until the 1890s that successful operations were formed. The Union Oil Company was the largest producer in the state at the time, with operations at San Pedro and Los Angeles.

In 1892, the Pan American Oil Company had its beginnings in Los Angeles, and in 1900 Standard Oil began its California operations in the San Francisco Bay Area. By the 1910s, the oil industry was a major corporate enterprise in the Los Angeles area. Several new and highly productive fields were opened in the 1920s in the Los Angeles basin, including major fields at Huntington Beach, Santa Fe Springs, and Signal Hill. Oil production in the South Bay area developed with important fields after the discovery of oil on Rancho San Pedro in 1921. Fields at Dominguez Hills, Torrance, Whittier, and Wilmington were established in the 1920s and influenced development patterns of the young communities in the area (Rice et al., 2002).

Oil discoveries during the 1920s created major commercial activity and temporarily transformed Lawndale. The boom reached its peak between 1927 and 1929, and the influx of the oil workers and typical boom real estate speculation rapidly declined as the drilling subsided (City of Lawndale, 2020c). During the oil period, Lawndale was easily recognizable by the landscape of oil derrick construction. However, the community's growth subsided during the Great Depression (City of Lawndale, 2020c).

Early Aviation and the Development of the Aerospace Industry

California was an early center for aviation pioneers, particularly Southern California due to its temperate climate. Abundant open land accommodated early airfields and landing strips for barnstormers, and cargo and passenger planes. In 1928, the open agricultural Mines Field (named after real estate developer William W. Mines) in Westchester was selected as the site for the Los Angeles Municipal Airport (now Los Angeles International Airport [LAX]). The airport drew commerce and the aviation industry to the area.

The location of military installations throughout Southern California contributed to the development of the aircraft industry in the Los Angeles area, which overwhelmingly dominated aircraft production into WWII. Companies including Douglas, Lockheed, and Consolidated opened massive plants and employed thousands of workers around the clock, contributing to the population boom during WWII. The military contracts for aircraft production, and research and design created the industry that subsequently laid the foundation for the post-WWII aerospace industry. The Cold War and space programs of the 1960s continued to evolve the industry, with an emphasis on technological development. The activities of several aerospace companies have remained near LAX and continue to remain in the forefront of the aerospace industry (Rice et al., 2002).

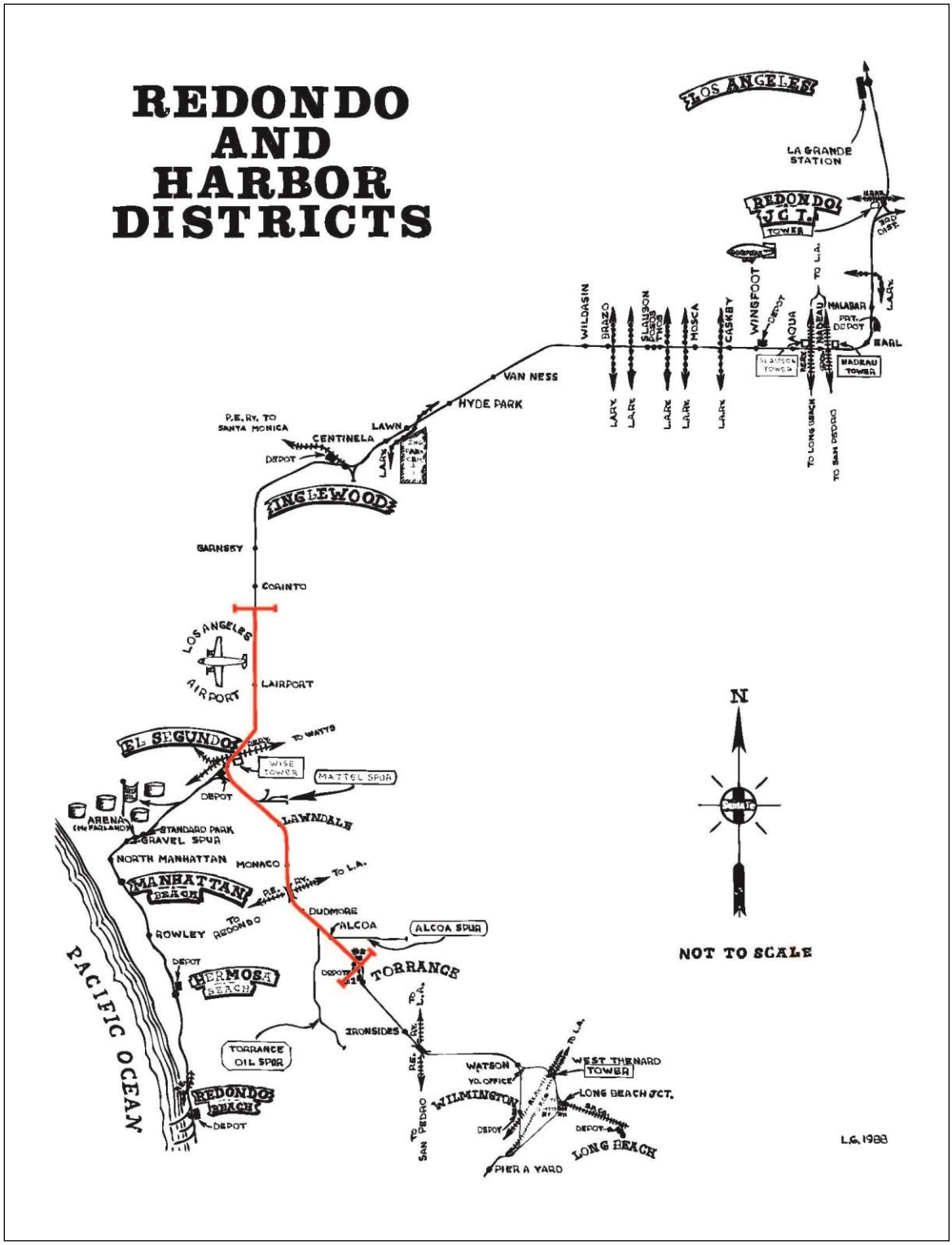
History of Railroad Development within the RSA

The development of the freight railroad in the RSA was directly related to the need for access between Los Angeles and the ports. The AT&SF Redondo Branch, a segment of which is in the Metro ROW between Century Boulevard and Douglas Street in El Segundo, was established in the late 1880s to connect to the port at Redondo Beach. With the intensive development of the ports at Wilmington and San Pedro in the early 1900s, the completion of the first municipal wharf in Los Angeles Harbor, the opening of the Panama Canal, and the discovery of oil, Los Angeles shipping flourished in the 1910s (Serpico, 1988). The AT&SF Railway planned to lay tracks from Los Angeles to San Pedro beginning in the 1880s, but a recession and lack of financial support delayed the extension. Further plans in 1917 were halted when the government took control of all railways during World War I. Finally, the Santa Fe and

Los Angeles Harbor (SF&LAH) Railway Company was incorporated in April 1922 to build a railway to connect the AT&SF at El Segundo to the port at Wilmington.

Construction of the new line began in 1923 and was completed by 1924. In January 1924, the AT&SF leased the SF&LAH and the line became part of the AT&SF San Pedro Branch. In December 1942, the line was acquired outright by the AT&SF Railway, becoming the Harbor District Branch. Business steadied after WWII, with two regular daily freight trains operating until 1960 (Serpico, 1988). In 1995, the Santa Fe Pacific Corporation merged with Burlington Northern, Inc., forming the Burlington Northern Santa Fe Railway (Strauss, 2003), now the BNSF Railway. The main branch line is now known as the BNSF Harbor Subdivision. The freight railroad lines in the RSA are illustrated in Figure 3.13-3.

Figure 3.13-3. Historic Harbor Subdivision Railroad Map (RSA in Red)



Source: Serpico, 1988

History of Commercial Development along Hawthorne Boulevard

Torrance was planned as a model industrial city in the early twentieth century. The neighboring City of Gardena originated in the 1880s but was not incorporated until the 1930s when the communities of Strawberry Park, Moneta, and Western City merged. Torrance and Gardena were both stops on the Pacific Electric Railway on lines running from Los Angeles to San Pedro and Redondo Beach (GPA, 2012). Following WWII, Hawthorne Boulevard became a main retail artery transitioning from a streetcar rural suburb to a commercial district. Hawthorne Boulevard was a two-lane highway in the 1940s and 1950s; by 1963, the highway became a four-lane major thoroughfare (Figure 3.13-4). By the 1960s, Torrance became the third largest city in Los Angeles County. Development shifted its focus to the west, and, with the addition of shopping malls and retail storefronts along Hawthorne Boulevard, the area became the regional destination for shopping (City of Torrance, n.d.).

Figure 3.13-4. Hawthorne Boulevard following roadway redevelopment in 1960s

Source: City of Torrance, n.d.

The property types along Hawthorne Boulevard in the Hawthorne Option RSA include One-Part Commercial Block properties, shopping centers, and large free-standing retail structures constructed during the 1950s and 1960s (Figure 3.13-5). During the 1970s, additional shopping centers were constructed along Hawthorne Boulevard and residential tract housing development began in the late 1970s along 177th Street and 178th Street. The area continues to be a commercial retail corridor, with some modern infill development.

Figure 3.13-5. Hawthorne Boulevard circa 1960, view toward 167th Street (16718 Hawthorne Blvd. photo right)

Source: Daily Breeze, n.d.

3.13-3.3 Archival Research

Historical Society Contact Program

A contact program to identify interested parties regarding historic properties was initiated to identify undocumented historical resources and to address any concerns regarding historical resources that might be affected by the Proposed Project and Options. The program involved contacting local historical societies and preservation groups to solicit comments and concerns regarding the Proposed Project. Letters, maps, and response forms were mailed to Los Angeles and South Bay-area historical societies and preservation organizations on November 30, 2020. Documents pertaining to the historical society contact program are attached as Appendix 3.13-C, Historical Society Contact Program Records Search Results.

South Central Coastal Information Center Records Search Summary

An archival records search request for the Proposed Project was sent via email to the SCCIC housed at California State University, Fullerton on April 30, 2020. The records search was completed by SCCIC staff on June 19, 2020. The research focused on the identification of previously recorded historic built environment and archaeological resources within a half-mile radius of the Proposed Project, Trench Option, and Hawthorne Option footprints. The archival research involved a search of records, including historical site inventories, archaeological site records and reports, and historic U.S. Geological Survey (USGS) topographic maps. Documents pertaining to the records search results are attached as Appendix 3.13-D, SSCIC Records Search.

Previous Cultural Resources Investigations

The records search identified a total of 37 investigations previously conducted within a half-mile radius of the Proposed Project. Of these, 36 are within a half-mile radius of the Proposed Project and Trench Option footprint, while 26 are within a half-mile radius of the Hawthorne Option footprint. Nine previous studies overlap the Proposed Project and Trench Option, while 12 overlap the Hawthorne Option. These reports are summarized in Table 3.13-1.

Table 3.13-1. Previous Investigations Conducted within a Half-mile Radius of the Proposed Project Alignment, Trench Option, and Hawthorne Option

Author	Report	Description	Date	Applies to
McKenna, Jeanette A.	02499	Results of a Standard Prehistoric Archaeological Records Check, City of Redondo Beach, Los Angeles County, California – General Plan EIR	1991	P^2, T^2, H^2
McKenna, Jeanette A.	02570	Phase I Cultural Resource Investigations of the Proposed Family Camp Project Area, Los Angeles Air Force Station, El Segundo, Los Angeles County, California	1992	P, T, H
Stickel, Gary E.	02904	Draft Report: A Phase I Cultural Resources Literature Search for the West Basin Water Reclamation Project	1993	P^2, T^2, H^2
Davis, Gene	03289	Mobil M-70 Pipeline Replacement Project Cultural Resource Survey Report for Mobil Corporation	1990	P, T, H
Duke, Curt	04747	Cultural Resource Assessment for Pacific Bell Mobile Services Facility La 597-03, County of Los Angeles, California	1999	P, T, H
Duke, Curt	04760	Cultural Resource Assessment for Pacific Bell Mobile Services Facility La586-02, County of Los Angeles, California	1999	P, T, H
Romani, John F.	04993	Historic Property Survey Report Prairie Avenue Ramp Relocation	1982	H
Smith, Philomene C.	05499	Negative Archaeological Survey Report: To Cold Plane the Existing Pavement on Route 405 and Overlay with 30mm of Rubberized Asphalt Concrete at Selected On/Off-ramps from Vermont Ave. to Manchester Blvd.	2000	P^2, T^2, H^2
Duke, Curt	05582	Cultural Resource Assessment: Cingular Wireless Facility No. SM 075-02 Los Angeles County, California	2001	P, T, H
Duke, Curt	05980	Cultural Resource Assessment AT&T Wireless Services Facility No. 05127a Los Angeles County, California	2002	P, T
Mason, Roger D.	05983	Cultural Resources Records Search and Literature Review Report for an American Tower Corporation Telecommunications Facility: Number La_464_n1 Hawthorne Boulevard in the City of Redondo Beach, Los Angeles County, California	2001	P, T, H^2
Mason, Roger D.	05990	Cultural Resources Records Search and Literature Review Report for American Tower Corporation Telecommunications Facility: Number La_694_n1 Artesia in the City of Redondo Beach, Los Angeles County, California	2001	P, T
Duke, Curt	05994	Cultural Resource Assessment AT&T Wireless Services Facility No. 05197 Los Angeles County, California	2002	P, T
Duke, Curt	06192	Cultural Resource Assessment AT&T Wireless Services Facility No. 05127b Los Angeles County, California	2002	P, T
Sylvia, Barbara	06236	Highway Project on Route 405 Between Crenshaw Blvd. and Manhattan Beach Blvd. in Torrance and Lawndale in Los Angeles County	2002	P, T, H^2

Author	Report	Description	Date	Applies to
Harper, Caprice D.	06819	Cultural Resource Assessment Cingular Wireless Facility No. SM 241-01 Redondo Beach, Los Angeles County, California	2003	P, T
Bonner, Wayne H.	07690	Cultural Resource Records Search and Site Visit Results for Cingular Telecommunications Facility Candidate El-0009-02 (Southern California Edison [SCE] Gibson), Manhattan Beach Boulevard near Gibson Place, Redondo Beach, Los Angeles County, California	2005	P, T, H
Maki, Mary K.	07842	Phase I Archaeological Investigation of Limited Areas within the Torrance Refinery and Atwood, Southwestern Marine and Vernon Terminals, Los Angeles and Orange Counties, California	2000	P^2, T^2, H
Phil Fulton	09910	Cultural Resource Assessment – Verizon Wireless Services, Prairie Facility, City of Torrance, Los Angeles County, California	2009	P, T
Dolan, Christy and Monica Strauss	10103	Historic Property Survey Report Del Amo Boulevard Extension Project City of Torrance, Los Angeles County, California	2003	P^2, T^2, H
Shepard, Richard S.	10106	Improvements to Artesia Boulevard (State Route 91) in the City of Torrance, Southwestern Los Angeles County	2002	P, T, H^2
Johnson, Ken	10132	Fun, Frustration and Fulfillment: An Historical Study of the City of Redondo Beach	1965	P^2, T^2, H^2
Harper, Caprice D. and Francesca Smith	10160	Preliminary Cultural Resources Survey for the Formation of the Wiseburn Unified School District Project, Cities of El Segundo and Hawthorne, and Unincorporated Los Angeles County, CA	2008	P, T, H
McKenna, Jeanette M.	10333	A Brief Historic Context Statement Prepared for the General Plan Update: The City of Torrance, Los Angeles County, California	2009	P^2, T^2, H^2
McKenna, Jeanette M.	10765	A Cultural Resources Overview and Architectural Evaluation of the Lawndale High School Campus, 14901 S. Inglewood Avenue, Lawndale, Los Angeles County, CA	2010	P, T, H
Billat, Lorna	10788	SCE El Nido – La Fresa #4, CA-LOS4340C – Collocation Submission Packet	2010	P, T
Bonner, Wayne	10878	Cultural Resources Records Search and Site Visit Results for T-Mobile Candidate LA03369C (SCE Maple), 505 Maple Avenue, Torrance, Los Angeles County, California	2007	P, T
Bonner, Wayne	10932	Cultural Resources Records Search and Site Visit Results for T-Mobile USA Facility LA02669-A (SCE Performance Nursery), 2600 Beland Boulevard, Redondo Beach, Los Angeles County, California	2011	P, T
Maxwell, Pamela	11150	West Basin Municipal Water District Harbor/South Bay Water Recycling Project	2003	P^2, T^2, H^2
Wlodarski, Robert J.	11296	Cultural Resources Records Search and Archaeological Survey Results for the Proposed Clear Wireless, LLC, Site CA-LOS5458A (SCE El Nido-La Fresa M5-T5) located at 1701 Inglewood Avenue, Redondo Beach, Los Angeles County, California, 90278	2010	P, T, H
Racer, F.H.	11482	Camp Sites in Harbor District – F.H. Racer	1939	P^2, T^2, H^2
Johnson, Brent	11767	Direct APE Historic Architectural for AT&T Mobility, LLC, 405 Fwy/Redondo Beach Blvd. 16720 Hawthorne Boulevard, Lawndale, CA	2012	P, T, H^2

Author	Report	Description	Date	Applies to
Bonner, Wayne and Kathleen Crawford	12311	Cultural Resources Records Search and Site Visit Results for T-Mobile West, LLC Candidate LA02459A (SM075 SCE Tower M5/Ta) Inglewood Avenue & Rockefeller Lane, Redondo Beach, California	2012	P, T, H
Bonner, Wayne and Kathleen Crawford	12361	Cultural Resources Records Search and Site Visit Results for T-Mobile West, LLC Candidate LA02669A (SM241 SCE/Performance Nursery), 2600 Beland Boulevard, Redondo Beach, Los Angeles County, California	2013	P, T
O'Neil, Stephen and Megan Black	12571	Archaeology Survey Report In Support of the Huitt-Zollars Inglewood Avenue Corridor Widening Project, City Lawndale, Los Angeles County, California	2014	P, T, H
Roland, Jennifer and Susan Hector	12990	Phase I Investigation for the Verizon Wireless Hindry Tower Installation Project, Los Angeles County, California	2015	P, T
Grady, Amber and Robin Hoffman	13416	South Bay Galleria Improvement Project, Redondo Beach, Los Angeles County, Historic Resources Evaluation Report	2016	P, T, H[2]

Source: AECOM, 2020

[1] Reports are prefixed with "LA-"

[2] Indicates study overlaps with RSA

P-Proposed Project

T-Trench Option

H-Hawthorne Option

Previously Recorded Cultural Resources

The records search at the SCCIC identified a total of 13 previously recorded cultural resources within a half-mile radius of the Proposed Project. Of these, all 13 are within a half-mile radius of the Proposed Project and Trench Option footprint, while seven are within a half-mile radius of the Hawthorne Option footprint. One prehistoric site (P-19-000100/CA-LAN-100), a historic period chemical plant (P19-186929), and two historic period railroad structures (P-19-186930 and P-19-186931) were previously recorded within the Proposed Project and Trench Option RSA. One prehistoric site (P-19-000100/CA-LAN-100) and a historic period commercial building (P-19-190021) were previously recorded within the Hawthorne RSA. These are summarized in Table 3.13-2.

Table 3.13-2. Previously Recorded Cultural Resource Sites within a Half-mile Radius of the Proposed Project, Trench Option, and Hawthorne Option

Primary Number[1]	Resource Name	Resource Description	Date	NRHP/CEQA Eligibility Status	Applies to
000100	Unnamed	Prehistoric Campsite	Not dated	Not Evaluated	P[2], T[2], H[2]
178516	Fern Avenue School	Historic-period educational building complex	1933	NRHP-listed	P, T
186929	Dow Chemical Industrial Facility	Historic-period chemical plant	1953	Not Eligible	P[2], T[2]
186930	Burlington Northern Santa Fe Railway Segment	Historic-period railroad segment	1924	Not Eligible	P[2], T[2]
186931	Alcoa Spur	Historic-period railroad spur	1942	Not Eligible	P[2], T[2]
187150	-	Single-family residence	1948	Not Eligible	P, T, H
187277	-	Single-family residence	1948	Not Eligible	P, T, H
187979	Southern California Edison Company Transmission Tower	Historic-period structure	Circa 1954	N/A	P, T
188892	Lawndale High School	Historic-period educational building complex	1959	Not Eligible	P, T, H
188900	Southern California Edison Company Transmission Tower	Historic-period structure	1963	Not Eligible	P, T
189746	Southern California Edison Company Transmission Tower	Historic-period structure	1963	Not Eligible	P, T, H
190021	Italy 2000 Imported Fine Furniture	Commercial building	1947	Not Eligible	P, T, H[2]
190326	Southern California Edison Company Transmission Tower	Historic-period structure	Circa 1967	Not Eligible	P, T, H

Source: AECOM, 2020

[1] Primary numbers are prefixed with "P-19-"

[2] Indicates located within RSA

P-Proposed Project

T-Trench Option

H-Hawthorne Option

> P-19-000100 (CA-LAN-100) – This prehistoric archaeological resource was recorded as one of a series of small prehistoric campsites in Torrance by F.H. Racer in 1939. Racer states, "The only artifacts I know of being found there was a large metate and a mano stone," i.e., prehistoric stone tools (Racer, 1939:5). Racer also notes these artifacts "may have been extraneous" (Racer, 1939:5), although he does not explain what he means by extraneous. In other words, this site is represented by only two stones which Racer's informant believed were artifacts. It is clear from his description that Racer described the resource from hearsay. Racer did not see the artifacts, nor did he personally observe any evidence of an archaeological site. The precise location where these artifacts was found is not recorded, but the resource is documented near the intersection of 190th Street and Hawthorne Boulevard. The site appears on the SCCIC's maps as an arbitrarily drawn 500-foot-diameter circle with its midpoint within the intersection. It overlaps the Proposed Project, Trench Option, and Hawthorne Option RSAs. The site was not evaluated for significance.

- P-19-178516 – The Fern Avenue School was constructed in 1933 to a Spanish Colonial Revival-style design by architect Henry L Gogerty. The property was listed in the NRHP in 1992. The property is significant under NRHP Criterion A for its association with social and education history trends. In addition, the Fern Avenue School is significant under NHRP Criterion C as the oldest elementary school still in use and the only example of Spanish Colonial Revival architecture for a school building within the City of Torrance (NRIS ID#: 92000067). This resource is not located within the Proposed Project, Trench Option, or the Hawthorne Option RSAs.
- P-19-186929 – This site is a 52-acre Dow Chemical industrial plastics production facility. The plant is a post-WWII-era (1945 to 1960) industrial complex that began construction in 1952 and has had alterations up to the present day. This resource was previously evaluated as not eligible for the NRHP (Strauss, 2003). The eastern edge of the property is located within the Proposed Project and Trench Option RSA.
- P-19-186930 – This site was recorded as a 190-foot-long segment of the Harbor Subdivision of the BNSF established on August 31, 1924. The 26-mile main branch line runs northwest to southeast; portions of it lie within the RSA. This resource was previously evaluated as not eligible for the NRHP (Strauss, 2003). This resource is located within the Proposed Project and Trench Option RSA.
- P-19-186931 – This site is a 5-mile-long segment of the Alcoa spur line that was established on July 5, 1942 (Serpico, 1988:151). This resource is partially located within the RSA and extends 2 miles to the east of the Metro ROW. This resource was previously evaluated as not eligible for the NRHP (Strauss, 2003). This resource is located within the Proposed Project and Trench Option RSA.
- P-19-187150 – This resource is a Minimal Traditional-style single-family residence constructed in 1948. The property was recorded and evaluated in 1996 and found ineligible for listing in the NRHP (NRHP, 2022). This resource is not located within the Proposed Project, Trench Option, or the Hawthorne Option RSAs.
- P-19-187277 – This resource is a Modern-style single-family residence constructed in 1948. The property was recorded and evaluated in 1996 and found ineligible for listing in the NRHP (NRHP, 2022). This resource is not located within the Proposed Project, Trench Option, or the Hawthorne Option RSAs.
- P-19-187979 – This site is a steel lattice-type transmission tower, 151 feet, 9 inches high and constructed with bolted steel L-shaped profiles. The base of the tower section measures 30 feet on each side, and the cement footings are rectangular concrete bases. The tower was installed as part of Southern California Edison Company's planned expansion of electrical service in the Redondo Beach area. A double lattice-type transmission tower is also present to the west of the single tower structure. This resource was previously evaluated as not eligible for the CRHR or NRHP and is not located within the Proposed Project, Trench Option, or the Hawthorne Option RSAs (NRHP, 2022).
- P-19-188892 – The Lawndale High School campus was constructed in 1959 with subsequent additions constructed in 2000 and 2005. The property was recorded and evaluated in 2010 and found ineligible for listing in the NRHP (NRHP, 2022). This resource is not located within the Proposed Project, Trench Option, or the Hawthorne Option RSAs.
- P-19-188900 – This site is a steel lattice-type transmission tower, 154 feet, 6 inches high. The tower is a self-supporting zinc-galvanized, open steel frame structure. The tower is part of the El Nido – La Fresa 220-kilovolttransmission line, originally constructed in 1963. The tower was installed as part of Southern California Edison Company's planned expansion of electrical service in the Redondo

Beach area. The structure was recorded and evaluated in 2010 and found ineligible for listing in the NRHP (NRHP, 2022). This resource is not located within the Proposed Project, Trench Option, or the Hawthorne Option RSAs.

- P-19-189746 – This site is a steel lattice-type transmission tower, 160 feet high originally constructed in 1963. The tower was installed as part of Southern California Edison Company's planned expansion of electrical service in the Redondo Beach area. The structure was recorded and evaluated in 2010 and found ineligible for listing in the NRHP (NRHP, 2022). This resource is not located within the Proposed Project, Trench Option, or the Hawthorne Option RSAs.
- P-19-190021 – This resource is a Modern-style, two-story commercial building constructed in 1947, which currently functions as the Italy 2000 Imported Fine Furniture retail store. The property was recorded and evaluated in 2012 and found ineligible for listing in the NRHP (NRHP, 2022). It is located within the Hawthorne Option RSA.
- P-19-190326 – This site is a steel lattice-type transmission tower, 156 feet high constructed circa 1967. The tower was installed as part of Southern California Edison Company's planned expansion of electrical service in the Redondo Beach area. The structure was recorded and evaluated in 2012 and found ineligible for listing in the NRHP (NRHP, 2022). This resource is not located within the Proposed Project, Trench Option, or the Hawthorne Option RSAs.

In addition to information from the SCCIC, the Built Environment Resources Directory (BERD), local historical resource inventories, and listings for the California Office of Historic Preservation's Historic Resources Inventory (HRI), which includes resources in the NRHP database, the CRHR, the California Historical Landmarks Register, and California State Points of Historical Interest, were also reviewed.

The BERD is a compilation of properties maintained by the Office of Historic Preservation. This inventory contains many built resources that are not found on the SCCIC's maps. The BERD listed 676 previously evaluated properties within half mile of the RSAs. Of these 676 properties, 674 of them are located within a half-mile of the Proposed Project and Trench Option RSA, and 385 are within a half-mile of the Hawthorne RSA; 23 are listed as significant, either for the NRHP or locally. Although outside the RSA, all 23 are within a half-mile of the Proposed Project and Trench Option, while five are within a half-mile of the Hawthorne Option. Of the total 676 properties, one is located within the Proposed Project and Trench Option RSA, and another is located within the Hawthorne Option RSA. Documents pertaining to the BERD search results are attached as Appendix 3.13-E, California DPR 523 Series Forms.

Review of the City of Torrance Register of Historic Resources and inventory identified one resource, the Torrance Tract Overlay Zone (Olmsted District) within half mile of the RSA. The Olmsted District is a Historic Preservation Overlay Zone that alone is not a listed resource, but rather a geographic area recognized by the City of Torrance as a planning tool. The Olmsted District is significant for its contribution to American urban planning and the history of Torrance with primarily development from 1912 and 1945 with a mix of commercial and residential properties (City of Torrance, 2018). The district includes 860 contributing resources and 935 non-contributing resources. Three non-contributing resources within the Olmsted District are located within the RSA for the Proposed Project and Trench Option. It does not overlap the Hawthorne Option.

The City of Redondo Beach Historic Resource Inventory contained one locally designated resource within a half-mile of the RSA. This resource is not located within the RSA for the Proposed Project or Options. Documents pertaining to the local register inventory search results are included in Appendix 3.13-E, California DPR 523 Series Forms.

Historic Maps

Maps used to analyze the historic development of the freight railroad within a half-mile of the RSAs are listed in Table 3.13-3.

Examination of the historic topographic maps shows a segment of the Redondo Branch of the AT&SF Railway overlapping with the northern portion of the Hawthorn Option RSA (USGS, 1896 Redondo 15-Minute Quadrangle). By 1944, the illustrated AT&SF (later the BNSF Harbor Subdivision) segment matched the present-day rail configuration except for a portion of the freight railroad within the Hawthorne Option RSA (USGS, 1944 Redondo 15-Minute Quadrangle).

Additional Historical Research

Additional archival research was conducted for the RSAs. Several online databases, including the historic aerial photographs available through Historic Aerials and Sanborn Fire Insurance Maps available through the Los Angeles Public Library (LAPL), were consulted to identify physical changes over time in the RSAs.

Table 3.13-3. Historic Maps

Title	Source	Description	Date
Redondo	USGS	15-Minute Topographic Quadrangle	1896
Redondo	USGS, War Department	15-Minute Topographic Quadrangle	1944
Inglewood	USGS	7.5-Minute Topographic Quadrangle	1924
Inglewood	USGS	7.5-Minute Topographic Quadrangle	1930
Torrance	USGS	7.5-Minute Topographic Quadrangle	1924

Source: AECOM, 2020

Historic and modern aerial photographs demonstrated the significant changes that occurred in the development of the RSAs and their vicinities from the 1950s to the present (NETROnline, 2020). Sanborn Fire Insurance Maps were available for the City of Los Angeles from 1888 to 1955 and the City of Torrance from 1916 to 1932. Sanborn maps depicted the AT&SF Redondo Branch in the RSA in 1929 (LAPL 1906–1950) and 1929–1950 (LAPL 1906–1951). The SF&LAH (now BNSF Harbor Subdivision) was depicted as early as 1928 (LAPL 1906–1951). In addition, historic newspapers and historic context statements for the City of Torrance, the City of Redondo Beach, and the City of Lawndale were also reviewed in order to develop a substantive historic context.

Native American Heritage Commission Sacred Lands File

A Sacred Lands File (SLF) search was conducted by the Native American Heritage Commission (NAHC) to identify any Native American cultural resources that may be Traditional Cultural Properties or Tribal Cultural Resources and that might be affected by the Proposed Project, as required by CEQA as amended by Assembly Bill (AB) 52. Documents pertaining to the SLF search are attached as Appendix 3.13-B, NAHC Correspondence. The following provides an overview of the process and results.

- A letter was mailed to NAHC on April 30, 2020, requesting that an SLF search be conducted for the Proposed Project, and that contact information be provided for Native American groups or individuals that may have an interest in cultural resources in the RSA. The NAHC responded to the request in a letter dated May 15, 2020, which stated “negative results” for the SLF search. The NAHC identified seven Native American representatives who may have knowledge of resources in or near the RSA.

Metro contacted these representatives to conduct mandated AB 52 consultation, which is documented in Section 3.14, Tribal Cultural Resources of this EIR.

3.13-3.4 Historic Built Environment Field Survey

An intensive built environment survey of the RSAs was conducted on November 5, 2020, by Monica Wilson, M.A. (qualified Architectural Historian per 36 CFR Part 61) and Frank Humphries, M.S., RPA. Prior to the field survey, Los Angeles County Tax Assessor's records were reviewed to identify buildings and structures built by 1985. The survey included all buildings and structures that were or appeared to have been built by 1985 and properties with unknown construction dates. Additional built environment resources, including railroad elements, parks, and a cemetery, were surveyed.

The survey identified 82 resources within the RSAs built before 1985 that appeared to have the potential for historical significance. These resources are included in Table 3.13-4. The resources included eight previously recorded built environment resources (P-19-186929, P-19-186930, P-19-186931, P-19-190021, 601 Pine Drive, 605 Pine Drive, 609 Pine Drive, and 706 Crenshaw Boulevard); a community park (El Nido Park in Redondo Beach); a cemetery (Pacific Crest Cemetery in Redondo Beach); Southern California Edison Company transmission towers; and a mix of previously unrecorded residential, commercial, and industrial buildings and structures with the majority of architectural styles dating from the 1940s to the 1970s. The 82 resources were recorded on California DPR 523 Series Forms that are presented in Appendix 3.13-E, California DPR 523 Series Forms. A table including parcels within the RSAs that were exempted from evaluation is included in Appendix 3.13-F, Exempted Property Table.

Of the 82 built environment resources, 13 are located within the Proposed Project and Trench Option RSA boundaries, and 66 are within the Hawthorne Option RSA. Three are within the RSAs of the Proposed Project and Options. Three of the 82 resources (16900 Hawthorne Boulevard, 16418-16424 Hawthorne Boulevard, and 17101 Hawthorne Boulevard) meet the NRHP and CRHR criteria at the local level of significance and are considered historical resources for the purposes of CEQA. All three resources overlap with the Hawthorne Option RSA and are described below.

Table 3.13-4. Historic Built Environment Resources in the RSA

Map Reference #	Address/Resource Name	Built Date	Evaluation	Applies to
1	18600 Hawthorne Blvd	1967	Not Eligible	H
2	18538 Hawthorne Blvd	1960	Not Eligible	H
3	18500-18520-22 Hawthorne Blvd	1962	Not Eligible	H
4	18436 Hawthorne Blvd	1963	Not Eligible	H
5	18402-18404 Hawthorne Blvd	1958	Not Eligible	H
6	18322 Hawthorne Blvd	1953	Not Eligible	H
7	18120 Hawthorne Blvd	1963	Not Eligible	H
8	4347 W 180th St/17916 Hawthorne Blvd	1963	Not Eligible	H
9	4347 W 179th St	1975	Not Eligible	H
10	4348 W 178th St	1975	Not Eligible	H
11	4347 W 178th St	1949	Not Eligible	H
12	4346 W 177th St	1952	Not Eligible	H
13	17490 Hawthorne Blvd	1963	Not Eligible	H
14	17400 Hawthorne Blvd	1963	Not Eligible	H
15	17200 Hawthorne Blvd	1974	Not Eligible	H
16	17000 Hawthorne Blvd	1960	Not Eligible	H
17	16910 Hawthorne Blvd	1966	Not Eligible	H
18	Moda Italia/16900 Hawthorne Blvd	1957	Eligible	H
19	16822 Hawthorne Blvd	1947	Not Eligible	H
20	16818 Hawthorne Blvd	1958	Not Eligible	H
21	16812 Hawthorne Blvd	1953	Not Eligible	H
22	16810 Hawthorne Blvd	1949	Not Eligible	H
23	16804 Hawthorne Blvd	1972	Not Eligible	H
24	16726 Hawthorne Blvd	1959	Not Eligible	H
25	16720 Hawthorne Blvd (P-19-190021)	1947	Not Eligible	H
26	16718 Hawthorne Blvd	1957	Not Eligible	H
27	16704 Hawthorne Blvd	1951	Not Eligible	H
28	16700 Hawthorne Blvd	1954	Not Eligible	H
29	16618 Hawthorne Blvd	1948	Not Eligible	H
30	16500 Hawthorne Blvd	1965	Not Eligible	H
31	Frank's Furniture/16418-16424 Hawthorne Blvd	1948	Eligible	H
32	16414 Hawthorne Blvd	1972	Not Eligible	H
33	16412 Hawthorne Blvd	1954	Not Eligible	H
34	16410 Hawthorne Blvd	1946	Not Eligible	H
35	16408 Hawthorne Blvd	1922	Not Eligible	H
36	16404 Hawthorne Blvd	1948	Not Eligible	H
37	16324 Hawthorne Blvd	1954	Not Eligible	H

Map Reference #	Address/Resource Name	Built Date	Evaluation	Applies to
38	16318 Hawthorne Blvd	1953	Not Eligible	H
39	16316 Hawthorne Blvd	1961	Not Eligible	H
40	16216 Hawthorne Blvd	1960	Not Eligible	H
41	16201 Hawthorne Blvd	1951	Not Eligible	H
42	16317 Hawthorne Blvd	1953	Not Eligible	H
43	16405 Hawthorne Blvd	1973	Not Eligible	H
44	16401 Hawthorne Blvd	1971	Not Eligible	H
45	16421 Hawthorne Blvd	1941	Not Eligible	H
46	16607 Hawthorne Blvd	1954	Not Eligible	H
47	16701 Hawthorne Blvd	1946	Not Eligible	H
48	16707 Hawthorne Blvd	1946	Not Eligible	H
49	16725 Hawthorne Blvd	1955	Not Eligible	H
50	16807 Hawthorne Blvd	1955	Not Eligible	H
51	16821-16827 Hawthorne Blvd	1957	Not Eligible	H
52	16919 Hawthorne Blvd	1958	Not Eligible	H
53	16927 Hawthorne Blvd	1958	Not Eligible	H
54	17001 Hawthorne Blvd	1965	Not Eligible	H
55	17007 Hawthorne Blvd	1950	Not Eligible	H
56	17015 Hawthorne Blvd	1956	Not Eligible	H
57	17017 Hawthorne Blvd	1959	Not Eligible	H
58	Lightning Express Carwash/17101 Hawthorne Blvd	1966	Eligible	H
59	18407 Hawthorne Blvd	1977	Not Eligible	H
60	18705 Hawthorne Blvd	1966	Not Eligible	P, T, H
61	15611 Condon Ave	1965	Not Eligible	H
62	15630 Condon Ave	1967	Not Eligible	H
63	15706 Condon Ave	1960	Not Eligible	H
64	15708 Inglewood Ave	1957	Not Eligible	P, T
65	4701 Manhattan Beach Blvd	1956	Not Eligible	P, T
66	4703 W 168th St	1909	Not Eligible	P, T
67	Pacific Crest Cemetery/2701 182nd St	1934	Not Eligible	P, T
68	Dow Chemical Plant/305 Crenshaw Blvd (P-19-186929)	1952	Not Eligible	P, T
69	BNSF Harbor Subdivision Railroad (P-19-186930)	1923	Not Eligible	P, T
70	Alcoa Spur (P-19-186931)	1942	Not Eligible	P, T
71	City of Redondo Beach Maintenance Facility, Kingsdale Ave	c. 1969	Not Eligible	P, T
72	El Nido Park/18301 Kingsdale Ave	1956	Not Eligible	P, T
73	1306 Firmona Ave	1955	Not Eligible	P, T
74	SCE El Nido La Fresa 220 kV Transmission Line - Tower #8	1966	Not Eligible	H
75	Torrance Tract Overlay Zone (Olmsted District)/ 601 Pine Drive	1949	Not Eligible	P, T

Map Reference #	Address/Resource Name	Built Date	Evaluation	Applies to
76	Torrance Tract Overlay Zone (Olmsted District)/ 605 Pine Drive	1949	Not Eligible	P, T
77	Torrance Tract Overlay Zone (Olmsted District)/ 609 Pine Drive	1949	Not Eligible	P, T
78	15548 Inglewood Ave	1968	Not Eligible	P, T, H
79	15634 Condon Ave	1951	Not Eligible	H
80	15700 Condon Ave	1951	Not Eligible	H
81	4552 Manhattan Beach Blvd	1950	Not Eligible	H
82	SCE El Nido La Fresa 220 kV Transmission Line – APN 4149-007-800	1967	Not Eligible	P, T, H

Source: AECOM, 2022
P-Proposed Project
T-Trench Option
H-Hawthorne Option

Moda Italia/16900 Hawthorne Boulevard (APN 4075-012-019/Map Reference 18)

This resource is only located within the Hawthorne Option RSA. The resource located at 16900 Hawthorne Boulevard is a Contemporary-style commercial building constructed in 1957 (Figure 3.13-6). The one-story building has a rectangular plan with a taller one-story building section along the west elevation and a west-facing orientation. The building has a flat roof with a cantilevered flat roof overhang along the west elevation. The exterior walls are stucco along the upper half of the west elevation, brick and decorative ashlar stone veneer along the north elevation, and brick along the east elevation. The south elevation wall is stacked bond masonry units and the wall is shared with the adjacent building at 16910 Hawthorne Boulevard. The primary entrance is offset at the northwestern corner within a recessed area under an L-shaped decorative metal I-beam and cantilevered flat roof entrance hood. Above the cantilevered hood is a metal screen flush with the roofline.

The entrance is flanked by low concrete planters and a wedge-shaped concrete planter at the northwest corner of the parcel. The low concrete planter extends around the north elevation of the building along the ashlar stone veneer wall. The planters contain tropical plantings, and a large mature yucca is within the north planter. The store entrance is a single-entry, aluminum-frame and glass storefront with sidelight. The façade features full-height, large plate glass windows. The rear elevation has three multi-light, wood-frame casement windows, a single-entry steel door accessed via a set of stairs with brick half wall, and a loading dock with a roll-up door enclosed by a chain-link fence. A small, paved area for employee parking is along the east (rear) elevation along the alleyway connecting 169th Street and 170th Street. Illuminated “Moda Italia” signage is attached to the façade. A roof-mounted and west elevation-mounted metal I-beams sign supports are still attached to the building, but the signage has been removed (see Figure 3.13-7 and Figure 3.13-8).

Built in 1957, the property operated as Bay Shore Furniture until 1975 and is associated with the mid-twentieth century development of Hawthorne Boulevard (Los Angeles Times [LAT], 1958). The property has operated as the Moda Italia furniture store from 1987 to the present (LAT 1985, 1987). The resource displays many features of the Contemporary style within the theme of commercial mid-twentieth century storefront architecture that was popular from the 1940s through 1970. The Contemporary style is generally characterized by strong roof forms including flat, gabled, shed, or butterfly, typically with deep overhangs and/or exposed beams, large windows, and non-traditional exterior finishes. The mid-twentieth century storefront layout is characterized by horizontal emphasis,

asymmetrical and angled storefronts, exaggerated-modern massing and experimental structure, cantilevered and rod/column-supported canopies, fixed awnings, signs (façade as billboard, channel-set neon tubing set within metal letters, reverse channel-set letters, programmatic, internally illuminated back-lit metal box, individual letters pinned to the wall or mounted to a canopy, projecting signs, post signs), tempered glass doors with sleek handles and hardware, and recessed lighting in entry lobbies. Eye-catching and fashionable storefront designs reflected new architecture and retailing designs in the immediate post-WWII period and into the 1960s. The building at 16900 Hawthorne Boulevard integrates hardscaping and landscape elements. The low concrete planters flanking the recessed entrance and along the ashlar stone veneer north wall help to add visual interest with exotic landscaping, including the large yucca plant that appears to be original.

Figure 3.13-6. Overview of 16900 Hawthorne Blvd. property, view to south, November 5, 2020

Source: AECOM, 2020

Figure 3.13-7. Newspaper advertisement of grand opening with rendering of 16900 Hawthorne Boulevard Bay Shore Furniture Co.

Source: Torrance Herald, 1957

Figure 3.13-8. Newspaper advertisement of 16900 Hawthorne Blvd. from 1979

Source: LAT, 1979

Table 3.13-5 provides the evaluation for this resource's eligibility under NRHP/CRHR. As described in the table, this commercial building meets NRHP Criterion C/CRHR Criterion 3. The resource is significant at the local level because it is a good example of Contemporary-style commercial mid-twentieth century storefront architecture that retains a high level of historic integrity to its period of construction (1957).

Table 3.13-5. Moda Italia/16900 Hawthorne Blvd Evaluation Summary

Eligibility Criteria	Summary	Finding
NRHP Criterion A/CRHR Criterion 1	No significant association with important historic events. The building on this parcel, constructed in 1957, is associated with the commercial development of Torrance during the mid-twentieth century and has served multiple functions and businesses since its construction. This was one of many commercial developments constructed in the area to support the postwar growth in the area and research did not reveal that the building itself played a distinct or important role in the economic development of Torrance.	Not eligible
NRHP Criterion B/CRHR Criterion 2	No significant association with important historic events. Research did not indicate that any individuals related to the use of this building made demonstrably important contributions to history at the local, state, or national level.	Not eligible
NRHP Criterion C/CRHR Criterion 3	This building is significant at the local level because it is a good example of Contemporary-style commercial mid-twentieth century storefront architecture that retains a high level of historical integrity to its period of construction (1957). The building still is in its original location, the setting of which still is dense commercial development along Hawthorne Boulevard. The building still is for commercial use as a furniture store, and thus the building retains integrity of association. It retains very good integrity of design, materials, and workmanship. Furthermore, in terms of feeling, the most subjective of integrity considerations, the building continues to look like a building of its period. The building at 16900 Hawthorne Boulevard is a good example reflecting the mid-twentieth century trends of this style and property type because of its asymmetrical façade; use of the building as a billboard concepts and prominent signage; and variety of exterior finishes including decorative metal beams, slate tile, brick, and stucco. Therefore, this property is eligible under NRHP Criterion C/CRHR Criterion 3. The period of significance of this building is 1957, the year it was built. The character-defining features are its footprint and form, scale and massing, flat roof, flat cantilevered overhang along the west elevation, cantilevered flat roof and I-beam over the recessed store entry within the northwestern ell of the building, metal sunscreen above the entrance flush with the upper roof line, full-height glass metal frame windows with solid stucco in the upper half of the wall elevation, low concrete planters flanking the entrance and north wall with mature yucca tree and other plantings, ashlar stone veneer on the north wall, concrete terrace with low stone wall/planter along the façade, glass and metal entrance door with sidelight, stacked bond concrete masonry unit south wall, and the brick exterior of the shorter one-story building segment. The boundaries of the property are its legal parcel.	Eligible
NRHP Criterion D/CRHR Criterion 4	Not significant as a source (or likely source) of important information regarding history. It does not appear to have any likelihood of yielding important information about historical construction materials or technologies.	Not eligible

Frank's Furniture/16418-16424 Hawthorne Boulevard (APN 4075-007-008; 4075-007-007/Map Reference 31)

This resource is only located within the Hawthorne Option RSA. The Frank's Furniture store at 16418-16424 Hawthorne Boulevard is a mid-twentieth century storefront commercial building constructed in 1948 (Figure 3.13-9). The one-story building has a rectangular plan and a west-facing orientation. The building has a flat roof with a parapet and a flat cantilevered awning extending the length of the 16418 unit. The attached 16424 unit has a narrower flat awning, brick veneer exterior cladding, and angled storefronts. The building has a rooftop-mounted sign that is a combination of illuminated box signage and channel-set neon tubing set within metal letters. Along the parapet is additional neon signage. The exterior walls feature a concrete block with Chatsworth stone veneer along the façade and stucco along the side and rear elevations. The façade has aluminum-frame and glass storefront windows and single-entry and double-leaf doors. The east (rear) elevation has several loading docks and single-entry steel doors. The building sits on a concrete foundation.

Built in 1948 and expanded in 1953, the property has operated as Frank's Maple Shop/Frank's Furniture/ Frank's Maple Furniture since 1948. The adjoining 16424 Hawthorne Boulevard building briefly operated as Howard's Cleaners during the 1950s; however, this section of the building has served Frank's Furniture since the 1960s. The resource displays many features of the mid-twentieth century One-Part Commercial Block architecture that was popular from the 1940s through 1970. The One-Part Commercial Block building utilizes simple single-story box forms with flat roofs, plain storefronts, and minimal ornamentation. Typically long and rectangular in plan with the narrow side facing the street, these buildings could be stand-alone, paired, or grouped. The primary façade is typically dominated by glazed, metal-frame storefronts with signage applied to the upper façade below the roofline. From the late 1940s through the 1970s, the One-Part Commercial Block building was commonly clad with brick, concrete block masonry, and stucco. During the period when Contemporary and Googie styles were popular in the 1950s through the 1960s, these high-style interpretations could be expressed using asymmetrical and angled storefronts with exaggerated-modern massing, cantilevered and rod/column-supported canopies, fixed awnings, and decorative signs. Decorative exterior cladding materials can also include porcelain enamel, structural glass, wood, tile, and metal screens and sometimes integrated landscaping elements, like low planters with exotic plantings, were part of the overall design aesthetic. With the popularity of the automobile and the transformation of Hawthorne Boulevard from streetcar to vehicular artery, many of the post WWII-constructed One-Part Commercial Block properties in Lawndale provided off-street paved parking at the rear or side of the commercial buildings (Archives & Architecture, 2015; Dyson, 2008; Jackson, 2000; McAlester, 2013).

Figure 3.13-9. Overview of 16418-16424 Hawthorne Boulevard property, view to east, November 5, 2020

Source: AECOM, 2020

Table 3.13-6 provides the evaluation for this resource's eligibility under NRHP/CRHR. As described in the table, this commercial building meets NRHP Criterion C/CRHR Criterion 3. The resource is significant at the local level because it is a good example of mid-twentieth century storefront commercial building that retains a high level of historical integrity to its period of construction (1948).

Table 3.13-6. Frank's Furniture/16418-16424 Hawthorne Boulevard Evaluation Summary

Eligibility Criteria	Summary	Finding
NRHP Criterion A/CRHR Criterion 1	No significant association with important historic events. The building on this parcel, constructed in 1948, is associated with the development of Lawndale during the mid-twentieth century and has served the same businesses since its construction. Research did not reveal that the building played a distinct or important role in the economic development of Lawndale and is merely one of many furniture stores along Hawthorne Boulevard.	Not eligible
NRHP Criterion B/CRHR Criterion 2	Not significant for any associations with the lives of persons important to history. Research did not indicate that any individuals related to the use of this building made demonstrably important contributions to history at the local, state, or national level.	Not eligible
NRHP Criterion C/CRHR Criterion 3	This commercial building retains its integrity of location, design, setting, materials, workmanship, feeling, and association. The original location of the building has remained the same, and it has not been moved since its construction in 1948; therefore, the property's integrity of location remains intact. The 16418-16424 Hawthorne Boulevard property retains its integrity of design because it has not been significantly or permanently altered to a point that would compromise the form, plan, space, structure, or style of the building. The signage modifications (addition of illuminated box signs) are minor and have been sympathetic to the original design such that it retains its integrity of design, materials, and workmanship. The property retains its integrity of workmanship because the property is recognizable as an interpretation of its mid-twentieth century storefront commercial design. The property's integrity of setting has seen some encroachments from commercial development along Hawthorne Boulevard, yet despite some modern construction, the property retains integrity of setting. In its current state, the property conveys its character and historical integrity of feeling as a furniture store from the mid-twentieth century. The 16418-16424 Hawthorne Boulevard property has functioned as Frank's Furniture since its construction; therefore, the property's integrity of association as a commercial building is intact. The period of significance is 1948.	Eligible
NRHP Criterion D/CRHR Criterion 4	Not significant as a source (or likely source) of important information regarding history. It does not appear to have any likelihood of yielding important information about historical construction materials or technologies.	Not eligible

Lightning Express Carwash/17101 Hawthorne Boulevard (APN 4081-028-032/Map Reference 58)

This resource is only located within the Hawthorne Option RSA. The drive-through carwash with an attached commercial building at 17101 Hawthorne Boulevard is a Googie-style commercial property constructed in 1966 (Figure 3.13-10). The one-story building has a rectangular plan and an east-facing orientation. The building has a flat roof with wide overhanging eaves. The exterior walls of the office are covered with concrete and sheet metal siding. The drive-through car wash lane has plexiglass panels, and the roof is supported by metal projecting blade signs. The building sits on a concrete foundation and has an asphalt-paved surface parking lot with vacuum stations to the west. The primary entrance is a

single-entry metal-frame and glass door. There is a pole-mounted illuminated box sign attached to the northeast corner of the building.

Built in 1966, originally, this property operated as the Continental Car Wash and had an Orange Julius kiosk inside the carwash waiting room (LAT, 1970). Currently, the property operates as the Lightning Express Carwash. The resource displays many features of the Googie (Futurist/Populuxe) style, popular from after WWII to the late 1960s. The Googie style is characterized by abstract, angular or curved shapes; expressive roof forms (flat, gabled, upswept, butterfly, parabolic, boomerang, or folded); large plate glass window walls (aluminum framed), prominent signage (neon or lighted) commonly integrated into the roofline; variety of exterior finishes including stucco, concrete block, brick, stone, plastic, and wood siding; bright colors; screen block and shadow block accents; use of the building as a billboard; porte-cocheres and other automobile-friendly features; and asymmetrical façades (City of Los Angeles, 2003:34). With the popularity of the automobile and the transformation of Hawthorne Boulevard from streetcar to vehicular artery, the Lightning Express Carwash employed projecting blade signage and abstract designs to attract customers. The original glass block along the east elevation was replaced with plexiglass panels in 2014.

Figure 3.13-10. Overview of 17101 Hawthorne Blvd. property, view to southwest, November 5, 2020

Source: AECOM, 2020

Table 3.13-7 provides the evaluation for this resource's eligibility under NRHP/CRHR. As described in the table, this commercial building meets NRHP Criterion C/CRHR Criterion 3. The resource is significant at the local level because it is a good example of a Googie-style carwash that retains a sufficient level of historical integrity to its period of construction (1966).

Table 3.13-7. Lightning Express Carwash/17101 Hawthorne Boulevard Evaluation Summary

Eligibility Criteria	Summary	Finding
NRHP Criterion A/CRHR Criterion 1	No significant association with important historic events. The carwash was constructed in 1966 and is associated with the commercial development of Lawndale during the mid-twentieth century. Although it is associated with the early years of the automated drive-through car washes, research did not reveal that the property itself played a distinct or important role in the history of the Continental Carwash franchise or the economic development of Lawndale.	Not eligible
NRHP Criterion B/CRHR Criterion 2	Not significant for any associations with the lives of persons important to history. Research did not indicate that any individuals related to the use of this building made demonstrably important contributions to history at the local, state, or national level.	Not eligible
NRHP Criterion C/CRHR Criterion 3	This property retains sufficient historical integrity to convey its significance. The Lightning Express Carwash property retains its integrity of location, association, and feeling. However, its integrity of design, setting, materials, and workmanship have been compromised. The original location of the building has remained the same, and it has not been moved since its construction in 1966; therefore, the property's integrity of location remains intact. The 17101 Hawthorne Boulevard property's integrity of design is diminished because it has been altered. The removal of the original glass block has compromised some aspects of its integrity of design, materials, and workmanship. The property's integrity of setting has seen some encroachments from commercial development along Hawthorne Boulevard. In its current state, the property conveys its character and historical integrity of feeling as an automated carwash from 1966. The 17101 Hawthorne Boulevard property was originally constructed as an automated carwash and continues to perform this function; thus, it retains its original association. Therefore, the property's integrity of association has not been diminished. The period of significance is 1966.	Eligible
NRHP Criterion D/CRHR Criterion 4	Not significant as a source (or likely source) of important information regarding history. It does not appear to have any likelihood of yielding important information about historical construction materials or technologies.	Not eligible

3.13-3.5 Archaeological Survey

A reconnaissance-level survey was conducted by Frank Humphries, M.S., RPA, (qualified Archaeologist per 36 CFR Part 61) on November 5, 2020. A supplemental survey was conducted by Alec Stevenson, M.A., RPA, on June 21, 2022. The purpose of these surveys was to discover and document new prehistoric and historic cultural resources, as well as to assess previously recorded cultural resources, within or adjacent to the RSAs. Survey methodology varied depending on accessibility and development of the Proposed Project footprint. The survey included the linear Proposed Project footprint along Hawthorne Boulevard, southwest edge of the Interstate 405 (I-405), and Railroad Avenue in the City of Redondo Beach. The survey along Hawthorne Boulevard was limited to a pedestrian survey on both the east and west sides of the paved street (Figure 3.13-11). The survey on the northwest edge of I-405 and beside the railroad tracks consisted of a windshield survey with opportunistic pedestrian survey in accessible areas.

The surveyor also revisited the documented location of P-19-000100, the only recorded archaeological resource overlapping the RSA, in order to assess its current condition and identify any potential impacts to the site.

To aid in navigation and plotting, maps showing the Proposed Project/Trench Option and Hawthorne Option footprints and known cultural resources were created and loaded into a handheld device with Geographic Information System (GIS) capabilities using the ArcGIS Collector mobile data collection application.

Overall ground visibility was less than 1% throughout the entire survey due to paved streets, sidewalks, and ornamental vegetation. Unpaved areas consisted largely of road medians, road shoulders, and the margins of the existing railroad tracks, although most of these areas were landscaped and therefore had limited surface visibility.

The only archaeological resource documented within the RSAs is P-19-000100. The resource was documented in 1939 based on hearsay as having consisted of one large metate and one mano (Racer, 1939:5). The artifacts were found at an unknown location near the intersection of Hawthorne Boulevard and 190th Street, an area that today is thoroughly developed. During the survey, all unpaved areas within the resource boundary were diligently examined. These include exposed soils beneath the railroad underpass on Hawthorne Boulevard immediately north of 190th Street; grassy areas with zero ground visibility on the northwest, southwest, and southeast corners of the intersection; and the road median that exists in the center of Hawthorne Boulevard just north of the railroad, which also had little ground visibility due to landscaping. No artifacts, archaeological features, anthropogenic soils, or other evidence of an archaeological site was observed within the site boundaries, including that part of the site that overlaps the RSA. Although this resource overlaps the Proposed Project, Trench Option, and Hawthorne Option RSAs, it primarily overlaps with the Proposed Project and Trench Option RSA.

Figure 3.13-11. Documented Location of P-19-000100 at Hawthorne Boulevard and 190th Street, View Northeast

Source: AECOM, 2020

The cultural resource survey failed to locate P-19-000100 and resulted in no new prehistoric cultural resources being identified.

3.13-3.6 Cemeteries and Burials

The archival research and survey identified one cemetery located within the Proposed Project and Trench Option RSA. Pacific Crest Cemetery is located at 2701 182nd Street in the City of Redondo Beach. The cemetery was established in 1902 by George Cate, the city's first mortician.

Soon after the cemetery's establishment, human remains were transferred to Pacific Crest from at least two other cemeteries. One was Knob Hill, slightly more than two miles to the southwest, where a Native American cemetery had been reused by nineteenth century settlers (Gnerre, 2017). The other was El Nido Cemetery, which was located in the approximate location of today's El Nido Park.

The history of Pacific Crest Cemetery is well known. The railroad ROW was established by 1888. Pacific Crest was established fourteen years later, in 1902. It is common for historic cemetery boundaries to change, sometimes leaving burials outside the property lines. However, because Pacific Crest Cemetery was established in the twentieth century, after the railroad ROW, it is unlikely that any unmarked and forgotten graves lay within the Proposed Project footprint.

The probability of encountering historic remains is elevated adjacent to El Nido Park. A historic cemetery, which predated the railroad ROW, was located at an unknown location within or adjacent to today's El Nido Park. Unmarked graves may be located within the Proposed Project and Trench Option RSA in the vicinity of El Nido Park.

3.13-3.7 Summary of Potential Historic Built Environment and Archaeological Resources

Through archival research and field survey, the cultural resources assessment identified three historical resources that meet the NRHP/CRHR criteria for eligibility and are considered historical resources for the purposes of CEQA, and one archaeological resource in the RSA. These resources are summarized below.

Moda Italia (APN 4075-012-019/Map Reference 18), a commercial property at 16900 Hawthorne Boulevard, meets NRHP Criterion C/CRHR Criterion 3. The Contemporary-style commercial building is a good example reflecting the mid-twentieth century trends of this style and property type because of its asymmetrical façade; use of the building as a billboard concepts and prominent signage; and variety of exterior finishes, including decorative metal beams, slate tile, brick, and stucco.

Frank's Furniture (APN 4075-007-008; 4075-007-007/Map Reference 31), a commercial property at 16418-16424 Hawthorne Boulevard, meets NRHP Criterion C/CRHR Criterion 3. The mid-twentieth century storefront commercial building is a good example with high integrity reflecting the twentieth century trends of this style because of its single-story box form with a flat roof, signage (channel-set neon tubing set within metal letters), cantilevered awning, masonry wall cladding, and display case storefronts.

The Lightning Express Carwash (APN 4081-028-032/Map Reference 58) at 17101 Hawthorne Boulevard meets NRHP Criterion C/CRHR Criterion 3. The Googie-style carwash is a good example with high integrity reflecting the mid-twentieth century trends of this style because of its projecting blade signage and abstract designs.

One archaeological resource, P-19-000100, was documented by F.H. Racer in 1939. Racer states, "The only artifacts I know of being found there was a large metate and a mano stone," i.e., prehistoric stone tools (Racer, 1939:5). Racer also notes these artifacts "may have been extraneous" (Racer, 1939:5). The precise location where these artifacts was found is not recorded, but the site is documented near the intersection of 190th Street and Hawthorne Boulevard. The site appears on the SCCIC's maps as a 500-foot-diameter circle with its midpoint within the intersection and overlapping the RSA in its northeastern quadrant. The resource overlaps more of the Proposed Project and Trench Option RSA than the Hawthorne Option RSA. It is unclear whether these objects, which were documented based on hearsay, were genuine artifacts. Moreover, if they were genuine artifacts, it is not clear from the available data whether this was an archaeological site or two isolated artifacts, nor is the location of the find was within or simply near the RSAs. As it is recorded, resource P-19-000100 appears to consist of only two isolated artifacts and therefore does not appear eligible for inclusion in the NRHP, CRHR, or local register.

No archaeological resources were observed during the field survey. Based on the age of the landforms in the RSAs, buried archaeological resources are not anticipated because the older Quaternary/Pleistocene landform pre-dates human occupation of the area. Resources that may have been buried by artificial means (i.e., fill) may be present.

3.13-4 Environmental Impacts

3.13-4.1 Would the Proposed Project cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

A substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired. Potential construction or operational impacts on historical resources would be direct (physical demolition, destruction, relocation, or

alteration of the historical resource) or indirect (alteration of the historical resource's immediate surroundings).

3.13-4.1.1 Construction Impacts

No Impact. The Proposed Project is not expected to result in any impacts on historical resources, because no known historical resources are in the Proposed Project RSA. Construction within the Metro ROW and within the proposed property acquisitions areas would not result in direct or indirect impacts on historical resources under the Proposed Project. No historic built environment resources that meet the NRHP/CRHR criteria for eligibility and are considered historical resources for the purposes of CEQA are in the Proposed Project RSA.

There are no historical resources within the Proposed Project RSA; therefore, the Proposed Project will have **no impact** on historical resources.

TRENCH OPTION

No Impact. Similar to the Proposed Project, The Trench Option is not expected to result in significant impacts to historical resources, because no known historical resources are in the Trench Option RSA. Construction within the Metro ROW and within the proposed property acquisitions areas would not result in direct or indirect impacts to historical resources under the Trench Option. No historical built environment resources that meet the NRHP/CRHR criteria for eligibility and are considered historical resources for the purposes of CEQA are located within the Trench Option RSA. There are no historical resources within the Trench Option RSA; therefore, the Trench Option will have **no impact** on historical resources.

HAWTHORNE OPTION

Less than Significant. Potential construction impacts on historical resources from the Hawthorne Option would be indirect (i.e., visual, audible, and atmospheric intrusions), resulting from permanent infrastructure and temporary construction activities that would alter the immediate surroundings and materially impair the significance of the historical resources.

Three historical resources are located in the Hawthorne Option RSA. The visual qualities of the new, permanent infrastructure and the temporary noise and vibration associated with construction would not alter the three historical resources or their immediate surroundings in a manner that would materially impair them; therefore, the Hawthorne Option will have a **less than significant impact** on historical resources. Construction impacts on each historical resource are discussed below.

Moda Italia (APN 4075-012-019/Map Reference 18)

The Hawthorne Option would be elevated in the center of Hawthorne Boulevard near the Moda Italia building. The construction would include elevated structures, overhead catenary systems, roadway restriping, curb-and-gutter/sidewalk reconstruction, roadway improvements, and lighting and traffic signal modifications. Under the Hawthorne Option, the Moda Italia building would not be physically demolished, destroyed, relocated, or altered. The elevated alignment adjacent to the building would introduce new visual, audible, and atmospheric elements within its immediate surroundings. Although the proposed elevated alignment would introduce a permanent visual element directly in front of the building (Approximately 100 feet), the relative height (29 feet 2 inches) of the element would not block significant views of the historical resource, such as the view of the façade from the sidewalk or the northbound side of Hawthorne Boulevard. The noise assessment for the Proposed Project in Section 3.6, Noise and Vibration, found that the Proposed Project, Trench Option, and Hawthorne Option would

have significant and unavoidable impacts to sensitive receptors due to construction noise over approximately three years of construction. This property is not identified as a sensitive receptor. The immediate surroundings of the Moda Italia building are already characterized by vehicular traffic noise; not by low noise levels. Construction noise and effects to the integrity of the historical resource would be temporary and no vibration related impacts would damage the property. The existing setting would be left largely intact. Because the setting of the building is already compromised by modern development and activities, the significance of the historical resource would not be materially impaired; therefore, construction of the Hawthorne Option would result in a **less than significant impact** on this historical resource.

Frank's Furniture (APN 4075-007-008; 4075-007-007/Map Reference 31)

The Hawthorne Option would be elevated in the center of Hawthorne Boulevard approximately 90 feet from the Frank's Furniture building. The construction would include the elevated structure, overhead catenary systems, roadway restriping, curb-and-gutter/sidewalk reconstruction, roadway improvements, and lighting and traffic signal modifications. Under the Hawthorne Option, the Frank's Furniture building would not be physically demolished, destroyed, relocated, or altered. The elevated alignment adjacent to the building would introduce new visual, audible, and atmospheric elements within its immediate surroundings. Although the proposed elevated alignment would introduce a permanent visual element directly in front of the building (Approximately 100 feet), the relative height (29 feet 2 inches) of the element would not block significant views of the historical resource, such as the view of the façade from the sidewalk or the northbound side of Hawthorne Boulevard. The noise assessment for the Proposed Project in Section 3.6, Noise and Vibration found that the Proposed Project would have significant and unavoidable impacts to sensitive receptors due to construction noise over approximately three years of construction. This property is not identified as a sensitive receptor. The immediate surroundings of the Frank's Furniture building are already characterized by vehicular traffic noise, and the setting of the building is not characterized by low noise levels. Construction noise and effects to the integrity of the historical resource would be temporary and no vibration related impacts would damage the property. The existing setting would be left largely intact. Because the setting of the building is already compromised by modern development and activities, the significance of the historical resource would not be materially impaired; therefore, construction of the Hawthorne Option would result in a **less than significant impact** on this historical resource.

The Lightning Express Carwash (APN 4081-028-032/Map Reference 58)

The Hawthorne Option would be elevated in the center of Hawthorne Boulevard near the Lightning Express Carwash. The construction would include the elevated structure, overhead catenary systems, roadway restriping, curb-and-gutter/sidewalk reconstruction, roadway improvements, and lighting and traffic signal modifications. Under the Hawthorne Option, the Lightning Express Carwash building would not be physically demolished, destroyed, relocated, or altered. The elevated alignment adjacent to the building would introduce new visual, audible, and atmospheric elements within its immediate surroundings. Although the proposed elevated alignment would introduce a permanent visual element directly in front of the building, the relative height of the element would not block significant views of the historical resource, such as the view of the façade from the sidewalk or the southbound side of Hawthorne Boulevard. Further, the closing of the east side crossing from 171st Street would not disrupt historic access routes to the property. The noise assessment for the Proposed Project in Section 3.6, Noise and Vibration, found that the Proposed Project would have significant and unavoidable impacts to sensitive receptors due to construction noise over approximately three years of construction. This property is not identified as a sensitive receptor. The immediate surroundings of the Lightning Express

Carwash are already characterized by vehicular traffic noise, and the setting of the building is not characterized by low noise levels. Construction noise and effects on the integrity of the historical resource would be temporary and no vibration related impacts would damage the property. The existing setting would be left largely intact. Because the setting of the building is already compromised by modern development and activities, the significance of the historical resource would not be materially impaired; therefore, construction of the Hawthorne Option would result in a **less than significant impact** on this historical resource.

3.13-4.1.2 Operational Impacts

No Impact. The Proposed Project is not expected to result in any direct or indirect impacts on historical resources, because no known historical resources are in the Proposed Project RSA. No historic built environment resources that meet the NRHP/CRHR criteria for eligibility and are considered historical resources for the purposes of CEQA are in the Proposed Project RSA. Therefore, the Proposed Project would have **no impact** on historical resources.

TRENCH OPTION

No Impact. The Trench Option is not expected to result in any direct or indirect impacts on historical resources, because no known historical resources are in the Trench Option RSA. No historic built environment resources that meet the NRHP/CRHR criteria for eligibility and are considered historical resources for the purposes of CEQA are in the Trench Option RSA. Therefore, the Trench Option would have **no impact** on historical resources.

HAWTHORNE OPTION

Less than Significant. Operation of the Hawthorne Option would be limited to the operation and maintenance of the light rail. Operation and maintenance of the light rail would not physically demolish, destroy, relocate, or alter any of the three historical resources (Moda Italia building, Frank's Furniture building, and the Lightning Express Carwash) in the Hawthorne Option RSA, but the introduction of new light rail trains would alter their immediate surroundings, and introduce new visual, audible, and atmospheric elements within the immediate surroundings.

The immediate surroundings of the three historical resources along Hawthorne Boulevard are characterized by modern, urban development along a major road with dynamic vehicular and pedestrian traffic. The introduction of light rail vehicles would introduce visual, audible, and atmospheric intrusions within the immediate surroundings. However, the Hawthorne Option would not cause significant visual impacts to the three historical resources (Moda Italia building, Frank's Furniture building, and the Lightning Express Carwash) because the new light rail elements would not impair their character defining features or historic integrity. The noise assessment in Section 3.6, Noise and Vibration, found that the Hawthorne Option would result in significant impacts for operational noise, but implementation of mitigation measures MM-NOI-2, MM-NOI-3, and MM-NOI-5 would reduce noise via installation of soundwalls at identified impacted receptors, installation of low impact frogs at crossovers, and wayside lubrication to reduce wheel squeal. The three historical resources are not sensitive receptors for noise impacts, and ground-borne vibration from the light rail would not cause damage to the properties. The immediate surroundings of the three historical resources in the Hawthorne Option RSA are already characterized by vehicular traffic noise, which the light rail operation is not anticipated to increase significantly. The existing setting would be left largely intact. Because the setting of the buildings is already compromised by modern development and activities, the significance of the historical resources would not be materially impaired. The visual, audible, and atmospheric intrusions on the immediate

surroundings of the three historical resources in the Hawthorne Option RSA would not substantially change the existing characteristics of the immediate surroundings or alter in an adverse manner any of the characteristics of the historical resources that convey historical significance. Therefore, operation of the Hawthorne Option would have a **less than significant impact** on historical resources.

3.13-4.2 Would the Proposed Project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

3.13-4.2.1 Construction Impacts

Less than Significant with Mitigation. Potential construction impacts on archaeological resources would be related to shallow construction work and excavations. Shallow construction work, such as for the at-grade portions of the Proposed Project, have limited potential to encounter intact archaeological resources due to prior disturbance, but other proposed construction activities (e.g., construction of retaining walls, drainage) have the potential to encounter and expose intact archaeological resources that may have been buried under artificial fill.

Other construction activities, such as the placement of piles for elevated structures, have a lower potential to encounter intact archaeological resources. Piles have a greater vertical range than horizontal, extending into much larger depths than any other construction activity. Based on geologic landforms mapped in the RSA, this extended depth has a low likelihood to encounter deeply buried resources as human activity does not extend much deeper than surficial soils beneath the fill layer. Thus, the majority of pile placement will occur below any potential impact to archaeological resources. Additionally, archaeological resources are unlikely to be exposed because piles are twisted or vibrated into the soil and preparation and compaction of the subgrade is not typically required.

The Proposed Project construction is not likely to impact any known archaeological resources. The CHRIS records search identified one previously recorded resource, P-19-000100, within the RSAs. As discussed in Section 3.13-3.3, the context related to the exact location and means of discovery are not fully known. The resource boundary is a buffer placed around an original approximation from 1939 on the location of two artifacts. This would normally qualify the resource as an isolate, which would not be eligible for the CRHR. During the survey, all unpaved areas were examined and no resources, previously recorded or otherwise, were found. However, it is possible that unknown archaeological resources lay buried throughout the RSA and could be impacted by the Proposed Project construction.

The Proposed Project has the potential to disturb or destroy a significant unknown archaeological resource, and therefore there would be a significant impact. Mitigation measure MM-CUL-1 (Cultural Resources Identification Training) would be implemented, which would require construction personnel to be trained in the identification of archaeological resources. Mitigation measure MM-CUL-2 (Archaeologist Consultation) would also be implemented, which would establish procedures to stop work in the event of an archaeological discovery, and to ensure that discovered resources would be avoided or treated in accordance with a treatment plan developed in consultation with Metro. With implementation of mitigation measures MM-CUL-1 and MM-CUL-2, the impact would be reduced to **less than significant**.

TRENCH OPTION

Less than Significant with Mitigation. The Trench Option would locate light rail tracks in a trench throughout most of the northern segment of the RSA, and there would be additional excavation required. Potential construction impacts on archaeological resources would be related to shallow construction work, such as construction of the at-grade portions of the Trench Option, as well as

excavations. While shallow construction work has potential to encounter archaeological resources, it is unlikely that such resources would be intact due to prior disturbance. However, other proposed construction activities, such as constructing the trench, retaining walls, or drainage, do have the potential to encounter and expose intact archaeological resources that may have been buried under artificial fill.

Trench Option construction is not likely to impact any known archaeological resources. The CHRIS records search identified one previously recorded resource, P-19-000100, within the RSA. As discussed in Section 3.13-3.2, the context related to the exact location and means of discovery are not fully known. The resource boundary is a buffer placed around an original approximation from 1939 on the location of two artifacts. This would normally qualify the resource as an isolate, which would not be eligible for the CRHR. During the survey, all unpaved areas were examined and no resources, previously recorded or otherwise, were found. However, it is possible that unknown archaeological resources lay buried throughout the RSA and could be impacted by Trench Option construction.

The Trench Option has the potential to disturb or destroy a significant unknown archaeological resource, and therefore there would be a significant impact. Mitigation measure MM-CUL-1 would be implemented, which would require construction personnel to be trained in the identification of archaeological resources. Mitigation measure MM-CUL-2 would also be implemented, which would establish procedures to stop work in the event of an archaeological discovery, and to ensure that discovered resources would be avoided or treated in accordance with a treatment plan developed in consultation with Metro. With implementation of mitigation measures MM-CUL-1 and MM-CUL-2, the impact would be reduced to **less than significant**.

HAWTHORNE OPTION

Less than Significant with Mitigation. The Hawthorne Option is entirely elevated, and deep construction activities such as the installation of piles for elevated structures have a low potential to encounter intact archaeological resources. The resources are unlikely to be exposed because piles are twisted or vibrated into the soil while preparation and compaction of the subgrade is not typically required. The potential for encountering deeply buried resources during these types of construction activities is limited because surficial landforms are old and pre-date human occupation of the area.

Additionally, Hawthorne Option construction is not likely to impact any known archaeological resources. The CHRIS records search identified one previously recorded resource, P-19-000100, within the Hawthorne Option RSA. in Section 3.13-3.2, the context related to the exact location and means of discovery are not fully known. The resource boundary is a buffer placed around an original approximation from 1939 on the location of two artifacts. This would normally qualify the resource as an isolate, which would not be eligible for the CRHR. Moreover, the resource is located within portion of the Hawthorne Option RSA associated with the Hawthorne Option's elevated features. As the boundary of P-19-000100 is approximated, changes in setting will not impact this resource as it is either destroyed, in a different location, or completely buried. Additionally, construction is approximately 100-feet outside of P-19-000100's approximated site boundary. Construction of the Hawthorne Option would not impact this resource.

Although the Hawthorne Option is elevated, certain construction activities (e.g., the construction of retaining walls and drainage) still have the potential to disturb or destroy a significant unknown archaeological resource, and therefore cause a significant impact. Mitigation measure MM-CUL-1 would be implemented, which would require construction personnel to be trained in the identification of archaeological resources. Mitigation measure MM-CUL-2 would also be implemented, which would

establish procedures to stop work in the event of an archaeological discovery and ensure that discovered resources would be avoided or treated in accordance with a treatment plan developed in consultation with Metro. With implementation of mitigation measures MM-CUL-1 and MM-CUL-2, the impact would be reduced to **less than significant**.

3.13-4.2.2 Operational Impacts

No Impact. Project activities during operation of the Proposed Project would largely be limited to light rail operations on established tracks or at facilities constructed as a part of the Proposed Project. These types of operational activities would not have the potential to encounter archaeological resources, and would not physically demolish, destroy, relocate, or alter any archaeological resources. Therefore, the operation of the Proposed Project would have **no impact**.

TRENCH OPTION

No Impact. Similar to the Proposed Project, activities during operation of the Trench Option would largely be limited to light rail operations on established tracks or at facilities constructed as a part of the Proposed Project. These types of operational activities would not have the potential to encounter archaeological resources, and would not physically demolish, destroy, relocate, or alter any archaeological resources. Therefore, the operation of the Trench Option would have **no impact**.

HAWTHORNE OPTION

No Impact. Similar to the Proposed Project, activities during operation of the Hawthorne Option would largely be limited to light rail operations on established tracks or at facilities constructed as a part of the Proposed Project. These types of operational activities would not have the potential to encounter archaeological resources, and would not physically demolish, destroy, relocate, or alter any archaeological resources. Therefore, the operation of the Hawthorne Option would have **no impact**.

3.13-4.3 Would the Proposed Project disturb any human remains, including those interred outside of formal cemeteries?

3.13-4.3.1 Construction Impacts

Less than Significant Impact with Mitigation. Potential construction impacts on human remains, including those interred outside of formal cemeteries, would be related to ground disturbing activities during construction. It is possible these burials could be unearthed during project excavation activities. Human burials, in addition to being potential archaeological resources, have specific provisions for treatment in Section 5097 of the California Public Resources Code. The California Health and Safety Code (Sections 7050.5, 7051, and 7054) has specific provisions for the protection of human burial remains. Existing regulations address the illegality of interfering with human burial remains, and protects them from disturbance, vandalism, or destruction. These regulations also establish procedures to be implemented if Native American skeletal remains are discovered. Public Resources Code Section 5097.98 also addresses the disposition of Native American burials, protects such remains, and established the NAHC to resolve any related disputes.

There are known cemeteries containing human remains within the RSA. The probability of encountering historic remains is elevated adjacent to El Nido Park. A historic cemetery, which predated the Metro ROW, was located at an unknown location within or adjacent to this park. Unmarked graves may be located within the RSA in the vicinity of the park. The Pacific Crest Cemetery is also located within the RSA, however the probability of encountering human remains during construction is low because the Pacific Crest Cemetery is located outside of the Proposed Project footprint and no construction activities

would occur within the cemetery grounds. In addition, Pacific Crest Cemetery was established in the twentieth century, after the Metro ROW. Therefore, it is unlikely that any unmarked and forgotten graves lay within the Metro ROW.

The Proposed Project has moderate sensitivity for encountering historic remains near El Nido Park and a low sensitivity for buried Native American archaeological deposits, which could include human remains. However, human remains can be encountered in fill, re-deposited, or disturbed soils, as well as intact soils. Disturbance of significant unknown human remains would result in a significant impact. Mitigation measure MM-CUL-3 (Unanticipated Discovery of Human Remains Associated with Known Cemeteries) would be implemented, which would establish a monitoring program as well as treatment measures and avoidance strategies for any remains that are identified. In addition, if Native American remains are encountered, these remains would be treated with appropriate deference through compliance with legal requirements pursuant to Health and Safety Code Section 7050.5 and PRC Section 5097.98. Therefore, with implementation of mitigation measure MM-CUL-3, construction of the Proposed Project would result in a **less than significant** impact related to disturbance of human remains.

TRENCH OPTION

Less than Significant Impact with Mitigation. The Trench Option would locate the light rail tracks in a trench throughout most of the segment, as there would be additional excavation required. The Trench Option RSA is the same as the Proposed Project, with the same known cemeteries within the RSA.

Due to the depth and extent of the ground disturbance associated with the Trench Option, the likelihood of encountering buried Native American archaeological deposits, including human remains is slightly higher than the Proposed Project. Additionally, human remains can be encountered in fill, re-deposited, or disturbed soils, as well as intact soils. Disturbance of significant unknown human remains would result in a significant impact. Mitigation measure MM-CUL-3 would be implemented, which would establish a monitoring program as well as treatment measures and avoidance strategies for any remains that are identified. In addition, if Native American remains are encountered, these remains would be treated with appropriate deference through compliance with legal requirements pursuant to Health and Safety Code Section 7050.5 and PRC Section 5097.98.

Therefore, with implementation of mitigation measure MM-CUL-3, construction of the Trench Option would result in a l**ess than significant impact** related to disturbance of human remains.

HAWTHORNE OPTION

Less than Significant. The Hawthorne Option has a low sensitivity to encounter historic remains and buried Native American archaeological deposits, which could include human remains, as there are no known cemeteries or archaeological sites with human remains located within the Hawthorne Option RSA. If Native American remains are encountered, these remains would be treated with appropriate deference through compliance with legal requirements pursuant to Health and Safety Code Section 7050.5 and PRC Section 5097.98. Therefore, construction of the Hawthorne Option would result in a **less than significant impact** related to disturbance of human remains.

3.13-4.3.2 Operational Impacts

No Impact. Project activities during operation of the Proposed Project would largely be limited to light rail operations on established tracks or at facilities constructed as a part of the Proposed Project. These types of operational impacts would not involve excavation and would not have the potential to disturb any human remains, including those interred outside of formal cemeteries. Therefore, the operation of the Proposed Project would have **no impact**.

TRENCH OPTION

No Impact. Similar to the Proposed Project, activities during operation of the Trench Option would largely be limited to light rail operations on established tracks or at facilities constructed as a part of the Proposed Project. These types of operational impacts would not involve excavation and would not have the potential to disturb any human remains, including those interred outside of formal cemeteries. Therefore, the operation of the Trench Option would have **no impact**.

HAWTHORNE OPTION

No Impact. There are no known cemeteries or archaeological sites with human remains located within the vicinity of the Hawthorne Option. Operational activities would not involve excavation and would not have the potential to disturb any human remains, including those interred outside of formal cemeteries. Therefore, operation of the Hawthorne Option would have **no impact** on human remains.

3.13-5 Mitigation Measures

MM-CUL-1. Cultural Resources Identification Training

Prior to any ground-disturbing activities, all construction personnel involved in ground-disturbing activities shall be provided with appropriate cultural resources training. The training shall instruct the personnel regarding the legal framework protecting cultural resources and tribal cultural resources , typical kinds of cultural resources and tribal cultural resources that may be found during construction, artifacts that would be considered potentially significant, and proper procedures and notifications if cultural resources and/or tribal cultural resources are inadvertently discovered. The training shall be presented by a Secretary of the Interior professionally qualified archaeologist who shall review types of cultural resources and artifacts that would be considered potentially significant to ensure operator recognition of these materials during construction.

MM-CUL-2. Archaeologist Consultation

If buried cultural resources are uncovered during construction, all work shall be halted in the vicinity of the archaeological discovery until a Secretary of the Interior professionally qualified archaeologist can visit the site of discovery and assess the significance of the archaeological resource.

If an archaeological deposit is identified, the construction contractor shall stop construction within 50 feet of the exposed resource until a Secretary of Interior professionally qualified archaeologist can evaluate the find (see 36 CFR 800.11.1 and California Code of Regulations, Title 14, Section 15064.5[f]). Examples of such cultural materials might include ground stone tools such as mortars, bowls, pestles, and manos; chipped stone tools such as projectile points or choppers; flakes of stone not consistent with the immediate geology such as obsidian or fused shale; historic trash pits containing bottles and/or ceramics; or structural remains. If the professional qualified archaeologist finds that the resources are significant, further impacts will be avoided if Metro determines that avoidance is feasible in light of factors such as the nature of the find, Proposed Project design, costs, and other considerations. If avoidance is not feasible, a treatment plan shall be developed and implemented by the construction contractor in consultation with a Secretary of Interior professional qualified archaeologist and Metro to reduce adverse impacts to below a level of significance. The treatment plan shall prioritize data recovery through implementation of an excavation and analysis program. The treatment plan shall include, at a minimum, the following: (a) a statement of why data recovery is appropriate as a mitigation measure; (b) a research plan that sets forth the research questions that can reasonably be expected to be addressed by excavation and analysis of the site; (c) a statement of the types and kinds of data that can reasonably be expected to exist at the site and how these data will be used to answer important

research questions; (d) a step-by-step discussion of field and laboratory methods to be employed; and (e) provisions for curation and storage of the artifacts, notes, and photographs.

If a resource is encountered that is prehistoric or otherwise of potentially Native American origin, regardless of any significance evaluation determined by Metro based on the input of a Secretary of the Interior professionally qualified archaeologist, interested Native American tribes consulting under AB 52 shall be contacted and their input sought as to the tribal significance of the resource. Based on this tribal input, Metro shall make a determination as to whether the resource constitutes a tribal cultural resource. The consulting Native American parties shall also be consulted as to the treatment and final disposition of the resource.

If determined appropriate during tribal consultation, a Native American monitor would be retained involving work at a prehistoric site, or at other suitable locations determined during tribal consultation. Treatment measures for tribal cultural resources may include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation.

Ground disturbing activities within the affected area may resume once the site has been fully evaluated and impacts mitigated to the satisfaction of Metro based on input from a Secretary of Interior qualified archaeologist and, if applicable (e.g., if the affected area was determined to contain tribal cultural resources), a Native American monitor.

If during cultural resources monitoring the qualified archaeologist determines that the sediments being excavated are previously disturbed or unlikely to contain significant cultural materials, the qualified archaeologist can specify that monitoring be reduced or eliminated.

MM-CUL-3. Unanticipated Discovery of Human Remains Associated with Known Cemeteries

To mitigate potential impacts to human remains at El Nido Park (located between the Kingsdale Avenue and 186th Street cross section to 182nd Street) and the Pacific Crest Cemetery (2701 182nd Street), a location-specific Cultural Resources Monitoring and Mitigation Plan (CRMMP) shall be developed and implemented by the construction contractor in consultation with a Secretary of the Interior-qualified archaeologist and Metro for these locations. The CRMMP shall outline methodology for monitoring and the protocol to follow in the event of an unanticipated discovery at these locations. Should human remains and/or associated funerary objects be identified during earth-moving activities, the CRMMP shall address methods for data recovery, anticipated artifact types, artifact analysis, report writing, repatriation of human remains and associated grave goods, and curation. The CRMMP shall also require that an archaeologist qualified in prehistoric and historical archaeology be retained prior to ground-disturbing activities. Archaeological monitoring during all ground disturbance adjacent to El Nido Park and the Pacific Crest Cemetery shall be conducted in accordance with the Project CRMMP. If there is an unanticipated discovery of human remains and/or associated funerary objects, , then work shall be halted within 50 feet of the find and a qualified archaeologist shall assess the significance of the find and, if necessary, develop appropriate treatment measures, per the CRMMP. Treatment measures typically include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation.

3.13-6 Project Impacts Remaining After Mitigation

3.13-6.1 Proposed Project

With the incorporation of mitigation measures described above, the Proposed Project would not result in significant impacts related to cultural resources. Therefore, impacts of the Proposed Project would be less than significant after mitigation.

3.13-6.2 Trench Option

With the incorporation of mitigation measures described above, the Trench Option would not result in significant impacts related to cultural resources. Therefore, impacts of the Trench Option would be less than significant after mitigation.

3.13-6.3 Hawthorne Option

With the incorporation of mitigation measures described above, the Hawthorne Option would not result in significant impacts related to cultural resources. Therefore, impacts of the Hawthorne Option would be less than significant after mitigation.

3.13-7 Cumulative Impacts

The methodology for cumulative analysis and a description of relevant projects and projections are included in Section 3.0, Introduction. The geographic scope of the cumulative analysis for historic and archaeological resources are the RSAs for the Proposed Project, Trench Option and Hawthorne Option, as historic and archaeological impacts are generally site-specific and localized. The geographic scope includes the South Bay and South Los Angeles.

3.13-7.1 Proposed Project

The analysis of cultural resources in Section 3.13-4 identifies potentially significant impacts to historical and archaeological resources as a result of the Proposed Project. In addition, development of the Proposed Project in combination with other projects located in the adjacent area would increase the potential for impacts to historical and archaeological resources and could contribute to the loss of such resources in the region. The potential that development consistent with local plans would impact cultural resources during development is determined by a variety of factors, including the type of development that is proposed.

There are no historical resources located with the Proposed Project RSA, and therefore there would be no impact related to historical resources. However, the Proposed Project would have the potential to disturb unknown archaeological resources or human remains during construction, and there would be a significant impact. Cumulative impacts from the Proposed Project along with surrounding development would be less than significant with mitigation measures. Mitigation measures MM-CUL-1, MM-CUL-2, and MM-CUL-3 would be implemented, which would reduce the impact to less than significant. Probable future projects would be expected to comply with applicable federal, state, and local regulations to protect historic and archaeological resources, and would implement project-specific mitigation measures during construction. Therefore, the Proposed Project in combination with past, present, and probable future projects would not result in a significant cumulative impact on historic and archaeological resources during construction.

Operational activities would not have the potential to encounter archaeological resources or human remains, and there would be no impact. Therefore, the Proposed Project in combination with past,

present, and probable future projects would not result in a significant cumulative impact on historic and archaeological resources during operation.

3.13-7.2 Trench Option

There are no historical resources located with the Trench Option RSA. The potential for cumulative impacts on unknown archaeological resources or human remains from the Trench Option would be similar to the analysis presented above for the Proposed Project, and the impact would be less than significant with mitigation measures MM-CUL-1, MM-CUL-2, and MM-CUL-3. The Trench Option in combination with past, present, and probable future projects would not result in a significant cumulative impact on historical and archaeological resources during construction or operation.

3.13-7.3 Hawthorne Option

There are three historical resources located with the Hawthorne Option RSA. As described in Section 3.13-4.1, the immediate surroundings of the three historical resources are characterized by vehicular traffic noise and the visual setting is compromised by modern development and activities. The temporary noise and vibration associated with construction would not alter the three historical resources or their immediate surroundings in a manner that would materially impair them, and therefore there would be a less than significant impact to historical resources. Construction of the Hawthorne Option would have low potential to encounter archaeological resources or human remains, and the impact would be less than significant. Probable future projects would be expected to comply with applicable federal, state, and local regulations to protect historical and archaeological resources, and would implement project-specific mitigation measures during construction. Therefore, the Hawthorne Option in combination with past, present, and probable future projects would not result in a significant cumulative impact on historical and archaeological resources during construction.

Operation of the Hawthorne Option would introduce new visual, audible, and atmospheric elements within the immediate surroundings of the three historical resources within the RSA, but it would not substantially change the existing characteristics of the immediate surroundings or alter in an adverse manner any of the characteristics of the historical resources that convey historical significance. Operational activities would not have the potential to encounter archaeological resources or human remains, and there would be no impact. Therefore, the Hawthorne Option in combination with past, present, and probable future projects would not result in a significant cumulative impact on historical and archaeological resources during operation.

3.14 TRIBAL CULTURAL RESOURCES

This section of the Draft EIR provides an analysis of the potential impacts on tribal cultural resources, including Native American historic, cultural, and sacred sites, as well as sites, features, places, objects, and landscapes that have cultural value to California Native American tribes.

3.14-1 Regulatory Framework

Federal, state, regional and local regulations concerning tribal cultural resources are described in the following section.

3.14-1.1 Federal Regulations

National Historic Preservation Act

The National Historic Preservation Act established the National Register of Historic Places (NRHP) to recognize resources associated with the country's history and heritage. Criteria for listing in the NRHP is set forth in 36 CFR 60.4, which states the quality of significance in American history, architecture, archaeology, engineering, and culture as presented in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that are:

- Associated with events that have made a significant contribution to the broad patterns of our history;
- Associated with the lives of persons significant in our past;
- Embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; and/or
- Have yielded or may be likely to yield information important to history or prehistory.

Criterion D is usually applied to archaeological resources. Properties eligible for the NRHP must be of sufficient age; be proven through scholarship to meet at least one of the significance criteria; and exhibit integrity of the features, elements, and/or informational value, which provides the property its documented historical or archaeological significance. Additionally, Section 101(d)(6)(A) of the National Historic Preservation Act allows properties of traditional religious and cultural importance to a tribe to be determined eligible for inclusion in the NRHP.

3.14-1.2 State and Regional Regulations

California Environmental Quality Act

CEQA is intended to prevent significant avoidable impacts to the environment by requiring feasible alternatives or mitigation measures. If cultural resources are identified within the resource study areas (RSAs), the sponsoring agency must take those resources into consideration when evaluating project effects. The level of consideration may vary with the importance of the cultural resource.

The CEQA Guidelines (Section 15064.5(a)) define a "historical resource" as the following:

- California properties formally determined eligible for, or listed in, the California Register of Historical Resources (CRHR).

- Those resources included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code (PRC), or identified as significant in a historical resources survey meeting the requirements of Section 5024.1(g) of the PRC.
- Those resources that a lead agency determines to be historically significant provided the determination is based on substantial evidence.
- Resources not listed in or previously determined eligible for listing in the state or local registers but determined by a lead agency as historical resources as defined in PRC sections 5020.1(j) or 5024.1.

California Register of Historical Resources

Created in 1992 under Assembly Bill (AB) 2881, the CRHR is designed to identify historical resources deemed worthy of preservation on a state level and was modeled closely after the NRHP. The criteria are nearly identical to those of the NRHP but focus on resources of statewide, rather than national, significance. The CRHR automatically includes any resource listed, or formally designated as eligible for listing in the NRHP, including tribal resources. The State Historic Preservation Officer maintains the CRHR, which may also include properties designated under local ordinance or identified through local historical resources surveys that meet CRHR eligibility criteria. A historical resource (including the historic built-environment and historic and prehistoric archaeological resources) is considered significant if it meets one of the four criteria for listing in the CRHR. These criteria are set forth in CEQA Section 15064.5 and defined as any resource that:

- Is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;
- Is associated with the lives of persons important to local, California, or national history;
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or
- Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Historical resources must also possess integrity, possess the authenticity of a historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance, and retain enough of this historic character or appearance to be recognizable as a historical resource and to convey the reasons for this significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association.

Assembly Bill 52

On September 25, 2014, Governor Jerry Brown signed into law AB 52. The law went into effect on July 1, 2015. The intent of AB 52 is to "set forth a process and scope that clarifies California tribal government involvement in the CEQA process, including specific requirements and timing for lead agencies to consult with tribes on avoiding or mitigating impacts to tribal cultural resources." It applies to projects that require an EIR or a Negative Declaration/Mitigated Negative Declaration.

AB 52 defined a new resource category called tribal cultural resources , amended the CEQA statute, and required amendments to the CEQA Guidelines to address consultation with California Native American tribes as a part of the CEQA process. Pursuant to PRC Section 2108.3.2, Tribal Governments can request consultation with a lead agency and give input regarding potential impacts to tribal cultural resources before the agency decides what type of environmental review is necessary for a project. The PRC further

requires avoiding damage to tribal cultural resources , if feasible. If not, lead agencies must mitigate impacts to tribal cultural resources to the extent feasible.

Section 21074 of the PRC defines "tribal cultural resources " as a resource that is either of the following:

> Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
    - Included or determined to be eligible for inclusion in the California Register of Historical Resources.
    - Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
> 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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.
    - A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.
    - A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

California Health and Safety Code

California Health and Safety Code Section 7050.5, and PRC Sections 5097.94 and 5097.98 outline procedures to be followed in the event human remains are discovered during the course of California projects. If human remains are encountered, all work must stop at that location and the County Coroner must be immediately notified and advised of the finding. The County Coroner would investigate "the manner and cause of any death" and make recommendations concerning treatment of the human remains. The County Coroner must make their determination within two working days of being notified. If the human remains are determined to be Native American, the County Coroner shall contact the California Native American Heritage Commission (NAHC). The Commission would in turn "…immediately notify those persons it believes to be most likely descended from the deceased Native American." The descendants would then inspect the site and make recommendations for the disposition of the discovered human remains. This recommendation from the most likely descendants may include the scientific analysis of the remains and associated items.

California Native American Historical, Cultural, and Sacred Sites Act

The California Native American Historical, Cultural, and Sacred Sites Act applies to both state and private lands. This law requires that if human remains are discovered, construction or excavation activity must cease, and the County Coroner must be notified. If the remains are of a Native American, the County Coroner must notify the NAHC. The NAHC then notifies those persons most likely to be descended from the Native American whose remains were discovered. The California Native American Historical, Cultural, and Sacred Sites Act stipulates the procedures the descendants may follow for treating or disposing of the remains and associated grave goods.

3.14-1.3 Local Regulations

There are no specific regulations or guidelines regarding Tribal Cultural Resources in the Cities of Lawndale, Redondo Beach, or Torrance.

3.14-2 Methodology

The following section discusses the methodology applied to date for the identification of tribal cultural resources potentially affected by the Proposed Project and Options. These methods include delineation of the RSA, archival research, field survey, and evaluation of potential impacts to TCRs resulting from the Proposed Project and Options. The tribal cultural resources studies were conducted by cultural resources specialists who meet the Secretary of the Interior's Professional Qualifications Standards (36 Code of Federal Regulations Part 61) in Archaeology and Architectural History.

Each RSA consists of the area of direct impact, which consists of the three-dimensional area of potential ground disturbance for the Proposed Project and Options, including all staging areas and other areas of temporary impact. RSA maps are attached as Appendix 3.14-A, Tribal Resource Study Area Maps.

Archival research was conducted at the South Central Coastal Information Center (SCCIC) on June 19, 2020, to identify previously conducted cultural resource investigations and previously recorded cultural resources within an approximate half-mile buffer of the RSAs. The results of the records search are discussed in Section 3.14-3.3.

One archaeological resource, P-19-000100, is documented as overlapping each RSA. This resource was recorded in 1939 with little context, as the archaeologist recorded the artifacts based on secondhand information from an informant. It was documented as two groundstone artifacts. As it is recorded, resource P-19-000100 does not appear eligible for inclusion in the NRHP, CRHR, or local register. Although the resource would be of Native American origin, it could only qualify as an isolate due to the limited resource count. Therefore, it does not appear to meet the threshold of significance for it to constitute a tribal cultural resource. This resource is discussed in more detail in Section 3.14-3.3.

A review of ethnographic source material was performed for this study. The research was conducted for the Proposed Project and Options and included review of ethnographic maps and standard ethnographic works for California Native American tribes that have historically occupied the vicinity of the RSAs. No potential tribal cultural resources were identified in the area within a half-mile radius of the Proposed Project, Trench Option, or Hawthorne Option RSAs during this ethnographic literature review.

A Sacred Lands File (SLF) search was requested from the NAHC. Documents pertaining to the SLF search are attached as Appendix 3.13-B, NAHC Correspondence. The results of the NAHC Sacred Lands File search are presented in Section 3.14-3.6.

Review of the SCCIC results, NAHC results, historic maps and aerial photographs, and other local historical sources informed the development of a prehistoric and historic setting for potential and known cultural resources in the Proposed Project vicinity.

Cultural resources specialists conducted a reconnaissance cultural resources survey of all RSAs on November 5, 2020. Previously recorded cultural resources were also revisited. No archaeological materials were observed, and no resources of Native American origin were identified during the field survey. Complete results of the survey are included in the archaeological report for this Draft EIR.

AB 52 acknowledges that "California Native American tribes may have expertise with regard to their tribal history and practices, which concern the tribal cultural resources with which they are traditionally and culturally affiliated." One purpose of the bill is to encourage government agencies to consult with

Native American governments in order to draw on this expertise and to identify and mitigate for potential impacts to tribal cultural resources . The Proposed Project will comply with all AB 52 requirements.

Metro initiated consultation February 2, 2021, via mail and email. All seven individuals identified by the NAHC as potentially interested parties in consultation were contacted. A 30-day response notice was provided. See section 3.14-3.6 and Appendix 3.13-B, NAHC Correspondence for additional information.

3.14-2.1 Resource Study Area

The RSA for tribal cultural resources , as shown in Figure 3.14-1 and in Appendix 3.14-A, Tribal Resource Study Area Maps, was delineated based on the proposed physical configuration of the Proposed Project, including areas where ground disturbance and property acquisitions may occur. It is defined as the area necessary to construct, operate, and maintain the Proposed Project, including all the areas of planned ground-disturbance (temporary or permanent), and property acquisitions.

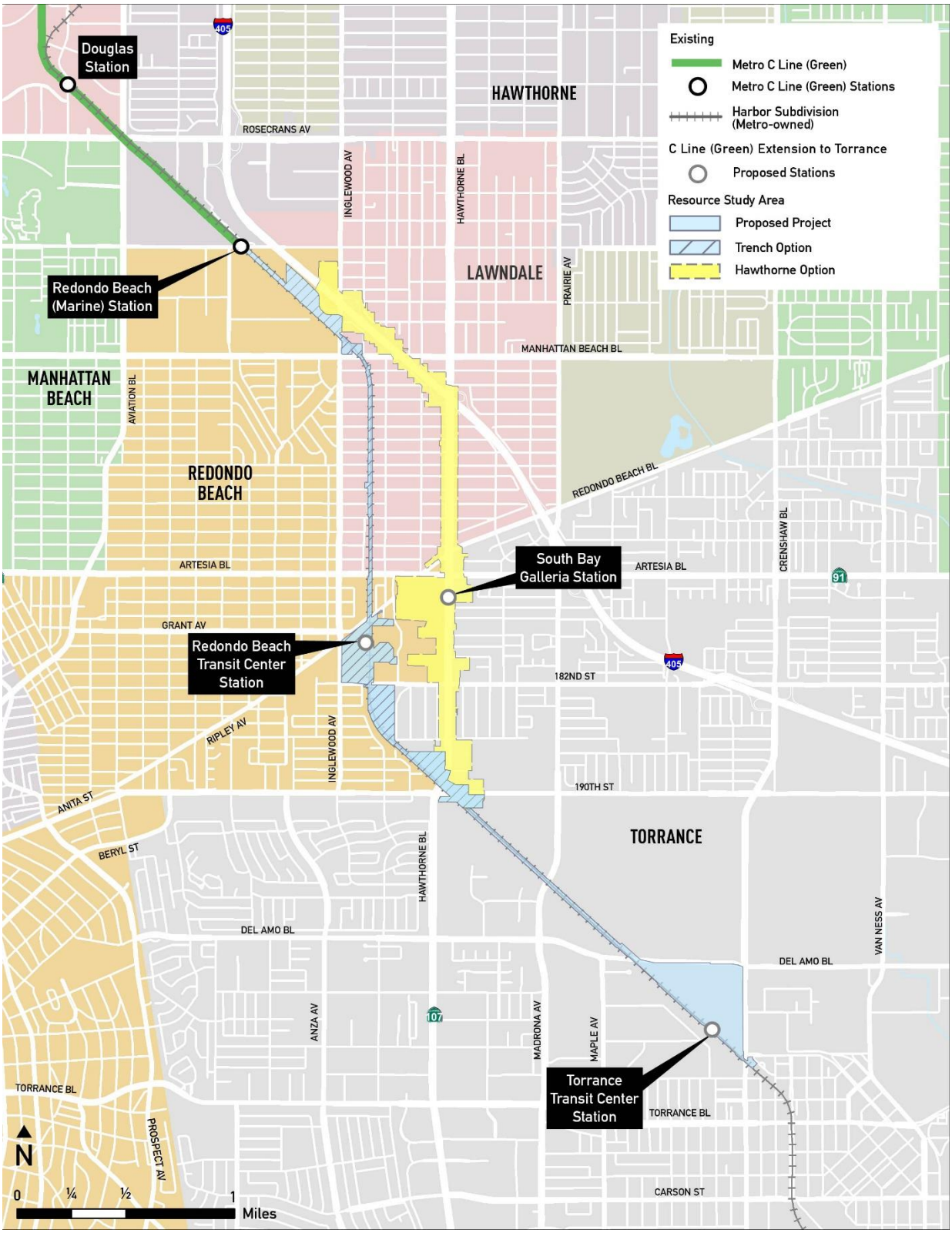
The RSA includes portions of the existing Metro-owned right-of-way (Metro ROW) and adjacent areas that would be used for project-related facilities, including stations, an overhead contact system, traction power substations, communications and signaling buildings, and temporary staging areas. All lay-down areas or other areas of temporary ground disturbance are considered part of the Proposed Project footprint.

Where light rail infrastructure would be constructed at or below grade within the existing Metro ROW (the Proposed Project and Trench Option), the RSA is limited to the extent of the Metro ROW, because the existing freight railroad infrastructure is already a component of the setting within the ROW, and the introduction of similar infrastructure is unlikely to result in new indirect impacts on cultural resources in areas adjacent to the Metro ROW. Where new light rail infrastructure is constructed outside of the existing Metro ROW or would require above-grade elements, such as the overhead contact system, elevated structures, sound walls, stations, or other equipment, the RSA includes the first tier of parcels or buildings adjacent to the Metro ROW within a reasonable viewshed of the new construction; i.e., the introduction of new infrastructure would have the potential to cause new visual, audible, or atmospheric intrusions on the setting of any adjacent tribal cultural resources .

To differentiate the potential impacts of the Proposed Project, the Trench Option, and the Hawthorne Option separately, the RSA is further delineated for each Option footprint (see Figure 3.14-1 and Appendix 3.13-A, Tribal Resource Study Area Maps). The Proposed Project and the Trench Option share the same horizontal RSA due to a spatial similarity in construction and operational impact potential, with a slight vertical RSA difference.

The Hawthorne Option RSA differs from the Proposed Project and Trench Option RSAs, as the proposed elevated alignment would be located outside of the Metro ROW. The Hawthorne Option RSA includes the first tier of parcels or buildings adjacent to the Hawthorne Option alignment within a reasonable viewshed of the new construction; i.e., the introduction of new infrastructure would have the potential to cause new visual, audible, or atmospheric intrusions on the setting of any adjacent tribal cultural resources.

Figure 3.14-1. Resource Study Area



Source: AECOM, 2022; STV, 2022

3.14-2.2 Significance Thresholds

Based upon the thresholds of significance contained in Appendix G of the CEQA Guidelines, implementation of the Proposed Project would result in a significant impact if any of the following occurred:

The Proposed Project caused a substantial adverse change in the significance of a Tribal Cultural Resource, defined in PRC 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:

a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC 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 PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

3.14-2.3 Project Features

As described in Chapter 2, Project Description, a number of features have been incorporated into the Proposed Project to ensure compliance with the laws, guidelines, or best practices of federal, state, local, and regional agencies. There are no specific project features for tribal cultural resources.

3.14-3 Affected Environment / Existing Conditions

The Proposed Project, Trench Option, and Hawthorne Option footprints are described in Section 3.14-2.1 above. The RSAs for the Proposed Project and Options are entirely developed within the County of Los Angeles, which is territory traditionally occupied by the tribe known to anthropologists and historians as the Gabrielino, and which tribal descendants call the Tongva or Kizh. One resource of Native American origin is documented within or adjacent to the Proposed Project, Trench Option, and Hawthorne Option. No resources within the RSA have been determined by a state agency to be tribal cultural resources.

3.14-3.1 Prehistoric and Ethnographic Setting

The first evidence of human occupation in the Los Angeles area dates to at least 9000 years before present (B.P.) (McCawley, 1996). The broader peopling of the Los Angeles Basin is associated with the Millingstone period, beginning approximately 6500 B.P. (Wallace, 1955; Warren, 1968). Millingstone populations established stable settlements located primarily on the coast and in the vicinity of estuaries, lagoons, lakes, streams, and marshes where a variety of resources, including seeds, fish, shellfish, small mammals, and birds, were exploited. Early Millingstone occupations are typically identified by the presence of handstones (manos) and millingstones (metates).

By 3500 B.P., a number of socioeconomic changes occurred (Erlandson, 1994; Wallace, 1955; Warren 1968) that are associated with the period known as the Intermediate Horizon (Wallace, 1955). Increasing population size necessitated the intensification of existing terrestrial and marine resources (Erlandson, 1994). The Intermediate Horizon marks a period in which specialization in labor emerged, trading networks became an increasingly important means by which both utilitarian and nonutilitarian materials were acquired, and travel routes were extended. Archaeological evidence suggests that the margins of numerous rivers, marshes, and swamps within the Los Angeles River drainage served as ideal

locations for prehistoric settlement during this period. The Los Angeles River (Gumprecht, 1999) and the wetlands associated with its mouth have attracted human settlement for millennia.

The Late Prehistoric period spans from approximately 1500 B.P. to the Spanish mission era. A sharp increase in the number of archaeological components seems to indicate population growth at this time, and artifact assemblages reflect continued technological improvements. Settlement at this time is believed to have revolved around a relatively limited number of permanent settlements that were located centrally with respect to a variety of resources. By the end of the Late Prehistoric, patterns had emerged that are associated with the ethnohistoric Gabrielino (McCawley, 1996).

The native people of the Los Angeles Basin and Sana Ana Plain, including the southern Channel Islands and the majority of today's Los Angeles and Orange Counties and part of Riverside County, are known as the Gabrielino. They were given this name by the intruding Spanish after Mission San Gabriel Arcangel, which was established in their territory; today Gabrielino descendants call themselves Tongva or Kizh. The Gabrielino spoke a Takic, Uto-Aztecan language related to the neighboring Juaneno, Luiseno, and Cahuilla, but linguistically distinct from the languages of their northern neighbors the Chumash and, further south, the Kumeyaay (Bean and Smith, 1978; Johnston, 1962; Kroeber, 1925; McCawley, 1996).

The Gabrielino are reported to have been second only to their Chumash neighbors in terms of population size, regional influence, and degree of sedentism (Bean and Smith, 1978). The Gabrielino are estimated to have numbered around 5,000 in the pre-contact period (Kroeber, 1925). Maps produced by early explorers indicate the existence of at least 40 Gabrielino villages, but as many as 100 may have existed prior to contact with Europeans (Bean and Smith, 1978; McCawley, 1996; Reid, 1939 [1852]).

Late Prehistoric Gabrielino subsistence consisted of hunting, fishing, and gathering. Small terrestrial game was hunted with deadfalls, rabbit drives, and by burning undergrowth, while larger game such as deer were hunted using bows and arrows. Fish were taken by hook and line, nets, traps, spears, and poison (Bean and Smith, 1978; Reid, 1939 [1852]). The bow and arrow first appear during this period. Frequently occurring mortars and pestles signify the growing importance of acorn exploitation, and fishing kits include a wide variety of implements. The primary plant resources were the acorn, gathered in the fall and processed with mortars and pestles, and various seeds that were harvested in late spring and summer and ground with manos and metates. The seeds included chia and other sages, various grasses, and islay or holly leafed-cherry (Reid, 1939 [1852]).

With an expansive territory that encompassed rich island, coastal, and inland environments, the Gabrielino developed a robust society with intensive regional economic interactions. Structurally, families were organized into lineage groups that were headed by a chief or tomyaar. Sedentary communities consisted of one or more of these lineage groups in which power relations and political authority were variable. Communities were regularly in contact with one another through a system of annual "ritual congregations" in which elites and non-elites were able to forge strong social, political, and economic bonds. Religious and craft-based organizations and guilds were a major structuring element of Gabrielino society as well. Soapstone, bone, wood, and plant-based crafts were produced by skilled individuals and were exchanged in local and regional settings. Some Gabrielino shamans have been documented as participating in the elite Chumash religious and political group known as the antap. Additionally, the Gabrielino religion associated with the creator-god Chengiichngech spread through much of Southern California and persisted through missionization (McCawley, 1996; Vargas, 2003).

Recent research on Gabrielino prehistory indicates that prior to contact, village and other habitation sites were situated around estuaries and organized in a hierarchical manner. The sizes of these settlements were variable throughout the basin, with differences related to the resource capacity of

nearby estuaries (Glassow et al., 2007). While habitation sites at larger estuaries were expansive, settlement patterns near limited estuarine environments exhibited more mobile Rancheria style habitation practices in which smaller groups of people congregated during specific times of the year and dispersed across the landscape during times of resource stress (Weil, 1984; Glassow, 2007:210). These Late period patterns likely persisted up until the interruption of Gabrielino social structure which occurred with European contact and missionization.

3.14-3.2 Historic Setting

3.14-3.2.1 Spanish Period

Spanish explorers made brief visits to Gabrielino territory in both 1542 and 1602, and, on both occasions, the two groups exchanged trade items. Gabrielino villages are reported by early explorers to have been most abundant along the coast and the dominant rivers of the Los Angeles Basin, including the Los Angeles, San Gabriel, and Santa Ana Rivers. The Long Beach area was particularly favored by the Gabrielino due to its protected bays and inlets (Johnston, 1962).

Sustained contact with Europeans did not commence until after 1769, when Gaspar de Portolá and a small Spanish contingent explored the California coast from San Diego to Monterey. The goal of the expedition was to establish a Spanish presence in Alta California, thereby discouraging Russian or English settlement. The party crossed Gabrielino territory twice during its journey and was received warmly with gifts of antelope and rabbit meat (McCawley, 1996:188). Shortly after the Portolá expedition, Spanish settlement increased. A string of 21 missions was established in the years that followed the Portolá expedition, including Mission San Gabriel Archangel in 1771 and Mission San Fernando Rey in 1797. These and many others were placed strategically across western California, systematically disrupting traditional Gabrielino society. By the early 1800s, the majority of the surviving Gabrielino population had entered the mission system.

3.14-3.2.2 Mexican Period

Alta California became a state when Mexico won its independence from Spain in 1821. In 1822, Rancho Sausal Redondo, the “Round Clump of Willows,” was provisionally granted to Antonio Ygnacio Avila (Dixon and Roberts, 2005). Rancho Sausal Redondo stretched from present-day Playa del Rey to Redondo Beach, including modern-day El Segundo, Manhattan Beach, Hawthorne, Inglewood, Lawndale and portions of Redondo Beach (Dixon and Roberts, 2005).

After Mexico won independence from Spain in 1821, the authority of the California missions gradually declined, culminating with their secularization in 1834. Native Americans who had become dependent upon the missions were disenfranchised, and most Gabrielino neophytes either fled to the north or sought work as laborers from nearby private landowners. Former mission lands were quickly divided and granted to private citizens for use as agricultural and pastoral land (Reid, 1939 [1852]).

Of the divided land, very little was given to Gabrielino people. Only 20 former Gabrielino residents of Spanish Missions were provided any land; of which was very little. In 1846 there was an effort to fight against this. A petition was signed by 140 Gabrielinos to demand access to old mission lands. However, by then the 1.5 million acres of mission land had already been doled out to Californio colonist families (Hernandez, 2017).

Throughout this time, Gabrielino families resided within the San Gabriel township and now diversified Yaanga village near today’s downtown Los Angeles. However, by the mid-1800s, the settlement of Yaanga was forced to move east across the Los Angeles River (Singleton, 2004).

3.14-3.2.3 Early American Period

The United States took control of California at the end of the Mexican-American War with the Treaty of Guadalupe-Hidalgo in 1848. Regarding Gabrielino sovereignty, nothing changed under new American occupation. Individuals and families were moved to various communities across the Los Angeles Basin, including San Jacinto, Temecula, Pechanga, Highland Park, and Eagle Rock (Hernandez, 2017). Native American men were often subjected to unfair criminalization, where they disproportionately experienced prison and indentured servitude. By the mid-19th century there was an estimated 1,000 Gabrielino left; living throughout the Los Angeles Basin working mostly servant and ranch jobs and being Christianized at an alarming rate (Singleton, 2004).

In 1850, California was admitted into the Union as the 31st state. The Dominguez Family held the title to Rancho San Pedro through the transition of California to statehood. President Buchanan signed the U.S. land patent for Rancho San Pedro in 1858. Although reduced to 25,000 acres due to sales and new surveys, Rancho San Pedro was still a massive holding into the nineteenth century. Antonio Avila retained the title to Rancho Sausal Redondo under the U.S. government after a court ruling in 1856. In 1868, Sir Robert Burnett acquired Rancho Sausal Redondo. Burnett leased 25,000 acres of the property to Catherine Freeman, the wife of Daniel Freeman, in 1873 (Freeman Family Papers, 2010).

The RSAs are located in the former lands of Rancho San Pedro and Rancho Sausal Redondo, or Rancho Centinela. As these lands were sold and subdivided in the late nineteenth century and the early twentieth century, several factors influenced the patterns of land use and community development in the area. These factors included expansion of the transportation network and its accompanying real estate speculation, the discovery of oil and its exploitation, and the concentration of the aviation industry and its development into the military-industrial complex. As these factors affected the region, individual and distinctive communities grew within their influence.

3.14-3.3 Archival Research and Ethnographic Study

3.14-3.3.1 South Central Coastal Information Center Records Search Summary

An archival records search request for the Proposed Project was sent via email to the SCCIC housed at California State University, Fullerton on April 30, 2020. The records search was completed by SCCIC staff on June 19, 2020. The research focused on the identification of previously recorded historic built environment and archaeological resources within an approximate half-mile radius of the RSAs. The archival research involved a search of records, including historical site inventories, archaeological site records and reports, and historic U.S. Geological Survey (USGS) topographic maps. Documents pertaining to the records search results are attached as Appendix 3.13-D, SCCIC Archaelogical Records Search Results.

Previous Cultural Resources Investigations

The records search identified a total of 37 investigations previously conducted within a half-mile radius of the Proposed Project. Of these, 36 are within a half-mile radius of the Proposed Project and Trench Option footprints while 26 are within a half-mile radius of the Hawthorne Option footprint. Nine previous studies overlap the Proposed Project and Trench Option RSAs while 12 overlap the Hawthorne Option RSA. These reports are summarized in Section 3.13, Cultural Resources, Table 3.13-1.

Previously Recorded Cultural Resources

The records search at the SCCIC identified 13 previously recorded cultural resources within a half-mile radius of the Proposed Project. Of these, all 13 are within a half-mile radius of the Proposed Project and

Trench Option footprints, while seven are within a half-mile-mile radius of the Hawthorne Option footprint. One previously recorded cultural resource of Native American origin overlaps with all of the RSAs: P-19-000100/CA-LAN-100. This resource is summarized in Table 3.14-1 and discussed below.

Table 3.14-1. Previously Recorded Cultural Resource Site of Native American Origin within RSAs

Primary Number[1]	Resource Name	Resource Description	Date	NRHP/CEQA Eligibility Status
000100	Unnamed	Prehistoric campsite	Not dated	Not Evaluated

Source: SCCIC, AECOM 2022

[1]Primary numbers are prefixed with "P-19- "

P-19-000100 (CA-LAN-100) – This prehistoric archaeological resource was recorded as one of a series of small prehistoric campsites in Torrance by F.H. Racer in 1939. Racer states, "The only artifacts I know of being found there was a large metate and a mano stone," i.e., prehistoric stone tools (Racer, 1939:5). Racer also notes these artifacts "may have been extraneous" (Racer, 1939:5), although he does not explain what he means by extraneous. In other words, this site is represented by only two stones which Racer's informant believed were artifacts. It is clear from his description that Racer did not see the artifacts, nor did he personally observe any evidence of an archaeological site. The precise location where these artifacts were found is not recorded, but the resource is documented near the intersection of 190th Street and Hawthorne Boulevard.

The site appears on the SCCIC's maps as an arbitrarily-drawn 500-foot diameter circle with its midpoint within the intersection of 190th Street and Hawthorne Boulevard. This circle overlaps the RSAs delineated for the Proposed Project, Trench Option, and Hawthorne Option.

It is unclear whether these objects, which were documented based on hearsay, were genuine artifacts. Moreover, if they were genuine artifacts, it is not clear from the available data that this was an archaeological site rather than two isolated artifacts, nor is it clear whether the find was located within or simply near the RSAs. As it is recorded, resource P-19-000100 (CA-LAN-100) appears to consist of only two isolated artifacts and therefore does not appear eligible for inclusion in the NRHP, CRHR, or local register.

Historic and Ethnographic Maps

Maps used to analyze the historic development of the freight railroad within half-mile of the RSAs are listed in Table 3.14-2.

Table 3.14-2. Historic Maps

Title	Source	Description	Date
Redondo	USGS	15-Minute Topographic Quadrangle	1896
Inglewood	USGS	7.5-Minute Topographic Quadrangle	1924
Torrance	USGS	7.5-Minute Topographic Quadrangle	1924
Native Sites in Part of Southern California	Kroeber	Ethnographic overview map	1925
Inglewood	USGS	7.5-Minute Topographic Quadrangle	1930
Kirkman-Harriman Map	Kirkman	Pictorial and Historical Map of Los Angeles County to 1860	1937
Redondo	USGS, War Department	15-Minute Topographic Quadrangle	1944
Gabrielino Communities	McCawley 1996:56	Gabrielino communities located on the Los Angeles-Santa Ana Plain	1996
Tongva Villages	Sutimiv-Pa'alat, Keepers of Indigenous Ways	Gabrieleño-Fernandeño villages of the Los Angeles Basin	2010
Kizh Tribal Territory	Salas et al.	Gabrielino Indian Lands	2016

Source: AECOM, 2022

Examination of the historic topographic maps shows a segment of the Redondo Branch of the AT&SF Railway overlapping with the northern portion of the RSAs (USGS, 1896 Redondo 15-Minute Quadrangle). By 1944, the illustrated AT&SF (later the BNSF Harbor Subdivision) segment matched the present-day rail configuration except for a portion of the freight railroad within the Hawthorne Option RSA (USGS, 1944 Redondo 15-Minute Quadrangle).

Examination of ethnographic maps prepared by local historians, early anthropologists including A.L. Kroeber, and modern Native American tribal leaders revealed no Native American villages within the RSA. None of the historic or ethnographic maps indicate the existence of potential tribal cultural resources within the RSAs.

3.14-3.3.2 Additional Historical and Ethnographic Research

Additional archival research was conducted for the RSAs. Several online databases, including the historic aerial photographs available through Historic Aerials and Sanborn Fire Insurance Maps available through the Los Angeles Public Library (LAPL), were consulted to identify physical changes over time in the RSAs.

Historic and modern aerial photographs demonstrated the significant changes that occurred in the development of the RSA and its vicinity from the 1950s to the present (NETROnline, 2020). Sanborn Fire Insurance Maps were available for the City of Los Angeles from 1888 to 1955 and the City of Torrance from 1916 to 1932. Sanborn maps depicted the AT&SF Redondo Branch in the RSA in 1929 (LAPL 1906–1950) and 1929–1950 (LAPL 1906–1951). The SF&LAH (now BNSF Harbor Subdivision) was depicted as early as 1928 (LAPL 1906–1951). In addition, historic newspapers and historic context statements for the City of Torrance, the City of Redondo Beach, and the City of Lawndale were also reviewed, as was published ethnographic material.

3.14-3.4 Present Day Development

Knowledge of the current development of the RSAs and vicinity informs an analysis of potential impacts to tribal cultural resources. The sensitivity of the area for unknown tribal cultural resources is

substantially reduced by development, which is likely to destroy archaeological sites that have the potential to be tribal cultural resources . Moreover, new indirect visual impacts tend to be less than significant when construction occurs within an already developed and visually cluttered landscape.

Within the RSA for the Proposed Project and Trench Option, the current Metro ROW extends through or borders several jurisdictions, including Hawthorne, Redondo Beach, Lawndale, and Torrance. Metro purchased the Harbor Subdivision freight corridor in 1993 with plans to build passenger rail service. BNSF freight railroad continues to operate along what is now the Metro ROW. A large portion of the current Metro ROW is bordered by industrial, office and retail/commercial land uses. However, between Manhattan Beach Boulevard and 190th Street, the Metro ROW is located near residential land uses. One of these adjacent residential areas lie on both sides of the current Metro ROW between Manhattan Beach and Artesia Boulevards within the Cities of Redondo Beach and Lawndale. These residences were constructed between the 1930s and the 1970s. South of Artesia Boulevard, land uses located adjacent to the Metro ROW include residences built in the 1950s and 1960s, as well as condominium developments (Los Angeles County Office of the Assessor, 2020). In addition, the Pacific Crest Cemetery (established in 1902) and El Nido Park are located adjacent to the Metro ROW near 182nd Street and the Redondo Beach/Torrance city border. South of the intersection of Hawthorne Boulevard and 190th Street, there are no residential land uses until south of Crenshaw Boulevard (past the southern terminus of the Proposed Project). The area between Hawthorne and Crenshaw Boulevards includes heavy industrial land uses, such as the Torrance Refining Company facilities, which have visually dominant industrial features.

3.14-3.5 Field Survey

Cultural resources specialists conducted a reconnaissance cultural resources survey of the RSAs on November 5, 2020, noting and photographing any potential cultural resources for recordation. A supplemental survey was conducted by Alec Stevenson, M.A., RPA, on June 21, 2022.

The purpose of these surveys was to discover and document new cultural resources of Native American origin, as well as to identify any surviving elements of P-19-000100, a previously recorded prehistoric resource, that were visible within or adjacent to the RSAs and assess its current condition and identify any potential impacts to the resource. Survey methodology varied depending on accessibility and development. The survey included the area of direct impact along Hawthorne Boulevard, southwest edge of the Interstate 405 (I-405), and Railroad Avenue in the City of Redondo Beach. The survey along Hawthorne Boulevard was limited to a pedestrian survey on both the east and west sides of the paved street (Figure 3.14-2). The survey on the southwest edge of I-405 and beside the existing BNSF freight railroad tracks consisted of a “windshield survey” with opportunistic pedestrian survey in accessible areas. The windshield survey (i.e., inspection by car) was done to identify areas with visible ground surface that could be surveyed and eliminate areas where survey was not feasible due to pavement or other obstructions.

Overall ground visibility was less than one percent throughout the entire survey due to paved streets, sidewalks, and ornamental vegetation. Unpaved areas consisted largely of road medians, road shoulders, and the margins of the existing freight railroad tracks, although most of these areas were landscaped and therefore had limited surface visibility.

As previously noted, the only archaeological resource documented within the RSA is P-19-000100. The resource was documented in 1939 based on hearsay as having consisted of one large metate and one mano (Racer, 1939:5). The artifacts were found at an unknown location near the intersection of Hawthorne Boulevard and 190th Street, an area that today is thoroughly developed. During the survey,

all unpaved areas within the resource boundary were examined using pedestrian survey techniques. This includes walking transects of 33-foot intervals while inspecting the ground, looking for artifacts partially exposed on the surface and coloration changes in soils that could be a sign of midden deposits.

This opportunistic pedestrian survey included exposed soils beneath the freight railroad underpass on Hawthorne Boulevard immediately north of 190th Street; grassy areas with zero ground visibility on the northwest, southwest, and southeast corners of the intersection; and the road median that exists in the center of Hawthorne Boulevard just north of the freight railroad, which also had little ground visibility due to landscaping. No artifacts, archaeological features, anthropogenic soils, or other evidence of an archaeological site was observed within the site boundaries, including that part of the site that overlaps the RSAs. Although this resource overlaps the RSAs for the Proposed Project, Trench Option, and Hawthorne Option, it is mostly intersected by the Proposed Project and Trench Option RSAs.

Figure 3.14-2. Documented Location of P-19-000100 at Hawthorne Boulevard and 190th Street, View Northeast

Source: AECOM, 2020

The cultural resource survey failed to locate P-19-000100 (CA-LAN-100) and no new prehistoric cultural resources were identified.

3.14-3.6 Sacred Land Files Search and Native American Contact Program

An SLF search was conducted by the NAHC to identify any Native American cultural resources that may be Traditional Cultural Properties or tribal cultural resources and that might be affected by the Proposed Project, as required by CEQA as amended by AB 52. Documents pertaining to the SLF search are attached as Appendix 3.13-B, NAHC Correspondence. The following provides an overview of the process and results.

A letter was mailed to the NAHC on April 30, 2020, requesting that an SLF search be conducted for the Proposed Project and Options. The NAHC responded to the request in a letter dated May 15, 2020, which stated "negative results" for the SLF search. The NAHC also provided a list of seven Native American representatives who may have knowledge of resources in or near the RSAs. The seven individuals were contacted as part of the Project AB 52 consultation.

3.14-3.7 Assembly Bill 52

Letters via mail and email were sent by Metro on February 2, 2021, to the seven individuals identified by the NAHC as potentially being interested in consultation. These letters identified the lead agency (Metro), the Proposed Project location, the environmental document in production, and discussed the Proposed Project, including potential ground impacts. The letters gave a 30-day notice upon receipt of a response of interest to consult under AB 52. Follow-up emails were sent ten days later on February 12, 2021.

On March 5, 2021, one individual responded, Adrian Morales on behalf of the Gabrieleno Tongva San Gabriel Band of Mission Indians under the leadership of Chairman/Chief Anthony Morales. Adrian Morales said that the Gabrieleno Tongva San Gabriel Band of Mission Indians would like to participate in the consultation process, and there will be a follow-up correspondence letter with formal recommendations to address potential adverse effects to tribal cultural resources. Metro responded on May 10, 2021, with additional cultural resource information based on the archival research and survey. Follow-up emails were sent by Metro to Adrian Morales on May 25, July 12, July 29, and October 27, 2021, each requesting additional follow-up. There have been no responses since the initial communication and this Draft EIR will be transmitted to a representative of the Gabrieleno Tongva San Gabriel Band of Mission Indians to close consultation.

No other individuals representing California Native American Tribes responded or requested AB 52 consultation.

3.14-4 Environmental Impacts

3.14-4.1 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 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)?

3.14-4.1.1 Construction Impacts

Less than Significant with Mitigation. Potential construction impacts on tribal cultural resources would be related to shallow construction work and excavations. Shallow construction work such as for the at-grade portions of the Proposed Project have limited potential to encounter intact archaeological resources that may qualify as tribal cultural resources due to prior disturbance, but other proposed construction activities (e.g., retaining walls, drainage) have the potential to encounter intact resources that may have been buried under artificial fill.

The Proposed Project construction is not likely to impact any known tribal cultural resources. However, it is possible that unknown resources lay buried throughout the RSA and could be impacted by the Proposed Project construction. One resource, identified as P-19-000100 (CA-LAN-100) in the CHRIS records search, was identified within the RSA. As discussed in Section 3.14-3.3.1, the resource was last

documented in 1939 and its context and means of discovery is not fully known. Information is lacking as the artifacts were recorded through an informant and no artifacts were examined directly by an archaeologist. Although the recorder described them as two pieces of groundstone, their specific typology and locational context is unclear. In addition to this, the resource consists of two artifacts, which would normally qualify it as an isolate. The resource boundary as currently mapped by the SCCIC is a large buffer placed around the approximate location of these artifacts, and the area has been heavily disturbed since the original recordation. Because of this, the resource will not likely be further impacted during construction and would not qualify under any criteria of eligibility for the CRHR nor as a tribal cultural resource.

Despite prior disturbances, the excavations associated with the Proposed Project have the potential to adversely impact a significant tribal cultural resource. This would result in a significant impact. Mitigation measure MM-CUL-1 (Cultural Resources Identification Training) would be implemented, which would require construction personnel to be trained in the identification of archaeological resources and tribal cultural resources. Mitigation measure MM-CUL-2 (Archaeologist Consultation) would also be implemented, which would establish procedures to stop work in the event of a resource discovery of potentially Native American origin, require tribal consultation, and ensure that discovered resources would be avoided or treated in accordance with a treatment plan developed in consultation with Metro and consulting Native American parties. Mitigation measure MM-CUL-3 (Unanticipated Discovery of Human Remains Associated with Known Cemeteries) would be implemented, which would establish a monitoring program as well as treatment measures and avoidance strategies for any remains that are identified. In addition, if Native American human remains are encountered, these would be treated with appropriate deference through compliance with legal requirements pursuant to Health and Safety Code Section 7050.5 and Public Resource Code Section 5097.98. Therefore, with implementation of mitigation measures MM-CUL-1, MM-CUL-2, and MM-CUL-3, the impact would be reduced to **less than significant**. Refer Section 3.13, Cultural Resources, for additional detail of these mitigation measures.

TRENCH OPTION

Less than Significant with Mitigation. As the Trench Option would locate the light rail tracks in a trench throughout most of the segment, and there would require additional excavation compared to the Proposed Project.

Because of the increased depths of excavation, there is an increased potential to encounter intact tribal cultural resources that may have been buried under artificial fill. Shallow construction work for the at-grade portions of the Trench Option have limited potential to encounter intact archaeological resources due to prior disturbance.

Excavation associated with the Trench Option has the potential to adversely impact a significant tribal cultural resource which would result in a significant impact. Mitigation measure MM-CUL-1 would be implemented, which would require construction personnel to be trained in the identification of archaeological resources and tribal cultural resources . Mitigation measure MM-CUL-2 would also be implemented, which would establish procedures to stop work in the event of a resource discovery of potentially Native American origin, require tribal consultation, and ensure that discovered resources would be avoided or treated in accordance with a treatment plan developed in consultation with Metro and consulting Native American parties. Refer to Section 3.13, Cultural Resources for additional detail of these mitigation measures. Mitigation measure MM-CUL-3 would be implemented, which would establish a monitoring program as well as treatment measures and avoidance strategies for any remains

that are identified. In addition, if Native American human remains are encountered, these would be treated with appropriate deference through compliance with legal requirements pursuant to Health and Safety Code Section 7050.5 and Public Resource Code Section 5097.98. Therefore, with implementation of mitigation measures MM-CUL-1, MM-CUL-2, and MM-CUL-3, the impact would be reduced to **less than significant**.

HAWTHORNE OPTION

Less than Significant with Mitigation. The Hawthorne Option is entirely elevated, and construction activities such as the installation of piles for elevated structures have a lower potential to encounter intact tribal cultural resources , compared to shallower excavation for at-grade track. Resources are unlikely to be exposed because piles are twisted or vibrated into the soil while preparation and compaction of the subgrade is not typically required. The potential for encountering deeply buried resources during these types of construction activities is limited because surficial landforms are old and pre-date human occupation of the area.

Nevertheless, excavations associated with the Hawthorne Option have the potential to adversely impact a significant tribal cultural resource which would result in a significant impact. Mitigation measure MM-CUL-1 would be implemented, which would require construction personnel to be trained in the identification of archaeological resources and tribal cultural resources. Mitigation measure MM-CUL-2 would also be implemented, which would establish procedures to stop work in the event of a resource discovery of potentially Native American origin, require tribal consultation, and ensure that discovered resources would be avoided or treated in accordance with a treatment plan developed in consultation with Metro and consulting Native American parties. Mitigation measure MM-CUL-3 would be implemented, which would establish a monitoring program as well as treatment measures and avoidance strategies for any remains that are identified. Refer to Section 3.13, Cultural Resources for additional detail of these mitigation measures. Finally, if Native American human remains are encountered, these would be treated with appropriate deference through compliance with legal requirements pursuant to Health and Safety Code Section 7050.5 and Public Resource Code Section 5097.98. Therefore, with implementation of mitigation measures MM-CUL-1, MM-CUL-2, and MM-CUL-3, the impact would be reduced to **less than significant**.

3.14-4.1.2 Operational Impacts

Less than Significant. Operational activities of the Proposed Project would be limited to light rail operations on established tracks and at facilities constructed as a part of the Proposed Project. The operation of light rail transit traffic and other rail operations would not cause subsurface ground disturbance nor alter any existing setting that would impact a tribal cultural resource within the RSA. Therefore, the impact would be **less than significant**.

TRENCH OPTION

Less than Significant. Similar to the Proposed Project, activities during operation of the Trench Option would be limited to light rail operations on established tracks or at facilities. These types of operational activities would not have the potential to encounter tribal cultural resources and would not cause subsurface ground disturbance nor alter any existing setting that would impact a tribal cultural resource within the RSA. Therefore, the impact is **less than significant**.

HAWTHORNE OPTION

Less than Significant. Similar to the Proposed Project, activities during operation of the Hawthorne Option would be limited to light rail operations on established tracks or at facilities constructed. These

types of operational activities would not have the potential to encounter tribal cultural resources and would not cause subsurface ground disturbance nor alter any existing setting that would impact a tribal cultural resource within the RSA. Therefore, the impact is **less than significant**.

3.14-4.2 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 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 Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

3.14-4.2.1 Construction Impacts

Less than Significant with Mitigation. No resources have been determined by Metro, in its discretion and supported by substantial evidence, to be significant tribal cultural resources within the RSA. However, excavations associated with construction have the potential to disturb and destroy an unknown significant tribal cultural resource. This disturbance of significant tribal cultural resources would result in a significant impact. Mitigation measure MM-CUL-1 would be implemented, which would require construction personnel to be trained in the identification of archaeological resources and tribal cultural resources . Mitigation measure MM-CUL-2 would also be implemented, which would establish procedures to stop work in the event of a discovery of a resource of potentially Native American origin, require tribal consultation, and ensure that discovered resources would be avoided or treated in accordance with a treatment plan developed in consultation with Metro and consulting Native American parties. Mitigation measure MM-CUL-3 would be implemented, which would establish a monitoring program as well as treatment measures and avoidance strategies for any remains that are identified. Refer to Section 3.13, Cultural Resources for discussion of these mitigation measures. Therefore, with implementation of mitigation measures MM-CUL-1, MM-CUL-2, and MM-CUL-3, the impacts would **less than significant**.

TRENCH OPTION

Less than Significant with Mitigation. Similar to the Proposed Project, there are no identified tribal cultural resources in the Trench Option RSA. However, construction of the Trench Option has the potential to disturb and destroy an unknown significant tribal cultural resource, and this would be a significant impact. Mitigation measures MM-CUL-1, MM-CUL-2, and MM-CUL-3 would be implemented, which would require construction personnel to be trained in the identification of archaeological resources and tribal cultural resources, and establish procedures to stop work in the event of a resource discovery of potentially Native American origin, require tribal consultation, and ensure that discovered resources would be avoided or treated in accordance with a treatment plan developed in consultation with Metro and consulting Native American parties. Therefore, with implementation of mitigation measures MM-CUL-1, MM-CUL-2, and MM-CUL-3 impacts would be **less than significant**.

HAWTHORNE OPTION

Less than Significant with Mitigation. Similar to the Proposed Project, there are no identified tribal cultural resources in the Hawthorne Option RSA. However, construction of the Hawthorne Option has the potential to disturb and destroy an unknown significant tribal cultural resource, and this would be a

significant impact. Mitigation measures MM-CUL-1, MM-CUL-2, and MM-CUL-3 would be implemented, which would require construction personnel to be trained in the identification of archaeological resources and tribal cultural resources, and establish procedures to stop work in the event of a resource discovery of potentially Native American origin, require tribal consultation, and ensure that discovered resources would be avoided or treated in accordance with a treatment plan developed in consultation with Metro and consulting Native American parties. Therefore, with implementation of mitigation measures MM-CUL-1, MM-CUL-2, and MM-CUL-3, impacts would be **less than significant**.

3.14-4.2.2 Operational Impacts

Less than Significant. Operational activities of the Proposed Project would be limited to light rail operations on established tracks and at facilities constructed as a part of the Proposed Project. The operation of light rail transit and other rail operations would not cause subsurface ground disturbance nor alter any existing setting that would impact a resource of tribal significance within the RSA. Therefore, the impact would be **less than significant**.

TRENCH OPTION

Less than Significant. Similar to the Proposed Project activities during operation of the Trench Option would be limited to light rail operations on established tracks or at facilities. These types of operational activities would not have the potential to encounter tribal cultural resources and would not cause subsurface ground disturbance nor alter any existing setting that would impact a resource of tribal significance within the RSA. Therefore, the impact would be **less than significant.**

HAWTHORNE OPTION

Less than Significant. Similar to the Proposed Project, activities during operation of the Hawthorne Option would be limited to light rail operations on established tracks or at facilities. These types of operational activities would not have the potential to encounter tribal cultural resources and would not cause subsurface ground disturbance nor alter any existing setting that would impact a resource of tribal significance within the RSA. Therefore, the impact would be **less than significant.**

3.14-5 Mitigation Measures

Mitigation measures MM-CUL-1, MM-CUL-2, and MM-CUL-3 outlined in Section 3.13, Cultural Resources address the potentially significant impacts during construction.

3.14-6 Project Impacts Remaining After Mitigation

3.14-1.1. Proposed Project

With the incorporation of mitigation measures MM-CUL-1, MM-CUL-2, and MM-CUL-3, as outlined in Section 3.13, Cultural Resources, the Proposed Project would not result in new or additional significant impacts related to tribal cultural resources. Therefore, impacts of the Proposed Project would be less than significant.

3.14-6.1 Trench Option

With the incorporation of mitigation measures MM-CUL-1, MM-CUL-2, and MM-CUL-3, as outlined in Section 3.13, Cultural Resources, the Trench Option would not result in new or additional significant impacts related to tribal cultural resources. Therefore, impacts of the Trench Option would be less than significant.

3.14-6.2 Hawthorne Option

With the incorporation of mitigation measures MM-CUL-1, MM-CUL-2, and MM-CUL-3, outlined in Section 3.13, Cultural Resources, the Hawthorne Option modifications would not result in new or additional significant impacts related to tribal cultural resources. Therefore, impacts of the Hawthorne Option would be less than significant.

3.14-7 Cumulative Impacts

The methodology for cumulative analysis and a description of relevant projects and projections are included in Section 3.0, Introduction. The geographic scope of the cumulative analysis for tribal cultural resources are the RSAs, as impacts are generally site-specific and localized.

3.14-7.1.1 Proposed Project

The development of the Proposed Project in combination with other projects located in the adjacent area would increase the potential for impacts to tribal cultural resources and could contribute to the loss of such resources in the region. The potential that development consistent with local plans would impact tribal cultural resources during development is determined by a variety of factors, including the type of development that is proposed.

No tribal cultural resources have been identified within the Proposed Project RSA. However, the Proposed Project would have the potential to disturb unknown tribal cultural resources during construction. Should tribal cultural resources be discovered, Metro would comply with applicable federal, state, and local guidelines, including PRC Sections 2108.3.2 and 5097.98 and Health and Safety Code Section 7050.5. Mitigation measures MM-CUL-1, MM-CUL-2, and MM-CUL-3 would be implemented, which would reduce the impact to less than significant. Probable future projects would be expected to comply with applicable federal, state, and local regulations to protect tribal cultural resources, and would implement project-specific mitigation measures during construction. Therefore, the Proposed Project in combination with past, present, and probable future projects would not result in a significant cumulative impact on tribal cultural resources during construction.

Operation of the Proposed Project would not cause subsurface ground disturbance that would impact a tribal cultural resource. Therefore, the Proposed Project in combination with past, present, and probable future projects would not result in a significant cumulative impact on tribal cultural resources during operation.

3.14-7.1.2 Trench Option

No tribal cultural resources have been identified within the Trench Option RSA. The potential for cumulative impacts on unknown tribal cultural resources from the Trench Option would be similar to the analysis presented above for the Proposed Project, and the impact would be less than significant with implementation of mitigation measures MM-CUL-1, MM-CUL-2, and MM-CUL-3. The Trench Option in combination with past, present, and probable future projects would not result in a significant cumulative impact on tribal cultural resources during construction or operation.

3.14-7.1.3 Hawthorne Option

No tribal cultural resources have been identified within the Hawthorne Option RSA. The potential for cumulative impacts on unknown tribal cultural resources from the Hawthorne Option would be similar to the analysis presented above for the Proposed Project, and the impact would be less than significant with implementation of mitigation measures MM-CUL-1, MM-CUL-2, and MM-CUL-3. The Hawthorne

Option in combination with past, present, and probable future projects would not result in a significant cumulative impact on tribal cultural resources during construction or operation.

3.15 PUBLIC SERVICES

This section of the Draft EIR provides an analysis of the potential impacts on public services.

3.15-1 Regulatory Framework

Federal, state, regional and local regulations concerning public services are described in the following section.

3.15-1.1 Federal Regulations

Uniform Fire Code

The Uniform Fire Code published by the National Fire Protection Association (NFPA), contains regulations relating to the construction and maintenance of buildings and to the use of their premises. Topics addressed include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions intended to protect and assist fire responders, industrial processes, and many other general and specialized fire safety requirements, for new and existing buildings and their premises. The Uniform Fire Code contains specialized technical regulations related to fire and human safety.

3.15-1.2 State and Regional Regulations

Penal Code of California

The Penal Code of California forms the basis for the application of criminal law in California. It was originally enacted in 1872 as one of the original four California Codes, and has been substantially amended and revised since then. All law enforcement agencies within the State of California are organized and operated in accordance with the applicable provisions of the California Penal Code, which, among other things, sets forth the authority, rules of conduct, and training for peace officers. All sworn municipal and county police officers are state peace officers, under the authority of California Penal Code Section 830.1.

California Education Code

Each of the state school districts is subject to the regulations of the California Education Code and the governance of the California State Board of Education, relative to funding, school curriculum, operations, and facilities (including location considerations).

California Office of Emergency Services (Cal OES)

In 2009, the State of California passed legislation creating the Cal OES and authorized it to prepare a Standard Emergency Management System (SEMS) program (Title 19 California Code of Regulations (CCR) Section 2401 et seq.), which sets forth measures by which a jurisdiction should handle emergency disasters. In California, SEMS provides the mechanism by which local government requests assistance. Non-compliance with SEMS could result in the state withholding disaster relief from the non-complying jurisdiction in the event of an emergency disaster. California Office of Emergency Services (Cal OES) coordinates the state's preparation for, prevention of, and response to major disasters, such as fires, floods, earthquakes, and terrorist attacks. During an emergency, Cal OES serves as the lead state agency for emergency management in the state. It also serves as the lead agency for mobilizing the state's resources and obtaining federal resources. Cal OES coordinates the state response to major emergencies in support of local government. The primary responsibility for emergency management resides with local government. Local jurisdictions first use their own resources and, as they are exhausted, obtain more from neighboring cities and special districts, the county in which they are located, and other

counties throughout the state through the statewide mutual aid system (see discussion of Mutual Aid Agreements, below). California Emergency Management Agency (Cal-EMA) maintains oversight of the state's mutual aid system.

Emergency Management Mutual Aid (EMMA)

Cal OES developed the EMMA System in response to the 1994 Northridge Earthquake. The EMMA System coordinates emergency response and recovery efforts along the coastal, inland, and southern regions of California. The purpose of EMMA is to provide emergency management personnel and technical specialist to afflicted jurisdictions in support of disaster operations during emergency events. Objectives of the EMMA Plan is to provide a system to coordinate and mobilize assigned personnel, formal requests, assignment, training, and demobilization of assigned personnel; establish structure to maintain the EMMA Plan and its procedures; provide the coordination of training for EMMA resources, including SEMS training, coursework, exercises, and disaster response procedures; and to promote professionalism in emergency management and response. The EMMA Plan was updated in November 2012 and supersedes the 1997 EMMA Plan and November 2001 EMMA Guidance.

California Code of Regulations (CCR) Title 24, Part 9

CCR Title 24, Part 9, is known as the California Fire Code. The Fire Code includes regulations regarding fire-resistance-rated construction, fire protection systems such as alarm and sprinkler systems, fire services features such as fire apparatus access roads, means of egress, establishment of fire resistance standards for fire doors, fire safety during construction and demolition, and wildland-urban interface areas. Stairwells associated with parking structures are also required to include fire doors ("Opening Protectives") (California Fire Code Sections 7703.2, 909.5.2, 1022.2).

California Code of Regulations (CCR) Title 8, Section 1270 and Section 6773

In accordance with CCR, Title 8 Section 1270, "Fire Prevention," and Section 6773, "Fire Protection and Fire Equipment," the California Occupational Safety and Health Administration (Cal-OSHA) establishes minimum standards for fire suppression and emergency medical services. The standards include, but are not limited to, guidelines on the handling of highly combustible materials, fire hose sizing requirements, restrictions on the use of compressed air, access roads, and the testing, maintenance, and use of all firefighting and emergency medical equipment.

California Health and Safety Code Section 1300

Section 13000 et seq. of the California Health and Safety Code sets regulations for building standards, fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards and fire suppression training. In the case where there is no local fire authority and in all state-owned and state-occupied facilities, the California State Fire Marshall has full enforcement jurisdiction of state fire regulations.

California Public Utilities Commission (CPUC) Code Division 10, Part 11

CPUC Division 10, Part 11 (Section 99000 – 99582) is a compilation of rules and regulations regarding the safe operation of any public transit guideway planned, acquired, or constructed, on or after January 1, 1979. Under the Code, the California Public Utilities Commission (CPUC) shall inspect all work done on those guideways and may make further additions or changes necessary for the purpose of safety to employees and the general public. As authorized by Section 99152, The CPUC's State Safety Oversight (SSO) Program employs safety planning criteria, guidelines, safety standards, and safety procedures to be met by operators in the design, construction, and operation of those guideways.

The SSO Program was approved and certified by the Federal Transit Administration (FTA) in accordance with the requirements of Federal public transportation safety law (49 United States Code Section 5329(e)) and FTA's SSO regulation (49 Code of Federal Regulation Part 674), on October 23, 2018. The CPUC's Rail Transit Safety Branch (RTSB) implements CPUC's program and focuses on verification of compliance with the System Safety Program Plan, System Security Plans, and Safety Certification Plans of each rail transit agency (RTA) to ensure that these plans meet all state and federal rules and regulations, and that RTAs are effectively implementing those plans and the RTA's adopted policies and procedures.

The California Public Park Preservation Act of 1971

The California Public Park Preservation Act of 1971 (also known as the California Public Resources Code (CPRC) Sections 5400-5409) requires a public agency that acquires public parkland for non-park uses to either provide compensation sufficient enough to acquire substantially equivalent replacement parkland or provide replacement parkland of comparable qualities. The Act states that, "No city, city and county, county, public district, or agency of the state, including any division, department or agency of the state government, or public utility, shall acquire any real property, which property is in use as a public park at the time of such acquisition, for the purposes of utilizing such property for any non-park purpose, unless the acquiring entity pays or transfers to the legislative body of the entity operating the park sufficient compensation or land, or both."

Metro Rail Design Criteria (MRDC)

The MRDC are formal written design standards for Metro transit stations which provide a consistent basis for the design of Metro Rail Transit Projects, including both heavy rail transit and light rail transit. The requirements of the MRDC ensure that stations are sustainably constructed and are cost effective to design, build, operate, and maintain. The MRDC addresses topics such as station accessibility, fare collection, and vehicular circulation around stations.

Regarding public services, Section 12 of the MRDC identifies the methods by which Metro constructs, maintains, and monitors the safety of its transit facilities (Metro, 2012b). The MRDC follow the principles of Crime Prevention through Environmental Design. The MRDC outlines four basic methods of resolving or addressing any potential safety and security concerns:

- Elimination through design/redesign
- Minimization through the provision of additional safety features
- Installation of warning devices to detect the condition and to generate an adequate warning signal to correct the hazard or to provide for operating personnel/public reaction
- Specialized procedures and training

Metro carefully engineers the security and safety design of transit systems with the security of the patron in mind and critical operating systems are engineered to be fail-safe. Areas utilized by the public are illuminated and as free as possible from alcoves, deep recesses, dark passages, and areas isolated from view. Closed circuit television (CCTV) coverage is provided for selected areas. CCTV coverage have full (24/7) recording capabilities. Emergency facilities and equipment are clearly identified and highly visible. Security personnel routinely patrol facilities.

The MRDC's Fire/Life Safety Design Criteria are designed to address specific fire protection requirements for design and construction of the Metro transit systems and equipment (Metro, 2012a). The criteria establish minimum requirements to provide a reasonable degree of safety from fire and its related

hazards. Fire safety on a light rail transit system is achieved by integrating facility design, operating equipment, hardware, procedures, and software subsystems to provide protection of life and property from the effects of fire. The criteria identify and discuss fire safety as they relate to the following specific design criteria:

- Station and guideway facilities
- Passenger vehicles
- Vehicle and maintenance yards
- System fire/life safety procedures
- Communications
- Rail operations control
- Inspection, maintenance, and training

In addition to the Fire/Life Safety Design Criteria, Metro has adopted the most current version of the NFPA standards as its standard for all rail projects (NFPA, 2018).

Metro's 2020 Long Range Transportation Plan (LRTP)

Metro's 2020 LRTP, adopted September 24, 2020, provides a detailed roadmap for how Metro will plan, build, operate, maintain, finance, and partner to improve system mobility, resilience, accessibility, and sustainability in the next 30 years. The LRTP includes strategies to advance equity and eliminate disparities in transportation access across its system. These strategies include the implementation of the Transit to Parks Strategic Plan, which focuses on building equitable and feasible connections between transit infrastructure and public parks.

Metro's First/Last Mile Strategic Plan

Metro's First/Last Mile (FLM) Strategic Plan, adopted March 2014, identifies barriers to and implements improvements for the first/last mile of a commuter's journey on the transit system (Metro, 2014c). Improvements proposed are intended to increase the ease of travel and improve safety for commuters on Metro's transit system. The plan proposes first/last mile improvements related to street and sidewalk infrastructure including:

- Crosswalks, bulb-outs, street trees and landscaping
- Signal timing for pedestrians and cyclists
- Bike lanes, bike parking and bike share stations
- Wayfinding signage to key destinations and transit connections
- Real-time signage or transit information kiosks

One of the strategies identified in the plan to expand transit user access is decreasing point to point distances by using strategic shortcuts and increased crossing opportunities through large parks. Parks located within a-half-mile radius of transit stations are considered key points of interests when considering strategic shortcuts to stations. The strategic plan identifies user safety along access roads as a major challenge associated with improving first/last mile connections, particularly for pedestrian facilities around transit stations.

Metro First/Last Mile Guidelines

Metro's First/Last Mile Guidelines, adopted May 2021, describes the process by which Metro and local jurisdictions partner in the planning, design, and construction of FLM improvements for new rail transit and bus rapid transit (BRT) corridor projects (Metro, 2021c). The guidelines intend to fulfill Metro's vision for safe, connected FLM pathways to new transit stations. The goal of the First/Last Mile Guidelines is to ensure the comprehensive integration of FLM improvements into existing and future transit capital projects.

Specific objectives include:

> Formalizing Metro's approach to implementing Board direction to incorporate FLM project delivery into the planning, design, and construction of all Metro transit projects.
> Defining Metro's role and responsibility in the planning, design, and implementation of FLM improvements for transit capital projects.
> Establishing the cooperative terms by which Metro and local jurisdictions will work together during the FLM planning and design process.
> Identifying how the FLM planning and design process is integrated in the transit corridor project planning and design process.
> Defining the approach to funding and implementing FLM projects identified during the planning and design process

Metro's Transit to Parks Strategic Plan

Metro's Transit to Parks Strategic Plan (T2P Strategic Plan), adopted June 2019, presents a systematic vision for increasing access to parks and open space Countywide. The goal of the T2P Strategic Plan is to find targeted, holistic ways to increase access to parks and open spaces, especially for communities that are not within walking distance or without convenient public transit access to a park. The T2P Strategic Plan lays out a strategy, via pilot projects, policies, and programs, to increasing access to parks. The process was structured around goal setting, best practice review, data analysis, and plan preparation. The Best Practice Review, conducted by an Advisory Committee with diverse representation, draws inspiration from Metro's core values of equity, quality access, innovation, fiscal responsibility, and team work to develop recommendations.

The T2P Strategic Plan identifies the provision rail connections as strategy to improve access to recreation areas that are located near rail stations but are beyond walking distance and not currently served by local transit.

Southern California Association of Governments (SCAG) 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy

SCAG is the Metropolitan Planning Organization for Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties and 191 cities. SCAG is required to prepare an RTP/SCS every four years that provides a comprehensive framework and outlook for guiding growth in population, housing, and employment. The most recent iteration of the SCAG RTP/SCS that has been formally adopted is the Connect SoCal 2020–2045 RTP/SCS (Connect SoCal), which was officially adopted in September 2020. The 2020-2045 RTP/SCS forecasts regional and local population, household, and employment growth projections through the horizon year of 2045.

3.15-1.3 Local Regulations

Public services (i.e., police and fire protection), schools and educational facilities, parks and recreational facilities, and libraries are generally regulated by local agencies. Therefore, these components and the project alternatives are regulated primarily by the policies and agencies of the County of Los Angeles and the Cities of Hawthorne, Lawndale, Redondo Beach and Torrance. It should be noted that some local jurisdictions have Memorandum of Understanding agreements in place to address jurisdiction coverage and/or shared protection related to fire and police, public schools within the Resource Study Areas (RSA) are within various school districts described in Section 3.15-3, which have their own policies and procedures. Similarly, county and public libraries within the RSA, described in Section 3.15-3, typically develop and review policies, services and programs through a Board of Trustees, Supervisors or Directors.

A summary of the local policies applicable to the Proposed Project is included in the following sections (listed by jurisdiction). A detailed analysis of the Proposed Project's consistency with the relevant planning policies is provided in 3.15-4.

County of Los Angeles

The Safety Element of the Los Angeles County General Plan contains the objectives or policies related to police and fire services for Unincorporated Los Angeles County as is described in Table 3.15-1. While the RSA does not overlap with Unincorporated Los Angeles County, the Los Angeles County Fire Department (LACoFD) and Los Angeles County Sheriff Department provide fire and police services to some parts of the RSA.

Table 3.15-1. County of Los Angeles – Relevant Regulations

Code/Goal/Policy	Description
County of Los Angeles General Plan Safety Element	
Goal S7	Effective county emergency response management capabilities
Policy S 7.2	Support County emergency providers in reaching their response time goals.
Policy S 7.3	Coordinate with other County and public agencies, such as transportation agencies and health care providers, on emergency planning and response activities, and evacuation planning.
Policy S 7.5	Ensure that there are adequate resources, such as sheriff and fire services, for emergency response.
Policy S 7.9	Work cooperatively with public agencies with responsibility for flood and fire protection, and with stakeholders in planning for flood and fire hazards.
Los Angeles County Fire Department 2017-2021 Strategic Plan	
Goal I: Emergency Operations	Address societal challenges through non-traditional service delivery
Goal II: Public Service	Catastrophic preparedness and community initiatives
Goal III: Organizational Effectiveness	Building tomorrow's fire department

Source: Los Angeles County, 2015b; LACoFD, 2018; Los Angeles County, 2022

City of Hawthorne

The Safety Element of the City of Hawthorne General Plan contains the objectives or policies related to police and fire services (City of Hawthorne, 1989a). The Open Space and Recreation Element contains objectives and policies related to parks facilities (City of Hawthorne, 1989b). Relevant goals and policies are described below in Table 3.15-2.

Table 3.15-2. City of Hawthorne – Relevant Regulations

Code/Goal/Policy	Description
City of Hawthorne General Plan Safety Policies	
Goal 1	Minimize the hazards to public health, safety, and welfare and prevent loss of life, bodily injury, and property damage resulting from natural and man-made occurrences
Policy 1.3.	The level of policy and fire services should not be adversely affected by any urban development.
City of Hawthorne General Plan Open Space and Recreation Policies	
Goal 1	Encourage the development of a variety of recreational opportunities accessible to the public.
Policy 1.4	The City shall support the cultural arts and facilities program to enhance the city image and up-grade the level of resident satisfaction in the community.
Policy 1.6	The City shall pursue agreements with the Southern California Edison Company, and Southern Pacific Railroad Company, and the Los Angeles County Flood Control District for the establishment of recreation trails, linkages and appropriate uses and landscaping within their respective rights-of-way.
City of Hawthorne Municipal Code	
Ordinance No. 1972	The Police Facilities Impact Fee and Parks Facilities Impact Fee is collected to finance the construction of the City's Police Station and Command Center and new park facilities and facility improvements, respectively. The Police Facilities Impact Fee schedule is based on new development's share of det service on the Police Station and Command Center, which was designed to serve both new residents and workers. The Parks Facilities Impact Fee is based on the City's existing standard of park facilities per capita applied to new development.

Source: City of Hawthorne, 1989b; 1989c

City of Lawndale

The General Plan of the City of Lawndale General Plan and municipal code contains goals, policies, and regulations that focus on public services described in Table 3.15-3 below.

Table 3.15-3. City of Lawndale – Relevant Regulations

Code/Goal/Policy	Description
City of Lawndale General Plan Safety Element	
Goal SAF-4	A community protected from loss of life or injury and damage to property due to fire hazards.
Policy SAF-4.2	Encourages the involvement of the Los Angeles County Fire Department in the development review process to ensure fire safety is addressed in new and modified developments.
Policy SAF-4.4	Ensures all new development provides adequate access for emergency vehicles and evacuation
City of Lawndale General Plan Open Space Element	
Goal 2	To provide recreational facilities and programs for all segments of the community.
Policy 2d	Encourage new development, through development incentives, to provide on-site recreational facilities for employees and residents.
Goal 3	To provide safe and accessible riding and walking trails for the City's residents.
Policy 3a	Pursue the feasibility of acquisition and development of a trail corridor along the AT&SF railroad right-of-way (ROW).
Policy 3b	Pursue funding and development of City-wide pedestrian/bicycle trails to integrate with the Los Angeles County Regional Trail System.
Policy 3c	Where feasible, improve and promote the establishment of a fitness trail utilizing alleys, streets, sidewalks, railroad ROW, and other open spaces areas.
City of Lawndale General Plan Land Use Element	
Goal 10	To preserve, enhance and expand the land base and structures necessary to provide public services to the residents of the City of Lawndale.
Policy 10a	The Public Facilities designation shall be applied to existing public facility sites: Public school sites; Atchison, Topeka and Santa Fe Railroad ROW; Civic Center; Maintenance Yards; Utility Easements; Library; and Prairie Avenue Recreation Center.
Land Use Element Implementation Programs	
Program 10	The City shall prepare a comprehensive financing plan to maintain and/or improve the public service facilities of the Community. Public facilities to be addressed in the financing plan shall include, but are not limited to: police, fire, streets, parks, and libraries.
City of Lawndale Municipal Code	
Ordinance No. 676-91	Every person constructing, enlarging, or remodeling any dwelling unit in the city shall pay a fee which will be collected in the City's capital facilities fund.

Source: City of Lawndale, 1992c; 1992e; 2015

City of Torrance

The Community Resources Element of the City of Torrance General Plan contains the objectives or policies related to schools, parks, and libraries (City of Torrance, 2010c). The Safety Element contains the objectives or policies related to police and fire services (City of Torrance, 2010f) as is described in Table 3.15-4 below.

Table 3.15-4 City of Torrance – Relevant Regulations

Code/Goal/Policy	Description
City of Torrance General Plan Community Resources Element Objectives and Policies	
Objective CR.6	To provide superior park and recreation facilities consistent with established City standards.
Policy CR.6.3	Require developers to dedicate land or pay sufficient in-lieu fees to meet established public recreational open space standards. Objective CR.10: A library system that provides a superior level of educational, informational, and cultural services for the Torrance community.
Policy CR.10.1	Maintain, enhance, and promote the Library as an important central resource for informational materials, lifelong learning, and personal development.
Objective CR.11	To provide educational programs and facilities that meet the needs of the Torrance community.
Policy CR.11.3	Partner with the Torrance Unified School District to optimize the joint use of school facilities for community educational use.
City of Torrance General Plan Safety Element Objectives and Policies	
Objective S.2	To minimize the risks associated with urban fires and wildland fires.
Policy S.2.1	Continue to enforce building fire codes and ordinances.
Policy S.2.2	Continue to enforce the City's fire prevention and suppression requirements for water supply, water flows, fire equipment access, and vegetation clearance in new and modified developments.
Policy S.2.4	Continue to involve the Fire Department in the development review process to ensure that fire safety is addressed in new and modified developments.
Objective S.6	To provide a high level of fire, police, and emergency medical services
Policy S.6.2	Maintain an adequate number of fire stations, facilities, and services sufficient to meet high fire protection standards.
Policy S.6.4	Provide for a maximum six-minute Fire Department response time.
Policy S.6.5	Maintain sufficient and adequate police stations and substations, facilities, services, and staffing to meet high public safety standards.
Objective S.7	To reduce the impacts related to natural and human activity hazards through a high level of emergency preparedness
Policy S.7.8:	Encourage the use of Crime Prevention through Environmental Design (CPTED) principles to enhance the safety of proposed and existing developments from crime.
City of Torrance Municipal Code	
Division 2, Chapter 9: Article 5	Fire Facilities Impact Fees, developers must pay fire facilities impact fees to mitigate the impacts caused by new development. These fees shall be used to construct fire facilities pursuant to the most current Fire Facilities Plan.
Division 2, Chapter 9: Article 6	Police Facilities Impact Fee, developers must pay police facilities impact fees to mitigate police facilities impacts caused by their development. The Police Facilities Impact Fee will be collected for constructing police facilities pursuant to the most current Police Facilities Plan
Division 2, Chapter 9: Article 7	Community Services Facilities Impact Fees, developers must mitigate impacts on public community services facilities by paying a fee that contributes to the construction of new community services facilities pursuant to the most current Community Services Facilities Plan
Division 2, Chapter 9: Article 9	Library Facilities Impact Fees, developers must mitigate impacts on library facilities by paying a fee that contributes to the construction of new community services facilities pursuant to the most current Library Facilities Plan.

Source: Torrance, 2010c; 2010f

3.15-2 Methodology

The impacts section addresses the impacts of the Proposed Project and Options based on an analysis of the components of public services described in the existing conditions section. The analysis determines the potential impacts of the Proposed Project and options on the existing public services and recreational facilities, including police and fire services, educational facilities, parks, and libraries were identified within, and as applicable, beyond, the RSA. Existing facilities were identified using the following sources:

> Planning documents for the Cities of Hawthorne, Lawndale, Redondo Beach, and Torrance;

> Websites for federal, state, and local agencies (e.g., the Redondo Beach Fire Department, City of Torrance);

> Websites for local school districts (e.g., the Torrance Unified School District, etc.); and

> Aerial surveys of the project area using Google Maps and ArcGIS.

Police, fire, and educational facilities, libraries, and parks within the RSA were identified and geolocated using ArcGIS. As discussed below in Section 3.15-2.1, the RSA includes the defined service area of each service category within quarter mile of the alignment. However, the analysis also identifies fire and police stations that lie beyond the RSA, but whose response times and emergency access could be impacted by the Proposed Project. The analysis also identifies library facilities that lie outside the RSA but whose jurisdictional service area would include the RSA. An assessment for each type of public service and recreational facility was conducted based on the potential to result in physical impacts to identified facilities; potential impacts to response times or other performance metrics; the potential for increased use of facilities; and include construction or expansion of a park or recreational facility that could create physical effects to the environment.

3.15-2.1 Resource Study Area

The RSA serves as the area of analysis. For public services, the RSA includes fire and police protection facilities whose defined service area operates within quarter mile of the Proposed Project and Options track alignments. The public services RSA also includes all educational facilities and libraries located within quarter mile of the linear alignment of the Proposed Project and Options. For parks and recreation, the RSA includes all public parks and recreational facilities within quarter mile of the Proposed Project and options. Refer to Figure 3.15-1.

3.15-2.2 Significance Thresholds

Based upon the questions contained in Appendix G of the CEQA Guidelines, implementation of the Proposed Project or Options under consideration, if it would:

a. 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:

    - Fire protection,
    - Police protection,
    - Educational facilities,
    - Parks,

- Libraries

b. 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.

c. Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

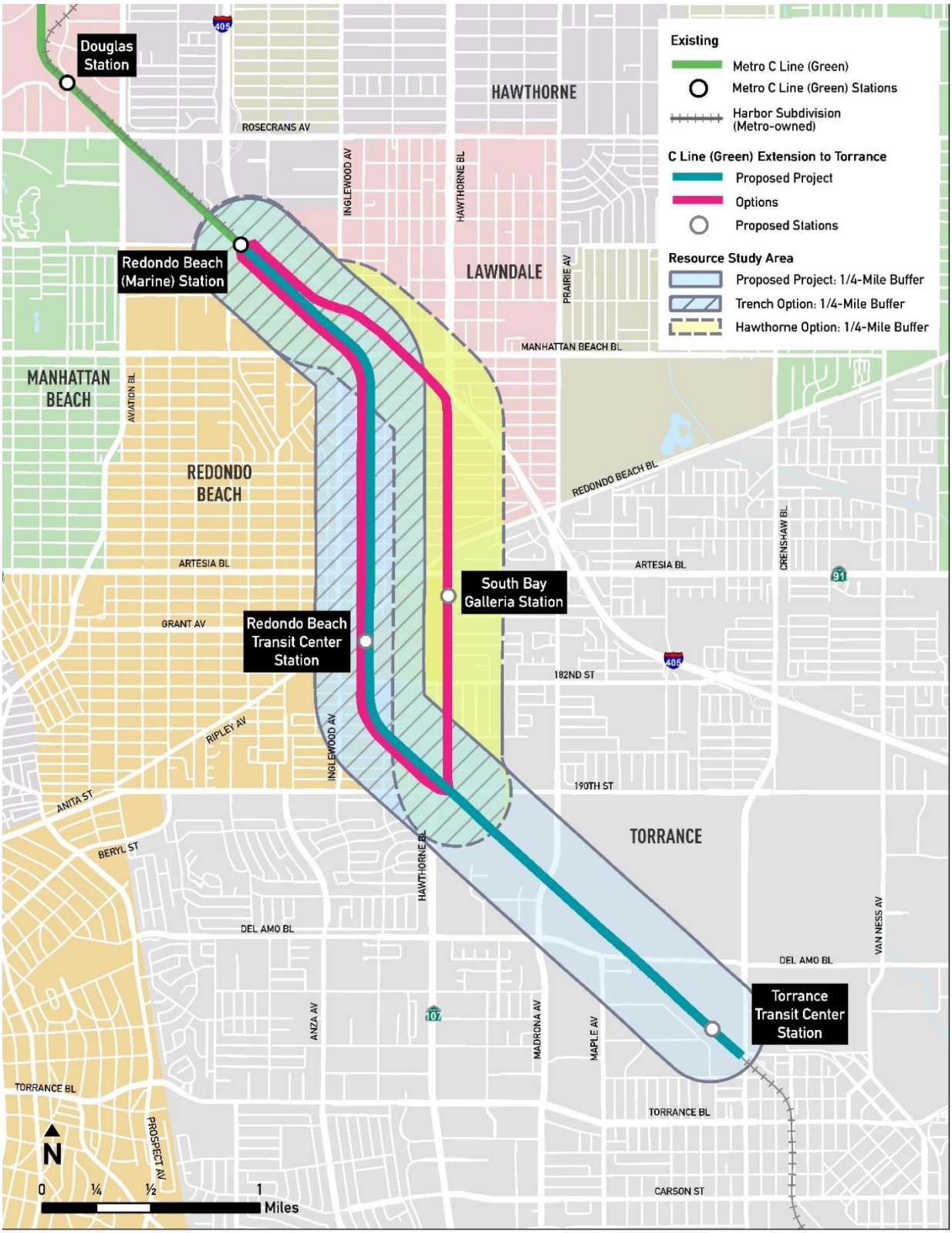
3.15-2.3 Project Features

As described in Chapter 2, Project Description, a number of features have been incorporated into the Proposed Project in order to ensure compliances with the laws, guidelines, and best practices of regulatory agencies. While project features were not developed specifically for public services, Project Feature (PF)-T-1, Construction Traffic Management Plan, as described in Section 3.1, Transportation, is relevant to public services in the RSA.

3.15-3 Affected Environment / Existing Conditions

This section describes the affected environment/existing conditions related to public services within the RSA. In addition, resources located outside the RSAs are also discussed if they are regionally significant or otherwise noteworthy resources. Table 3.15-5. summarizes the agencies that provide public services and recreational facilities within the RSAs and surrounding cities. These services and facilities are described in the following sections. As previously noted, police and fire stations located outside the RSAs are discussed, as the service areas of these police and fire stations fall within the RSAs or within its proximity.

Figure 3.15-1. Public Services Resource Study Area



Source: STV, 2022

Metro

Table 3.15-5. Agencies with Jurisdiction over Public Services and Recreational Facilities within the RSA

Jurisdiction	Agency with Jurisdiction over Public Services and Recreational Facilities				
	Police Protection	**Fire Protection**	**Libraries**	**Public Schools**	**Recreational Facilities**
City of Hawthorne	Hawthorne PD	LACoFD	County of Los Angeles Public Library	Wiseburn School District and Centinela Valley High School District	Hawthorne Department of Recreation and Community Services
City of Lawndale	Los Angeles County Sheriff's Department	LACoFD	County of Los Angeles Public Library	Lawndale Elementary School District, Centinela Valley High School District	City of Lawndale Community Services Department, Parks and Recreation Division
City of Redondo Beach	Redondo Beach PD	Redondo Beach FD	Redondo Beach Public Library	Redondo Beach Unified School District	City of Redondo Beach Recreation and Community Services Department
City of Torrance	Torrance PD	Torrance FD	Torrance Public Library	Torrance Unified School District	City of Torrance Recreation Services Division

PD = Police Department; FD = Fire Department; LACoFD = Los Angeles County Fire Department

3.15-3.1 Public Services

Fire Services

There are no fire stations located within the RSA. In the Cities of Hawthorne and Lawndale, Battalion 18 of the LACoFD provides emergency medical, fire, rescue, and safe haven services. The Redondo Beach Fire Department (FD) provides fire suppression, emergency medical, code enforcement and marine safety services to the City of Redondo Beach. The Torrance FD provides fire suppression services, hazardous materials emergency services, emergency medical services, rescue systems services, specialty emergency response services and fire prevention services to the City of Torrance. Fire services within the RSAs are provided by the fire stations noted in Table 3.15-7 and displayed in Figure 3.15-2.

The adequacy of fire protection service is measured through response times, which refers to the time it takes from receipt of a call to arrival at an emergency site. The LACoFD, Redondo Beach FD, and the Torrance FD adhere to NFPA guidelines regarding appropriate staffing levels and adequate response times for fire and emergency medical responses. Guidelines for staffing and response times are shown in Table 3.15-6.

Public service information requests regarding the current performance metrics, personnel, and equipment of each fire station in the RSA were initiated to LACoFD, Redondo Beach FD, and Torrance FD. As of publication, responses have been received from Torrance FD. Information regarding LACoFD and the Redondo Beach FD are cited from publicly available sources.

Table 3.15-6. NFPA Staffing and Response Time Guidelines

Demand Zone[1]	Demographics	Minimum Staff to Respond[2]	Response Time (minutes)[3]	Meets Objective (%)
Urban area	>1000 people/mile^2	15	9	90
Suburban area	500–1000 people/mile^2	10	10	80
Rural area	<500 people/mile^2	6	14	80
Remote area	Travel distance ≥ 8 miles	4	Directly dependent on travel distance	90
Special risks	Determined by AHJ[4]	Determined by AHJ[4] based on risk	Determined by AHJ[4]	90

Source: NFPA, 2020

[1] A jurisdiction can have more than one demand zone.

[2] Minimum staffing includes members responding from the Authority Having Jurisdiction (AHJ)'s department and automatic aid.

[3] Response time begins upon completion of the dispatch notification and ends at the time interval shown in the table.

[4] AHJ - Authority Housing Jurisdiction

Battalion 18 of the Los Angeles County Fire Department

According to the 2019 Statistical Summary of the LACoFD, the fire department has approximately 1,419 active firefighters and a total of 5,901 personnel which includes Chief Officers, captains, firefighter paramedics, hazmat specialists, and administrative support, among other personnel. In 2019, LACoFD responded to approximately 398,981 incidents (LACoFD, 2020). Station 21 of the LACoFD services the area within the City of Lawndale. Station 21 maintains one fire engine, two squad cars, and one truck (FireDepartment.net, 2021). Station 160 of the LACoFD services the area within the City of Hawthorne. Station 160 maintains one fire engine. Station 161 of the LACoFD services the area within the boundaries of the City of Hawthorne. Station 161 maintains a battalion chief, a utility vehicle, one engine, and one squad truck. The average response time for LACoFD as of 2013 was six minutes and five seconds (County of Los Angeles, 2013).

Redondo Beach Fire Department

The Redondo Beach FD provides its services from three fire stations located within the City boundaries, of which one has a service area operating within the RSA. The Department maintains two dedicated paramedic units, three fully staffed fire engines, a battalion chief, a 100-foot ladder truck, a marine rescue/harbor patrol vessel, and a fire boat (City of Redondo Beach, 2021c). According to the City of Redondo Beach Fiscal Year (FY) 2020-2021 budget, the Redondo Beach FD currently employs 62 sworn personnel and five non-sworn personnel. Current Census data shows the total population of Redondo Beach is 71,576 people. Therefore, there is approximately one sworn personnel per 1,154 residents (U.S. Census Bureau, 2022b). In FY 2018-2019, the department responded to 7,270 emergency incidents with calls to 911, with an average response time of four minutes and 16 seconds for all calls (City of Redondo Beach, 2020a).

Torrance Fire Department

The Torrance FD provides services from six fire stations within the City boundaries, four of which serve the RSA: Stations 1, 3, 5, and 6. The City of Torrance is divided into seven geographical Planning Zones, each of which are served by a fire station and generally defines the first-due response area for each station (Torrance FD, 2018). Station #3 serves Planning Zone 93, Station #5 serves Planning Zone 95, Station #6 serves Planning Zone 96, and Station #1 serves Planning Zones 91 and 97 (Torrance FD, 2018).

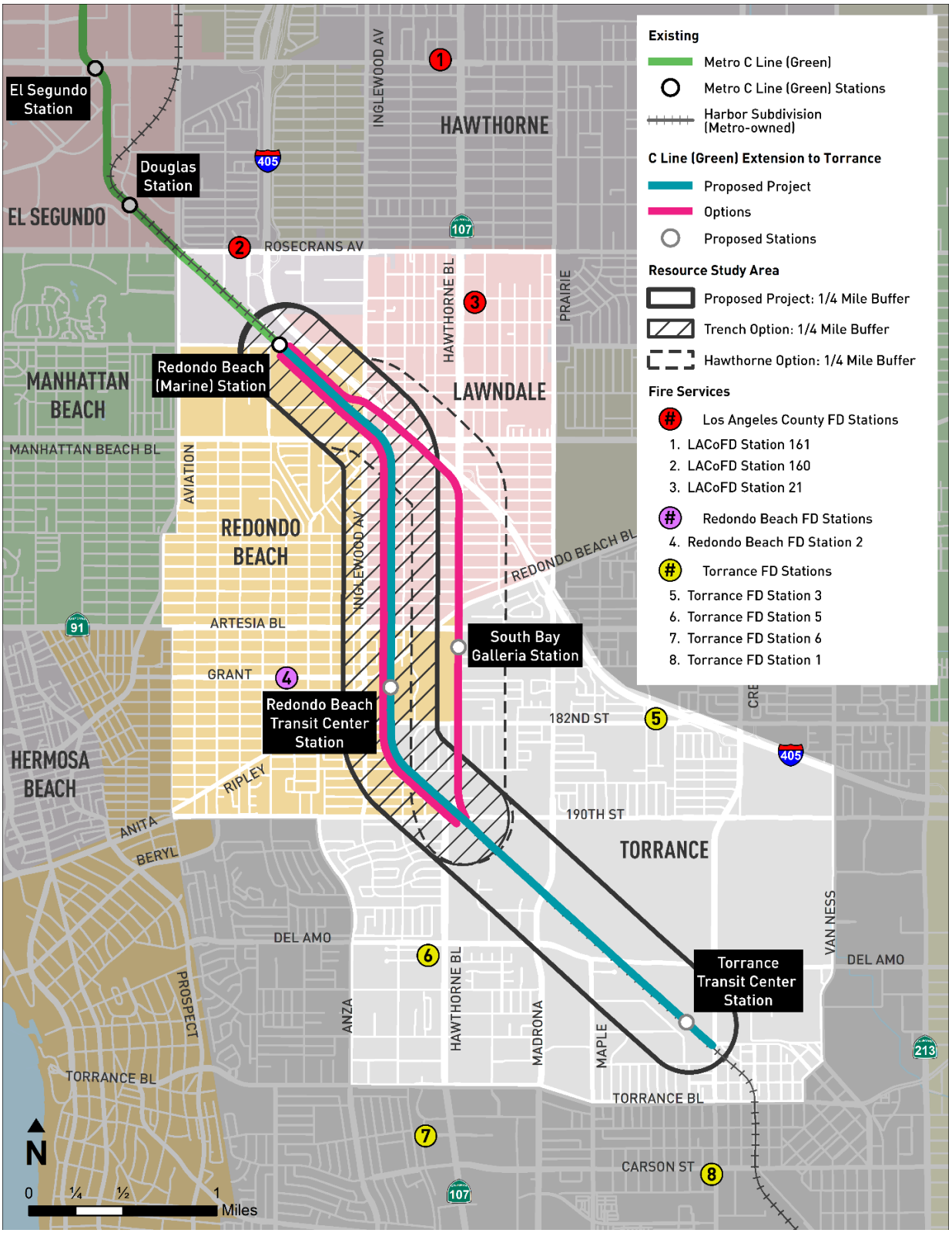
In total, the four stations whose service areas overlap the RSA employ 41 sworn and 17 non-sworn personnel and maintain five fire engines, two fire trucks, four paramedic rescue vehicles, and four ambulances. A total of population of 118,377 persons lives in the combined station service areas for Stations 1, 3, 5, and 6. Therefore, there is approximately one sworn personnel per 822 residents in the RSA. The Torrance FD publishes response Department-wide time performances metrics. In 2020, the average overall response time for the first unit on scene was seven minutes and 24 seconds. Department wide, the overall response time standard is six minutes and four seconds for EMS calls and six minutes and 24 seconds for Fire/Special Operations (Torrance FD, 2022).

Table 3.15-7. Fire Stations within Project Area

Map No.[1]	City / Area	Provider	Average Response Times	Station(s)	Distance to Proposed Project/Trench Option (miles)	Distance to Hawthorne Option (miles)
1	Hawthorne	LACoFD	6:05	Station #161 4475 W El Segundo Blvd, Hawthorne	1.75	Same as Proposed Project
2				Station #160 5323 W Rosecrans Ave, Hawthorne	0.57	Same as Proposed Project
3	Lawndale			Station #21 4312 W 147th St, Lawndale	0.86	0.77
4	Redondo Beach	Redondo Beach FD	4:16	Station #2 2400 Grant Ave, Redondo Beach	0.55	0.91
5	Torrance	Torrance FD	7:24	Station #3 3535 W. 182nd St, Torrance	1.04	0.99
6				Station #5 3940 Del Amo Blvd, Torrance	0.71	Same as Proposed Project
7				Station #6 21401 Del Amo Cir, Torrance	1.37	Same as Proposed Project
8				Station #1 1701 Crenshaw Blvd, Torrance	0.82	Same as Proposed Project

Source: Google Earth, 2020; TAHA, 2022.
FD = Fire Department; LACoFD = Los Angeles County Fire Department
[1] Map numbers correspond to Figure 3.15-2.

Figure 3.15-2. Fire Stations within Project Area



Source: TAHA, 2022

Police Services

There are no police stations located within the RSA. The Hawthorne Police Department (PD) provides police services to the City of Hawthorne. The Los Angeles Sheriff's Department (LASD) provides professional public safety services to the Cities of Lawndale and Inglewood. The Redondo Beach PD provides police protection services to the City of Redondo Beach. The Torrance PD provides police protection services to the City of Torrance. Police services are provided to the RSA by the station(s) noted in Table 3.15-8 and displayed in Figure 3.15-3. Table 3.15-8 includes the approximate distances of the police stations servicing the RSA to the Metro ROW and Hawthorne Boulevard.

The LASD's Transit Policing Division (TPD) provides contract transit policing services to the Metro public transit system. Deputies provide transit police services for both the light rail and bus transportation systems throughout 1,433 square miles, where Metro provides transit service. LASD deputies conduct routine patrols of Metro facilities and transit vehicle and respond to emergency calls placed on Metro's public transit system. Police departments not contracted with Metro are also available for 9-1-1 emergency responses.

In 2017, Metro launched a new multi-agency policing model with inter-agency cooperation with LAPD, LASD, and Long Beach Police Department to provide law enforcement services on across the entire Metro transit system. LASD assumes law enforcements responsibilities within Los Angeles County, while Hawthorne PD, Redondo Beach PD, and Torrance PD assume responsibility for their respective jurisdictions (Metro, 2018c).

Following protests across the United States during the summer of 2020, the Metro Board sought to improve community safety, transit rider expectations, and community engagement on Metro's system. The Board sought recommendations from Metro's System Security and Law Enforcement Department on ways to reform the agency's policing practices, including the reallocation of resources from policing to homeless engagement and outreach and other forms of community safety.

Metro is now in the process of reevaluating its safety strategies. As part of its efforts to evaluate its policing and safety strategies, Metro established a Public Safety Advisory Committee which reviews, comments on, and provides input for public safety improvements on its system. The Public Safety Advisory Committee provides Metro with opportunities to consult with key law enforcement experts and community members to develop a community-based approach to public safety on the transit system.

Public service information requests regarding the current performance metrics and personnel of the police stations in the project area were initiated to LASD, Hawthorne PD, Redondo Beach PD, and Torrance PD. As of publication, responses have been received from Torrance PD and Redondo Beach PD. Information regarding LASD is cited from publicly available sources.

Los Angeles Sheriff Department

The LASD provides police services to the City of Lawndale from the South Los Angeles Station. The City of Torrance and Redondo Beach transit centers plan to include LASD substations. Approximately 18,300 sworn and non-sworn personnel were budgeted in Fiscal Year 2019-2020, (which included more than 10,000 sworn deputies and over 8,000 non-sworn personnel [LASD, 2020]). In calendar year (CY) 2018, the South Los Angeles Station responded to a total of 2,355 reported incidents (LASD, 2018). LASD did not respond to public outreach requests for information regarding average emergency response times for the South Los Angeles Station.

Hawthorne Police Department

The Hawthorne PD provides police services to the City of Hawthorne from one station located within the City boundaries. According to the City of Hawthorne FY 2020-2021, the Hawthorne PD employed 173 personnel, including 68 full time police officers (City of Hawthorne, 2019a). Current census data shows the total population of Hawthorne is 88,083. Therefore, there is one full time police officer per 1,295 residents (U.S. Census Bureau, 2022a).

Redondo Beach Police Department

The Redondo Beach PD currently employs 92 sworn personnel and 44 non-sworn personnel (Redondo Beach PD, 2022). Current census data shows the total population of Redondo Beach is 71,576 and has a ratio of 778 persons to every police officer (U.S. Census Bureau, 2022b). In FY 2018-2019, the Redondo Beach PD totaled 114,000 patrol hours in the City, and 108,000 hours are proposed for FY 2020-2021 (City of Redondo Beach, 2020). Additionally, the Redondo Beach PD's current average call response time is 38 seconds for emergency calls and two minutes and 58 seconds (Redondo Beach PD, 2022).

Torrance Police Department

The Torrance PD currently employs 371 personnel, including 209 sworn police officers (Torrance PD, 2022). Current census data shows the total population of Torrance is 147,067 persons, providing a ratio of 703 persons to every police officer (U.S. Census Bureau, 2022c). The Torrance PD's internally set response time standard is six minutes and 30 seconds. The Torrance PD's average response time for both emergency and non-emergency calls combined is 19 minutes and 14 seconds (Torrance PD, 2022).

Table 3.15-8. Police Stations Servicing the RSA

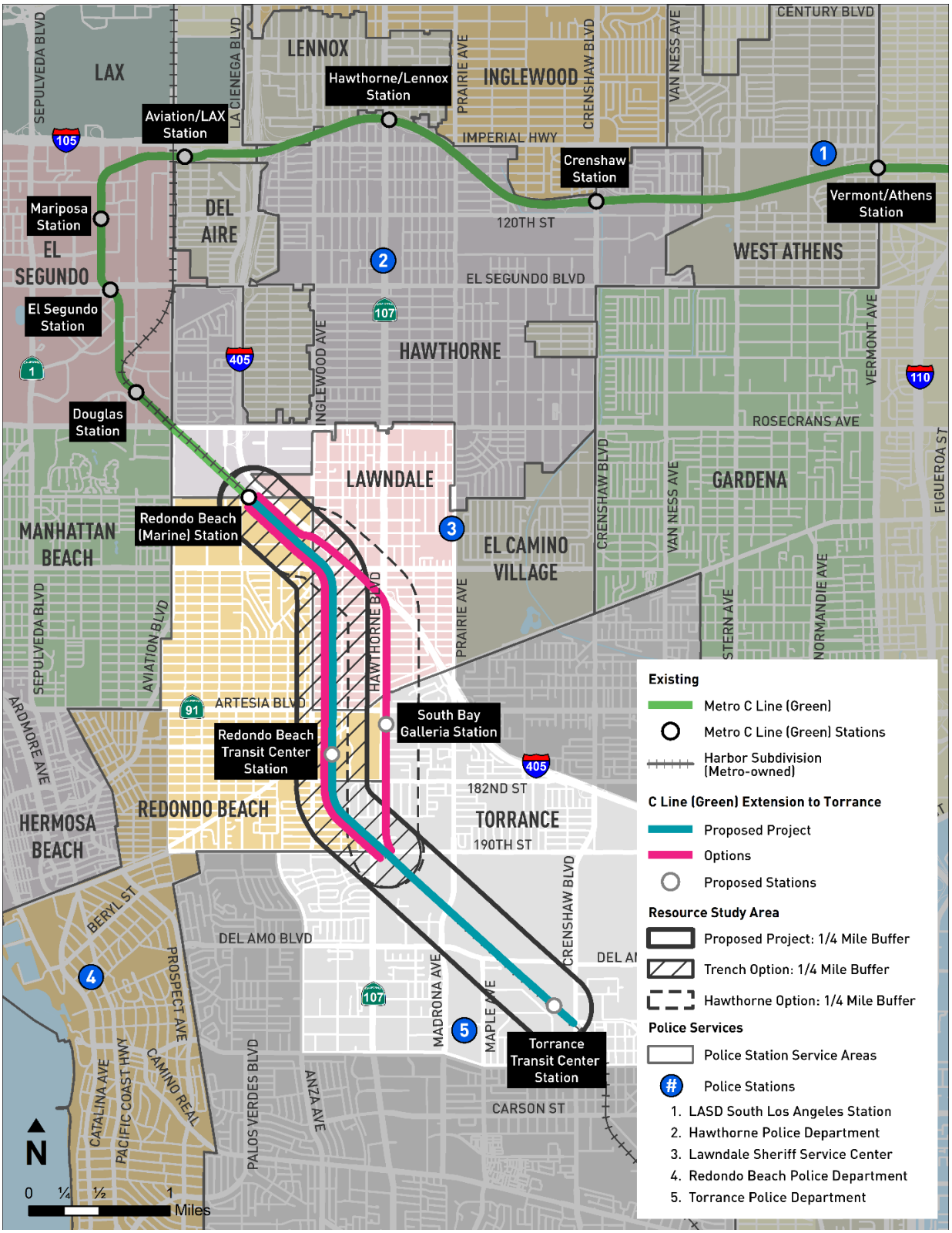
Map No.	Police Service	Station(s)	Distance to Proposed Project/Trench Option (miles)	Distance to Hawthorne Option (miles)
1	LASD	LASD South Los Angeles Station 1310 W Imperial Highway, Los Angeles	4.60	4.45
2	Hawthorne PD	Hawthorne PD 12501 S Hawthorne Blvd, Hawthorne	1.94	Same as Proposed Project
3	LASD	Sheriff's Department Service Center 15331 Prairie Ave, Lawndale	0.93	0.71
4	Redondo Beach PD	Redondo Beach PD 401 Diamond St, Redondo Beach	2.12	2.27
5	Torrance PD	Torrance PD 3231 Torrance Blvd, Torrance	0.55	Same as Proposed Project

Source: TAHA, 2022

PD = Police Department; LASD = Los Angeles Sheriff Department

[1] Map numbers correspond to Figure 3.15-3.

Figure 3.15-3. Police Stations within RSA



Source: TAHA, 2022

Educational Facilities

There are 11 educational facilities located within the RSA, listed in Table 3.15-9 and shown on Figure 3.15-4.

City of Hawthorne

The City of Hawthorne has several public and private schools and day care facilities; however, none are located within the RSA. The Centinela Valley High School District (CVHSD) is a high school district that serves students in the Cities of Hawthorne and Lawndale. The Wiseburn School District (WSD) is an elementary school district comprised of four schools that serve students from the Hollyglen area of the City of Hawthorne and the surrounding unincorporated areas of Los Angeles County (Del Aire and Wiseburn) (WUSD, 2021).

City of Lawndale

The Lawndale Elementary School District (LESD) consists of nine school sites, providing a public school education to approximately 6,000 students (LESD, 2021a). Of these nine school sites, two are located within the RSA: William Green Elementary School, an elementary school for grades Kindergarten through 5 (4520 168th Street); and Jane Addams Middle School, a middle school for grades 6 through 8 (4535 West 153rd Place). In addition, one public independent school chartered by the LESD is located within the RSA: Environmental Charter High School, a charter high school for grades 9-12 (16315 Grevillea Avenue) (Environmental Charter Schools, 2021).

As discussed earlier, the CVUHSD serves students residing in the Cities of Lawndale and Hawthorne and the community of Lennox (unincorporated Los Angeles County). The CVUHSD consists of five high schools and one adult school. There are three CVUHSD schools located within the RSA in Lawndale: Lawndale High School, a high school for grades 9 through 12 (14901 Inglewood Avenue) (CVHSD, 2021a); R.K. Lloyde High School, an alternative high school for grades 9 through 12 (4951 Marine Avenue) (CVHSD, 2021b); and Centinela Valley Independent Study School, an alternative high school for grades 9 through 12 (4951 Marine Avenue) (CVHSD, 2021c).

There is one day care and child development facility within the RSA in the City of Lawndale: Lawndale Day Care Center (4520 168th St) (LESD, 2021b).

City of Redondo Beach

The Redondo Beach Unified School District (RBUSD) is the public school district in the City of Redondo Beach. RBUSD consists of eight elementary schools, two middle schools, one high school, one continuation school and one adult school. There are two RBUSD schools located within the RSA: Washington Elementary School, an elementary school for grades kindergarten through 5 (1100 Lilienthal Lane) (RBUSD, 2021a); and Adams Middle School, a middle school for grades 6 through 8 (2600 Ripley Avenue) (RBUSD, 2021b).

Two pre-schools are located within the RSA in Redondo Beach, the Beach Cities Child Development Center (850 South Inglewood Avenue), and Washington Child Development Center (1201 Felton Lane) (Redondo Beach Unified Child Development Center, 2021).

City of Torrance

The Torrance Unified School District (TUSD) serves kindergarten through 12 students within the City of Torrance. TUSD consists of 17 elementary schools, eight middle schools, four high schools, one continuation school and one alternative high school (TUSD, 2021). TUSD also has two adult school

campuses. There are no TUSD schools located within the RSA. There are no public day care or pre-schools within the RSA. There are several universities and colleges located in the City of Torrance including El Camino College; however, none are located within the RSA.

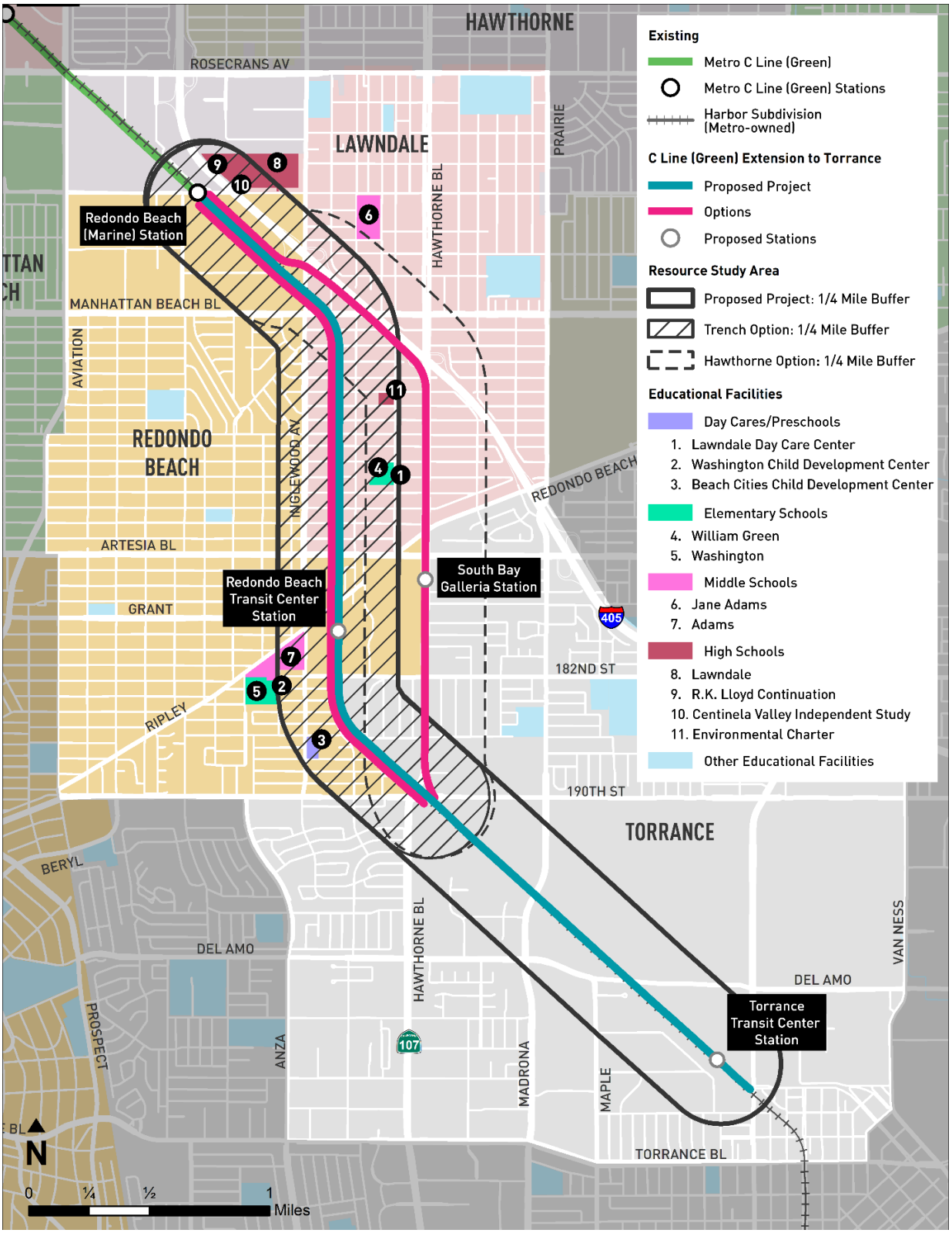
Table 3.15-9. Educational Facilities in the RSA

Map No.[1]	Name	Location	Distance to Proposed Project/Trench Option (miles)	Distance to Hawthorne Option (miles)
Day Care and Pre-Schools				
1	Lawndale Day Care Center – William Green Preschool	4520 168th St, Lawndale	0.21	0.14
2	Washington Child Development Center	1201 Felton Ln, Redondo Beach	0.27	0.63
3	Beach Cities Child Development Center	850 S. Inglewood Ave, Redondo Beach	0.12	0.42
Elementary Schools				
4	William Green Elementary School	4520 168th St, Lawndale	0.13	Same as Proposed Project
5	Washington Elementary School	1100 Lilienthal Ln., Redondo Beach	0.24	0.61
Middle Schools				
6	Jane Addams Middle School	4535 W. 153rd Pl, Lawndale	0.30	0.21
7	Adams Middle School	2600 Ripley Ave, Redondo Beach	0.14	0.50
High Schools				
8	Lawndale High School	14901 Inglewood Ave, Lawndale	0.16	Same as Proposed Project
9	R. K. Lloyde High School	4951 Marine Ave, Lawndale	0.13	Same as Proposed Project
10	Centinela Velley Independent Study School	4951 Marine Ave, Lawndale	0.13	Same as Proposed Project
11	Environmental Charter High School	16315 Grevillea Ave, Lawndale	0.16	0.13

Source: Google Earth, 2022; TAHA, 2022.

[1] Map numbers correspond to Figure 3.15-4

Figure 3.15-4. Educational Facilities in RSA



Source: TAHA, 2022

Libraries

There are no libraries located within the RSA. The County of Los Angeles Public Library provides library services to residents living in Hawthorne and Lawndale. The Redondo Beach Public Library provides library services to the City of Redondo Beach. The Torrance Public Library provides public library services within the City of Torrance. Library services for the RSA are provided by the library located noted in Table 3.15-10. and displayed in Figure 3.15-5.

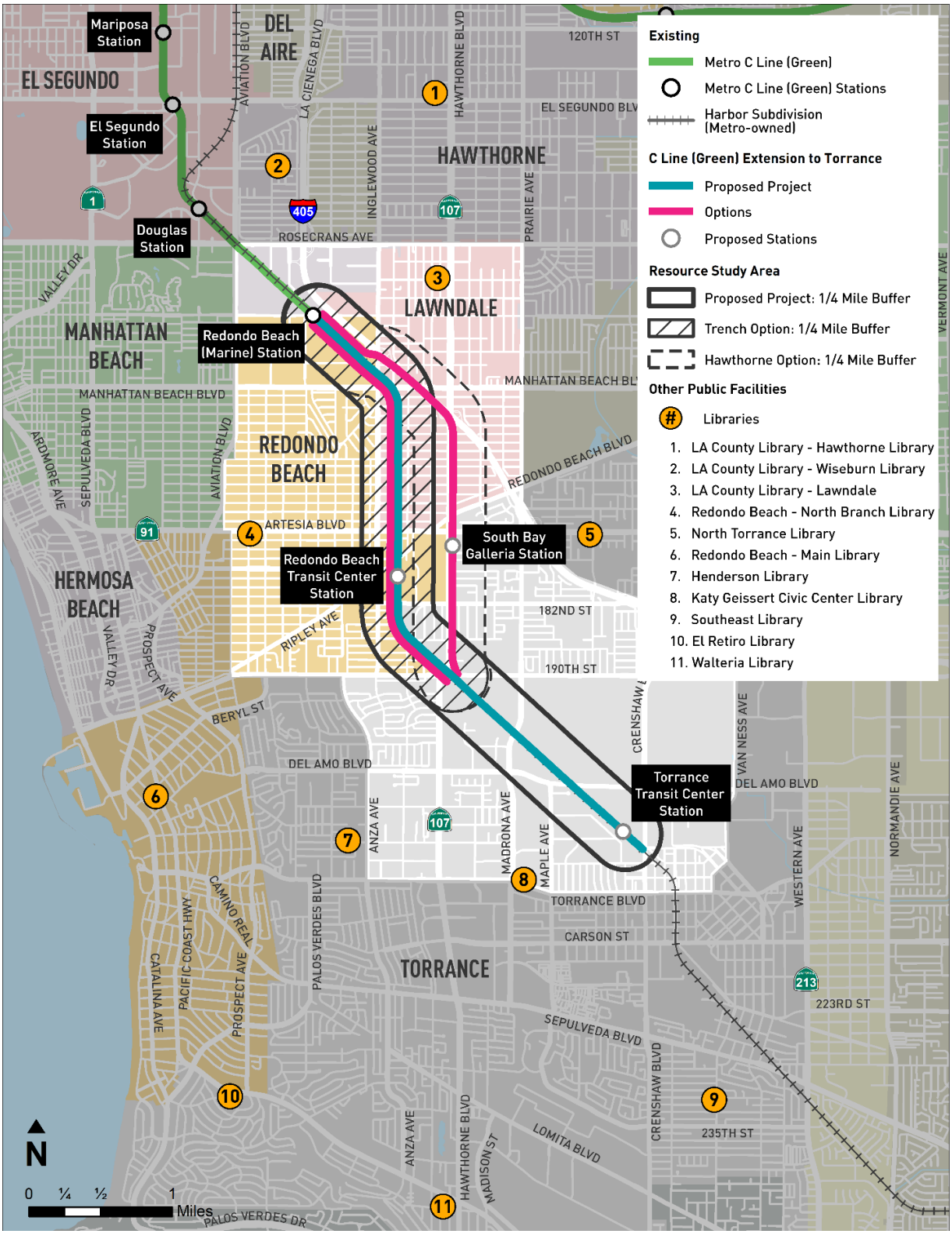
Table 3.15-10. Library Locations within Project Area

Map No.[1]	Name	Location	Distance to Proposed Project/Trench Option (miles)	Distance to Hawthorne Option (miles)
1	LA County Library - Hawthorne Library	12700 Grevillea Ave, Hawthorne	1.78	Same as Proposed Project
2	LA County Library - Wiseburn Library	5335 W 135th St, Hawthorne	1.08	Same as Proposed Project
3	LA County Library - Lawndale Library	14615 Burin Ave, Lawndale	0.78	0.70
4	Redondo Beach - North Branch Library	2000 Artesia Blvd, Redondo Beach	1.03	1.39
5	North Torrance Library	3604 Artesia Blvd, Torrance	1.34	0.98
6	Redondo Beach - Main Library	303 N. Pacific Coast Hwy, Redondo Beach	2.08	2.23
7	Henderson Library	4805 Emerald St, Torrance	1.33	Same as Proposed Project
8	Katy Geissert Civic Center Library	3301 Torrance Blvd, Torrance	0.71	Same as Proposed Project
9	Southeast Library	23115 Arlington Ave, Torrance	1.97	Same as Proposed Project
10	El Retiro Library	126 Vista Del Parque, Redondo Beach	3.21	Same as Proposed Project
11	Walteria Library	3815 242nd St, Torrance	2.90	Same as Proposed Project

Source: Google Earth, 2022; TAHA, 2022

[1] Map numbers correspond to Figure 3.15-5.

Figure 3.15-5. Library Locations within Project Area



Source: TAHA, 2022

3.15-3.2 Parks and Recreation

City of Hawthorne

The City of Hawthorne Department of Recreation and Community Services oversees the operation and maintenance of 10 parks, the Memorial Center, the Hawthorne Pool Center, a sports center, and a senior center within the City of Hawthorne (City of Hawthorne, 2021). There are no parks and recreational facilities located within the RSA in Hawthorne.

City of Lawndale

The Parks and Recreation Division of the City of Lawndale Community Services Department oversees the day-to-day operations of six parks, playgrounds and recreational facilities in Lawndale and works closely with locally-based, private youth sports organizations such as Lawndale Youth Football and Lawndale Little League to provide these organizations with field space for practices and games (City of Lawndale, 2021). There are three parks located within the RSA in Lawndale: William Green Park, located at 4558 West 168th Street; the Dan McKensie Community Garden, located at 4324 160th Street; and the Charles B Hopper Park, located at 4418 W 162nd Street. Additional details about the parks are included in Table 3.15-11. and their locations are shown in Figure 3.15-6.

City of Redondo Beach

The City of Redondo Beach Recreation and Community Services Department provides a wide variety of programs and services to Redondo Beach residents (City of Redondo Beach, 2021b). Recreational programs include classes and camps, adult sports leagues, after-school and summer playgrounds, summer swim and performing arts. This department is also responsible for the management of 14 parks and several recreational facilities within Redondo Beach. There is one park and one recreational facility located within the RSA in Redondo Beach: Franklin Park, located at 807 Inglewood Avenue; and the Franklin Park, located at 850 Inglewood Avenue. Additional details about the parks and recreational facilities are included in Table 3.15-11. and their locations are shown in Figure 3.15-6.

City of Torrance

The City of Torrance Park Services Division oversees 33 parks and recreational facilities with a combined total size of approximately 275 acres (City of Torrance, 2021). Of the many park properties and recreational facilities within the Torrance, there are four parks located within the RSA: El Nido Park, located adjacent to the Metro ROW at 18301 Kingsdale Avenue; Columbia Park, located at 4045 190th Street; Pequeno Park, located at 180th Street and Regina Avenue; and Delthorne Park, located at 3401 Spencer Street. Additional details about the parks are included in Table 3.15-11. and their locations are shown in Figure 3.15-6.

Table 3.15-11. Parklands and Recreational Facilities in RSA

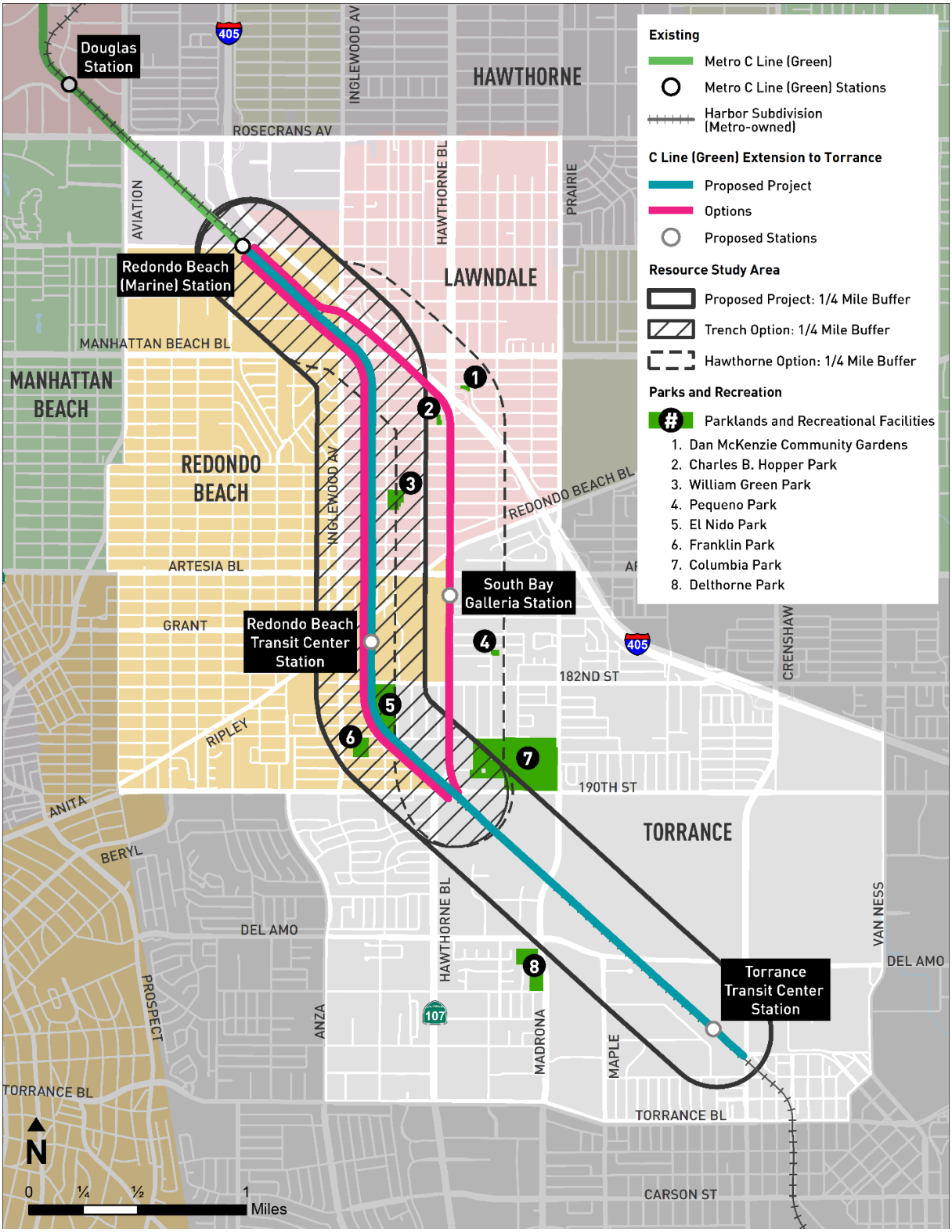
Map No.[1]	Name	Type of Facility	Approx. Size (acres)	Location	Regulatory Agency	Distance to Proposed Project / Trench Option (miles)	Distance to Hawthorne Option (miles)
1	Dan McKensie Community Garden	**Equipment:** 20' x 20' garden plots, storage sheds, picnic area, and restrooms	0.5	4324 160th St, Lawndale	City of Lawndale	0.41	0.10
2	Charles B Hopper Park	**Equipment:** Children's play equipment, picnic area, restrooms	0.6	4418 W 162nd St, Lawndale	City of Lawndale	0.30	0.04
3	William Green Park	**Buildings:** Community rooms and multi-use meeting room with TV-DVD, sink and refrigerator **Equipment:** Playgrounds for pre-school and elementary-aged children, baseball/softball field, lighted basketball courts, picnic facilities, horseshoe pits and public restrooms	4.0	4558 W. 168th St, Lawndale	City of Lawndale	0.07	0.21
4	Pequeño Park	**Equipment:** Children's play equipment, picnic area, barbeques	0.7	180th St & Regina Ave, Torrance	City of Torrance	0.55	0.19
5	El Nido Park	**Buildings:** Small meeting room **Equipment:** Picnic areas, softball field, basketball court, horseshoe pit, overnight camping with permit and playground	12.3	18301 Kingsdale Ave, Torrance	City of Torrance	0.01	0.25

Map No.[1]	Name	Type of Facility	Approx. Size (acres)	Location	Regulatory Agency	Distance to Proposed Project / Trench Option (miles)	Distance to Hawthorne Option (miles)
6	Franklin Park	**Buildings:** Redondo Beach community center **Equipment:** Basketball court, play equipment, expansive passive open space with meandering pathways and picnic areas and restrooms	6.8	807 Inglewood Ave, Redondo Beach	City of Redondo Beach	0.07	0.37
7	Columbia Park	**Equipment:** Play equipment, picnic area with barbeques and gazebo, softball fields, soccer fields, 18-station exercise and jogging track, restrooms, community gardens and stage/amphitheater	54.8	4045 190th St, Torrance	City of Torrance	0.11	0.09
8	Delthorne Park	**Equipment:** Picnic area, barbecues, basketball court, children's play equipment, rubberized fitness course (0.5 mile) and restrooms	9.6	3401 Spencer St, Torrance	City of Torrance	0.26	Same as Proposed Project

Source: Google Earth, 2022; TAHA, 2022

[1] Map numbers correspond to Figure 3.15-6.

Figure 3.15-6. Parklands and Recreational Facilities in RSA



Source: TAHA, 2022

Metro

3.15-4 Environmental Impacts

3.15-4.1 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 fire protection?

3.15-4.1.1 Construction Impacts

Less than Significant Impact. There are no fire stations or other related government facilities in or adjacent to the Proposed Project RSA. Construction staging areas of the Proposed Project would therefore not result in the acquisition of any fire facilities within the RSA, nor result in the alteration of existing facilities or construction of new facilities to maintain fire protection services the RSA. Roadways that intersect the Proposed Project would need to be temporarily closed to accommodate construction activities, which could impede the vehicle circulation network in the RSA. However, pursuant to PF-T-1, Construction Traffic Management Plan, described in Section 3.1, Transportation the construction contractor would coordinate with the cities and emergency providers to develop a construction traffic management plan (CTMP) and communicate it with the emergency providers listed in Table 3.15-7. The CTMPs would clearly identify alternative routes to ensure that fire services response times would remain compliant with NFPA guidelines, and construction of the Proposed Project would not impact fire protection performance metrics in a manner that would require the provision of new or expanded fire protection facilities.

Although construction of the Proposed Project would create additional jobs in the project area, it would not indirectly result in population growth. Construction of the Proposed Project would therefore not indirectly increase demand for fire protection services in the RSA, which would lead to the need for fire protection facilities to maintain service ratios. Construction workers would temporarily work in the area and would not likely relocate to the project area on a permanent basis. Additionally, a minimum of 40% of all project work hours would be local hire workers as per Metro's Local Hire Initiative (Metro, 2022e). Therefore, construction of the Proposed Project would not result in the need for new or physically altered fire protection facilities and this impact would be **less than significant.**

TRENCH OPTION

Less than Significant Impact. As with the Proposed Project, there are no fire stations or other government facilities in or adjacent to the Trench Option RSA, and construction activities of the Trench Option would not directly impact any fire protection service facilities nor result in the need for the provision of new or physically altered fire protection facilities. Roadways that intersect the Trench Option would need to be temporarily closed to accommodate construction activities, which could impede the vehicle circulation network in the RSA. Construction of the Trench Option would take longer to construct and require more intensive construction activities compared to the Proposed Project, including additional truck haul trips to remove subsurface debris, which could result in additional congestion on roads within the RSA and delay emergency response times. However, as stated in Section 3.1, Transportation pursuant to PF-T-1, CTMPs would be prepared that would ensure that adequate detour routes are established and communicated to the emergency providers listed in Table 3.15-7, and that fire protection and emergency service response times and staffing levels remain compliant with NFPA guidelines. Construction of the Trench Option would create additional jobs for construction workers in the RSA, but it would not indirectly result in population growth. These jobs would be temporary, and workers are not anticipated to relocate to the RSA on a permanent basis. Construction

of the Trench Option would therefore not indirectly increase demand for fire protection services in the RSA, which would lead to the need for fire protection facilities to maintain service ratios. Therefore, construction of the Trench Option would not result in the need for new or physically altered fire protection facilities and this impact would be **less than significant.**

HAWTHORNE OPTION

Less than Significant Impact. Similar to the Proposed Project, there are no fire stations or other government facilities in or adjacent to the Hawthorne Option RSA, and construction activities of the Hawthorne Option would not directly impact any fire protection service facilities nor result in the need for the provision of new or physically altered fire protection facilities. Roadways that intersect the Hawthorne Option would need to be temporarily closed to accommodate construction activities, which could impede the vehicle circulation network in the RSA. However, pursuant to PF-T-1, CTMPs would ensure that adequate detour routes are established around construction staging areas and communicated to emergency providers listed in Table 3.15-7, and that fire protection and emergency service response times and staffing levels would remain compliant with NFPA guidelines. Construction of the Hawthorne Option would create additional jobs for construction workers in the RSA, however these jobs would be temporary, and the construction of the Hawthorne Option would not indirectly result in the population growth. Therefore, construction of the Hawthorne Option would not result in the need for new or physically altered fire protection facilities and this impact would be **less than significant.**

3.15-4.1.2 Operational Impacts

Less than Significant Impact. Fire protection services during operation of the Proposed Project would be provided by LACoFD, Redondo Beach FD, and the Torrance FD. Each department would continue adhere to NFPA staffing and response time guidelines listed in Table 3.15-6.

The Proposed Project would modify several existing freight at-grade crossings but would only construct two new light rail at-grade crossings, one at 170th Street and one at 182nd Street. Delays of emergency response vehicles could occur as a result of gate downtimes at the at-grade rail crossings, which could potentially impact emergency preparedness and planning, the ability to provide fast and efficient response to emergencies or disasters, and the broader ability to minimize risk to the safety and health of passengers, employees, and emergency response personnel. Delays of emergency response vehicles could have the potential to cause fire protection facilities operating in the RSA to have increased response times.

The potential for this delay to occur is dependent on dispatch routing of emergency responders to this particular grade crossing. Emergency responders are dispatched either from the station or from their current location which means they may not utilize this crossing to arrive at their response destination. Alternative routes include Grant Avenue, Artesia Boulevard, and 190th Street. Furthermore, 182nd Street is an existing at-grade freight crossing which currently has the potential to result in delay to emergency responders and is assumed to be known for routing and dispatch of emergency responders. Therefore, although delays may occur at the 182nd Street crossing, it would not necessitate the construction of new fire protection facilities to maintain service.

As a transportation infrastructure project, the Proposed Project could indirectly lead to population increases within the RSA; however, the Proposed Project is included in the 2020-2045 RTP/SCS as a planned transit project and is thus factored into demographic forecasts for future population, household, and employment growth for the Cities of Lawndale, Hawthorne, Redondo Beach, and

Torrance (SCAG, 2020a). Accordingly, the Proposed Project would not induce unplanned population growth that would impact the demand for fire protection facilities.

All facilities constructed as part of the Proposed Project would adhere to all federal, state, and local regulations regarding building fire suppression and management and emergency ingress and egress, including the Uniform Fire Code, the California Health and Safety Code Section 1300, CCR Title 8, Sections 1270 and 6773, and the General Plans for the Cities of Torrance, Redondo Beach, Lawndale, and Hawthorne. The Proposed Project would also comply with the fire protection-related regulations included in the MRDC. The transit stations would be required to maintain adequate emergency access as per MRDC's Fire/Life Safety Design Criteria and per NFPA's rail project standards during operations. Gate operations at at-grade crossings would be configured per CPUC standards. Compliance with these plans and regulations would further reduce fire risks associated with the Proposed Project and the potential need to expand or construct new fire facilities to adequately serve the Proposed Project and the RSA. Therefore, operation of the Proposed Project would not result in the need for new or physically altered fire protection facilities and this impact would be **less than significant.**

TRENCH OPTION

Less than Significant Impact. As with the Proposed Project, operations of the Trench Option would continue to be provided fire protection services by LACoFD, Redondo Beach FD, and the Torrance FD. Each department would continue adhere to NFPA staffing and response time guidelines listed in Table 3.15-6. The Trench Option would have no at-grade light rail crossings and therefore would not have the potential to increase emergency vehicle delays. Accordingly, the Trench Option would not affect response times of fire protection services operating within the RSA. As with the Proposed Project, the Trench Option would not induce unplanned population growth that would impact the demand for fire protection facilities. Therefore, operation of the Trench Option would not result in the need for new or physically altered fire protection facilities and this impact would be **less than significant.**

HAWTHORNE OPTION

Less than Significant Impact. Similar to the Proposed Project, LACoFD, Redondo Beach FD, and the Torrance FD would continue to provide fire protection services during operation of the Hawthorne Option. Each department would continue adhere to NFPA staffing and response time guidelines listed in Table 3.15-6.. The Hawthorne Option would not have at-grade rail street crossings and therefore would not have the potential to increase emergency vehicle delays. Accordingly, the Hawthorne Option would not affect response times of fire protection services operating within the RSA. The Hawthorne Option would not induce unplanned population growth that would impact the demand for fire protection facilities. Therefore, operation of the Hawthorne Option would not result in the need for new or physically altered fire protection facilities and this impact would be **less than significant.**

3.15-4.2 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 police protection?

3.15-4.2.1 Construction Impacts

Less than Significant Impact. There are no police stations within the Proposed Project RSA. Construction staging areas of the Proposed Project would therefore not result in the acquisition of any police facilities

within the RSA, nor would it result in the alteration of existing facilities or construction of new facilities to service the RSA. Construction activities of the Proposed Project would be temporary and generally confined within the existing Metro ROW. Roadways that intersect the Proposed Project would need to be temporarily closed to accommodate construction activities, which could impede the vehicle circulation network in the RSA. However, as stated in Section 3.1, Transportation pursuant to PF-T-1, the construction contractor would coordinate with the cities and emergency providers to develop a CTMP to clearly identify alternative routes to reduce delays to emergency response times to the greatest extent feasible, and construction of the Proposed Project would not impact police protection performance metrics (i.e., staffing levels).

Construction activities would be conducted in compliance with Metro's MRDC, which follows the principles of Crime Prevention through Environmental Design (CPTED), and Metro safety and security programs. The CPTED principles are designed to reduce the potential for criminal activity around construction staging sites using tools like overhead lighting, clearing lines-of-sight, and clearing overgrown vegetation. Incorporation of CPTED principles would reduce potential impacts to police service performance ratios that may arise from the introduction of construction staging areas.

Finally, construction of the Proposed Project would not indirectly result in the population growth and would therefore not indirectly increase demand for police protection services in the RSA or the need for police protection facilities to adequately provide police services to the RSA. Construction workers would temporarily work in the area, would not likely relocate to the project area on a permanent basis, and nearly half of workers would be locally hired per Metro's Local Hire Initiative (Metro, 2022e).

Therefore, construction of the Proposed Project would not result in the need for new or physically altered police protection facilities and this impact would be **less than significant.**

TRENCH OPTION

Less than Significant Impact. As with the Proposed Project, construction of the Trench Option would be temporary and would not result in any direct physical impacts associated with the provision of new or physically altered government facilities or the need for new or physically altered government facilities to maintain response times or other performance objectives for police protection service. Construction staging and activities would require the full or partial street closures, which could delay response times for emergency vehicles. Construction of the Trench Option would require more intensive construction activities compared to the Proposed Project, including additional truck haul trips to remove subsurface debris, which could result in additional congestion on roads within the RSA and delay emergency response times. However, as stated in Section 3.1, Transportation pursuant to PF-T-1, adequate detour routes would be established and communicated to the police protection facilities listed in Table 3.15-8, and that police protection services are not impeded in a manner requiring the provision of new or expanded police facilities. Construction of the Trench Option would incorporate CPTED guidelines into construction staging. Construction of the Trench Option would create additional jobs for construction workers in the RSA, but it would not indirectly result in the population growth. However, these jobs would be temporary, and workers are not anticipated to relocate to the RSA on a permanent basis. Construction of the Trench Option would therefore not indirectly increase demand for police protection services in the RSA, leading to the need for new or physically altered police protection facilities. Therefore, construction of the Trench Option would not result in the need for new or physically altered police protection facilities and this impact would be **less than significant.**

HAWTHORNE OPTION

Less than Significant Impact. Similar to the Proposed Project and Trench Option, construction activities of the Hawthorne Option would not directly impact any police protection service facilities nor result in the need for the provision of new or physically altered police protection facilities. Pursuant to PF-T-1, the CTMP would ensure that adequate detour routes are established around construction staging areas and communicated to the police protection facilities listed in Table 3.15-8. Construction of the Hawthorne Option would incorporate CPTED guidelines into construction staging. Construction of the Hawthorne Option would create temporary jobs for construction workers in the RSA, but it would not indirectly result in the population growth. Construction of the Hawthorne Option would therefore not indirectly increase demand for police protection services in the RSA, leading to the need for new or physically altered police protection facilities. Therefore, construction of the Hawthorne Option would not result in the need for new or physically altered police protection facilities and this impact would be **less than significant.**

3.15-4.2.2 Operational Impacts

Less than Significant Impact. Operation of the Proposed Project would require police protection services at and around the transit stations, and on board the C Line train cars. As previously stated in Section 3.15-3.1, LASD provides transit police services on Metro's transit system and assumes law enforcement responsibilities within Los Angeles County, while Hawthorne PD, Redondo Beach PD, and Torrance PD assume responsibility for their respective jurisdictions. Metro's PSCAC Committee would continue developing community-based approaches to public safety on the transit system. Per MRDC, CPTED principles would be incorporated into the design of the transit facilities would reduce any potential impacts to police service performance ratios that may arise from the implementation of the Proposed Project.

Delays of emergency response vehicles could have the potential to cause police protection facilities operating in the RSA to have increased response times at 172nd or 182nd Street rail crossings when the crossing gates are down. The potential for this delay to occur is dependent on dispatch routing of emergency responders to these particular crossings. Emergency responders are dispatched either from the station or from their current location which means they may not utilize this crossing to arrive at their response destination. Alternative routes include Grant Avenue, Artesia Boulevard, and 190th Street. Metro would coordinate with involved police departments in addressing security for the proposed alignment and station areas within their respective jurisdictions. Gate operations for at-grade crossings would be configured per CPUC standards.

As a transportation infrastructure project, the Proposed Project could indirectly lead to population increases within the RSA; however, the Proposed Project is included in the 2020-2045 RTP/SCS as a planned transit project and is thus factored into demographic forecasts for future population, household, and employment growth for the Cities of Lawndale, Hawthorne, Redondo Beach, and Torrance (SCAG, 2020a). Accordingly, the Proposed Project would not induce unplanned population growth that would impact the demand for police protection facilities. Operation of the Proposed Project are therefore not expected to increase the need for resources, staff, or community facility usage such that new or expanded government facilities are required to provide police protection services in the RSA. Therefore, operation of the Proposed Project would not result in the need for new or physically altered police protection facilities and this impact would be **less than significant.**

TRENCH OPTION

Less than Significant Impact. As with the Proposed Project, police protection services for operations of the Trench Option would be provided by LASD, Hawthorne PD, Redondo Beach PD, and Torrance PD within their respective jurisdictions. The Trench Option would have no at-grade crossings, and therefore would not increase emergency vehicle delays. Nonetheless, Metro and police protection providers would coordinate in order to maintain acceptable service ratios. Therefore, operation of the Trench Option would not result in the need for new or physically altered police protection facilities and this impact would be **less than significant**.

HAWTHORNE OPTION

Less than Significant Impact. Similar to the Proposed Project and Trench Option, LASD, Hawthorne PD, Redondo Beach PD, and Torrance PD would provide police protection services for operations of the Hawthorne Option. The Hawthorne Option would not have at-grade street crossings, and therefore would not increase emergency response vehicle delays. Metro and police protection providers would coordinate to maintain acceptable service ratios. The Hawthorne Option would not induce unplanned population growth that would impact the demand for police protection facilities. Therefore, operation of the Hawthorne Option would not result in the need for new or physically altered police protection facilities and this impact would be **less than significant**.

3.15-4.3 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 meet demand for schools?

3.15-4.3.1 Construction Impacts

Less than Significant Impact. No educational facilities are located immediately adjacent to the proposed alignment or transit stations. The nearest educational facility is William Green Elementary School located on 168th Street approximately 700 feet to the east of the Metro ROW. Table 3.15-9 lists the school facilities located within the RSA. Construction of the Proposed Project would not require the acquisition of any public facilities, including educational facilities. Roadways that intersect the Proposed Project would need to be temporarily closed or have lanes reduced to accommodate construction activities, which could impede the vehicle circulation network in the RSA, though traffic would be detoured to a parallel route (for example, with a closure at 170th Street, all traffic would detour to 162nd Street or Artesia Boulevard). Construction activity would be limited to the Metro ROW and staging areas and would not result in direct physical impacts to any school. Additionally, access to the schools would be maintained during construction and detour routes would be included pursuant to PF-T-1 (see Section 3.1, Transportation). Therefore, construction of the Proposed Project would not result in the need for new or physically altered educational facilities and this impact would be **less than significant.**

TRENCH OPTION

Less than Significant Impact. Similar to the Proposed Project, no educational facilities are located immediately adjacent to the proposed Trench Option alignment or transit stations. The nearest educational facility is William Green Elementary School located on 168th Street approximately 700 feet to the east of the Metro ROW. Construction activity would be limited to the Metro ROW and staging areas and would not result in direct physical impacts to any school. Vehicular and pedestrian access to schools would be maintained through the CTMP pursuant to PF-T-1 (see Section 3.1, Transportation).

Therefore, construction of the Trench Option would not result in the need for new or physically altered educational facilities and this impact would be **less than significant.**

HAWTHORNE OPTION

Less than Significant Impact. Similar to the Proposed Project, none of the public educational facilities located within a quarter-mile of the Hawthorne Option would experience significant direct impacts as a result of construction activities. The nearest educational facility to the Hawthorne Option is the R.K. Lloyd Continuation High School located on Marine Avenue approximately 650 feet to the east of the Metro ROW. Access to schools would be maintained through the CTMP pursuant to PF-T-1 (see Section 3.1, Transportation). Therefore, construction of the Hawthorne Option would not result in the need for new or physically altered educational facilities and this impact would be **less than significant.**

3.15-4.3.2 Operational Impacts

No Impact. The Proposed Project would not construct any residential housing and thus operation of the Proposed Project would not result in a direct increase in the number of residents in the RSA; there would be no increase in demand for school facilities requiring the provision of new or expanded educational facilities. Operation of the Proposed Project would indirectly increase local access to educational facilities within the RSA. However, it is anticipated that students and faculty would remain within their associated school districts and an increase in attendance would not occur as a result of the Proposed Project. Additionally, the Proposed Project is included in the 2020-2045 RTP/SCS as a planned transit project and is thus factored into demographic forecasts for future population, household, and employment growth for the Cities of Lawndale, Hawthorne, Redondo Beach, and Torrance. Accordingly, the Proposed Project would not induce unplanned population growth that would impact the demand for school facilities. Therefore, **no impact** would occur.

TRENCH OPTION

No Impact. As with the Proposed Project, the Trench Option would not construct any residential units and would therefore not directly increase the population within the RSA. Indirect population growth that may result from the Trench Option is factored into the demographic projections contained in the 2020-2045 RTP/SCS, and therefore the Trench Option would not indirectly lead to unplanned population growth which would affect the demand for educational facilities. Therefore, **no impact** would occur.

HAWTHORNE OPTION

No Impact. As with the Proposed Project, the Hawthorne Option would not construct any residential units and would therefore not directly increase the population within the RSA. Indirect population growth that may result from the Hawthorne Option is factored into the demographic projections contained in the 2020-2045 RTP/SCS, and therefore the Hawthorne Option would not indirectly lead to unplanned population growth which would affect the demand for educational facilities. Therefore, **no impact** would occur.

3.15-4.4 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 meet demand for library facilities?

3.15-4.4.1 Construction Impacts

No Impact. There are no libraries located within a quarter mile of the Proposed Project. Construction of the Proposed Project would not require the acquisition of library property. The libraries listed in Figure

3.15-5 would continue to provide services to their respective jurisdictions, and construction activities are not anticipated to disrupt access to them. The Proposed Project would not require the provision of new or physically altered library facilities. Therefore, **no impact** would occur.

TRENCH OPTION

No Impact. As with the Proposed Project, construction of the Trench Option would neither directly nor indirectly result in physical impacts to libraries. Therefore, **no impact** would occur.

HAWTHORNE OPTION

No Impact. As with the Proposed Project, construction of the Hawthorne Option would neither directly nor indirectly result in physical impacts to libraries. Therefore, **no impact** would occur.

3.15-4.4.2 Operational Impacts

No Impact. The Proposed Project would not construct any residential housing and thus operations of the Proposed Project would not result in a direct increase in the number of residents in the RSA The Proposed Project is included in the 2020-2045 RTP/SCS as a planned transit project and is thus factored into demographic forecasts for future population, household, and employment growth for the Cities of Lawndale, Hawthorne, Redondo Beach, and Torrance (SCAG, 2020a). Accordingly, the Proposed Project would not indirectly induce unplanned population growth that would impact the demand for library facilities. Thus, there would be no unplanned increase in demand for libraries. Operations of the Proposed Project would not impact the ability of libraries to continue to serve their respective communities and jurisdictions at existing and anticipated levels. Therefore, **no impact** would occur.

TRENCH OPTION

No Impact. Similar to the Proposed Project, the Trench Option would not result in a direct increase in the number of residents in the RSA, nor indirectly induce unplanned population growth that would impact the demand for library facilities. Operation of the Trench Option would not result in physical impacts to libraries, nor disrupt their ability to adequately serve the surrounding communities. The Trench Option would not result in the need for new or physically altered library facilities. Therefore, **no impact** would occur.

HAWTHORNE OPTION

No Impact. As with the Proposed Project, the Hawthorne Option would not directly increase or indirectly induce unplanned population growth that would impact the demand for library facilities. Operations of the Hawthorne Option would not result in physical impacts to libraries, nor disrupt their ability to adequately serve the surrounding communities. The Hawthorne Option would not result in the need for new or physically altered library facilities. Therefore, **no impact** would occur.

3.15-4.5 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 meet demand for parks?

3.15-4.5.1 Construction Impacts

Less than Significant Impact. El Nido Park is located adjacent to the existing Metro ROW and would be adjacent to construction staging areas at 182nd Street for the Proposed Project, and thus construction activities could potentially hinder or block access to this park facility. Additionally, construction staging

areas at 170th Street would potentially reduce access to William Green Park. Roadways that intersect the Proposed Project would need to be temporarily closed to accommodate construction activities, which could impede the vehicle circulation network in the RSA. However, as stated in Section 3.1, Transportation pursuant to PF-T-1, possible alternative vehicular and pedestrian access routes to park facilities would be clearly marked on the public roadways, and ensure that access to park facilities is maintained during construction. For example, access routes to El Nido Park could be 186th Street and Kingsdale Avenue, while pedestrian access to William Green Park could be 168th Street and Firmona Avenue.

Although construction of the Proposed Project would create additional jobs in the project area, it would not indirectly result in the population growth which would lead to the need for new parks. Construction workers would temporarily work in the area and would not likely relocate to the project area on a permanent basis. Construction workers may increase demand for parks or recreational facilities by utilizing them during lunchtime breaks. The parks closest to construction staging areas and therefore the most likely to be used by construction workers are William Green Park, El Nido Park, Franklin Park, and Columbia Park. While the number of daily construction workers who may utilize these parks for breaks cannot be quantitatively estimated, total daily workers for the Proposed Project range from approximately 15 to 40 workers, depending on construction phase. Even if all construction workers utilized these facilities during lunchtime breaks, such uses would still be temporary, limited to weekdays, and nominal compared to total facility usage by all local residents. The landscaping and equipment quality of these parks would continue to be regularly maintained by the City of Hawthorne Department of Recreation and Community, the City of Lawndale Community Services Department, the City of Redondo Beach Recreation and Community Services Department, and the City of Torrance Park Services Division. Construction of the Proposed Project would not lead to the need for new or physically altered parks. Therefore, construction impacts of the Proposed Project would not result in the need for new or physically altered park facilities and this impact would be **less than significant**.

TRENCH OPTION

Less than Significant Impact. Similar to the Proposed Project, roadways that intersect the Trench Option would need to be temporarily closed to accommodate construction activities, which could impede the vehicle circulation network in the RSA. El Nido Park is located adjacent to the existing Metro ROW and would be adjacent to construction staging areas at 182nd Street for the Trench Option, and thus construction activities could potentially hinder, block, or degrade access to this park facility. Additionally, construction staging areas at 170th Street for the Trench Option could potentially reduce access to William Green Park. However, as stated in Section 3.1, Transportation pursuant to PF-T-1, vehicular and pedestrian access to park facilities would be maintained during construction. For example, access routes to El Nido Park could include186th Street and Kingsdale Avenue, while pedestrian access to William Green Park could include 168th Street and Firmona Avenue. Similar to the Proposed Project, construction workers may potentially increase the usage of and demand for parks and recreational facilities, but this increased usage would be temporary and nominal compared to total facility usage by all local residents. Parks and recreational facilities within the RSA would continue to be maintained by the respective recreational departments of the Cities of Hawthorne, Lawndale, Redondo Beach, and Torrance. Therefore, construction impacts of the Trench Option would not result in the need for new or physically altered park facilities and this impact would be **less than significant**.

HAWTHORNE OPTION

Less than Significant Impact. Similar to the Proposed Project, roadways that intersect the Hawthorne Option would need to be temporarily closed to accommodate construction activities, which could impede the vehicle circulation network in the RSA. Construction staging areas of the Hawthorne Option would not be located adjacent to any parks and recreational facilities in the RSA. Approximately 15 to 40 construction workers per day may utilize nearby parks, which include Charles B. Hopper Park, Columbia Park, and Pequeno Park, during lunchtime breaks, however such uses would be temporary and nominal. These recreational facilities would continue to be regularly maintained by the respective recreational departments of the Cities of Hawthorne, Lawndale, Redondo Beach, and Torrance. As stated in Section 3.1, Transportation the CTMP (PF-T-1) would ensure that vehicular access to park facilities is maintained during construction. Pedestrian access to parks would be maintained via public sidewalks. Therefore, construction impacts of the Hawthorne Option would not result in the need for new or physically altered park facilities and this impact would be **less than significant**.

3.15-4.5.2 Operational Impacts

Less than Significant Impact. The Proposed Project would not include stations at parks adjacent to the Metro ROW. El Nido Park would be located within a quarter mile of the Redondo Beach TC Station and may see some increased demand for and usage of its facilities during operation of the Proposed Project. However, this station would be located adjacent to high-volume commercial uses and transportation connections, which are expected to attract greater numbers of riders than surrounding residential and open space destinations. Therefore, the Proposed Project is reasonably anticipated to not generate substantial additional demand for and usage of El Nido Park beyond the existing maintenance capacity of the City of Torrance Park Services Division. The Proposed Project would therefore not indirectly result in an increased usage of parks and recreational facilities in the RSA beyond the existing maintenance capacities of the respective recreational departments of the Cities of Hawthorne, Lawndale, Redondo Beach, and Torrance.

Metro acknowledges that residents currently use the Metro ROW as recreational space, although it is not a designated park or walkway, and its primary purpose is rail transportation. Operation of the Proposed Project would result in a closure of the portion of the Metro ROW (which would include active light rail and freight service) to public access where fencing is currently breached, for the safety of residents. The closure of this portion of the Metro ROW would not, however, lead to the need for new or physically altered government facilities in order to meet demand for parks. The Proposed Project would include the construction of a multi-use recreational path parallel to Condon Avenue along the Metro ROW between 159th Street and 170th Street which would still allow residents to use a portion of the Metro ROW for recreational use. A second multi-use path would be located along the east side of the Metro ROW between Grant Ave and 182nd Street to provide access to the proposed Redondo Beach TC Station. These paths would increase the overall capacity of recreational uses. The provision of new recreational facilities could benefit other facilities by potentially reducing the usage of other existing parks in the RSA. The existing parks and recreational facilities in the RSA would continue to serve the existing surrounding residential population during operations. Therefore, operational impacts of the Proposed Project would not create a demand for new or expanded parks in order to meet park demands.

The Proposed Project would not construct any residential units and therefore would not directly result in an increase in the number of residents in the RSA; thus, the Proposed Project would not result in an increase in demand for or deterioration of parks and recreational facilities resulting in the need for new

or expanded facilities. Therefore, operational impacts of the Proposed Project would not result in the need for new or physically altered park facilities and this impact would be **less than significant**.

TRENCH OPTION

Less than Significant Impact. Similar to the Proposed Project, the Trench Option is not anticipated to directly or indirectly result in increased demand for and usage of parks and recreational facilities in the RSA beyond the existing maintenance capacities of the respective recreational departments of the Cities of Hawthorne, Lawndale, Redondo Beach, and Torrance. The Trench Option would also include the construction of a multi-use recreational path parallel to Condon Avenue along the Metro ROW between 159th Street and 170th Street which would still allow residents to use a portion of the Metro ROW for recreational and transportation use. A second multi-use path would be located along the east side of the Metro ROW between Grant Ave and 182nd Street to provide access to the proposed Redondo Beach TC Station. This would provide a benefit to the community and increased capacity of recreational facilities. Therefore, operational impacts of the Trench Option would not result in the need for new or physically altered park facilities and this impact would be **less than significant**.

HAWTHORNE OPTION

Less than Significant Impact. As with the Proposed Project, the Hawthorne Option would not construct any residential units and therefore would not result in a direct increase in the number of residents in the RSA or an increase in demand for recreational facilities. Pequeno Park would be located within a quarter-mile of the South Bay Galleria Station and may see some increased demand for and usage of its facilities during operations of the Hawthorne Option. However, the South Bay Galleria Station would be located adjacent to high-volume commercial uses, which are expected to attract greater numbers of riders than surrounding residential and open space destinations. Therefore, the Hawthorne Option is not reasonably anticipated to generate additional demand and usage of Pequeno Park beyond the existing maintenance capacity of the City of Torrance Park Services Division. The Hawthorne Option is not anticipated to indirectly result in increased demand for and usage of parks and recreational facilities in the RSA beyond the existing maintenance capacities of the respective recreational departments of the Cities of Hawthorne, Lawndale, Redondo Beach, and Torrance. Therefore, operational impacts of the Hawthorne would not result in the need for new or physically altered park facilities and this impact would be **less than significant**.

3.15-4.6 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?

3.15-4.6.1 Construction Impacts

Less than Significant Impact. The Proposed Project would neither directly nor indirectly result in the population growth which would lead to increased or accelerated deterioration of recreational facilities. El Nido Park would be adjacent to construction staging areas at 182nd Street for the Proposed Project. Between 15 and 40 daily construction workers may temporarily increase the use of existing parks such as El Nido Park, by utilizing park benches, tables, trash receptacles, and restroom facilities during lunchtime breaks. However, even if all construction workers utilized these facilities during lunchtime breaks, such uses would still be temporary, limited to weekdays, and nominal. Therefore, the Proposed Project is not anticipated to increase the use of parks in the RSA such that their deterioration is accelerated. The existing parks and recreational facilities in the RSA would continue to be regularly maintained by the respective recreational departments of the Cities of Hawthorne, Lawndale, Redondo

Beach, and Torrance, and would continue to serve the existing surrounding residential population during construction activities. Therefore, construction impacts of the Proposed Project would not result in the substantial deterioration of park facilities and this impact would be **less than significant**.

TRENCH OPTION

Less than Significant Impact. As with the Proposed Project, between 15 to 40 daily construction workers may potentially increase the usage of and demand for parks and recreational facilities by utilizing these facilities during lunchtime breaks, however as with the Proposed Project, this increased usage would be temporary and nominal. Parks and recreational facilities within the RSA would continue to be maintained by the respective recreational departments of the Cities of Hawthorne, Lawndale, Redondo Beach, and Torrance. Therefore, construction impacts of the Trench Option would not result in the substantial deterioration of park facilities and this impact would be **less than significant**.

HAWTHORNE OPTION

Less than Significant Impact. As with the Proposed Project, construction workers may utilize nearby parks, including Charles B. Hopper Park, Columbia Park, and Pequeno Park, during lunchtime breaks, however such uses would be temporary and nominal. These recreational facilities would continue to be regularly maintained by the respective recreational departments of the Cities of Hawthorne, Lawndale, Redondo Beach, and Torrance. Construction activities would not lead to the need for new or physically altered parks or recreational facilities. Therefore, construction impacts of the Hawthorne Option would not result in the substantial deterioration of park facilities and this impact would be **less than significant**.

3.15-4.6.2 Operational Impacts

Less than Significant Impact. As discussed in Section 3.15-4.5, the Proposed Project would not include stations adjacent to parks. El Nido Park may see increased usage of its facilities due to its proximity to the Redondo Beach TC Station. However, this station would be located adjacent to high-volume commercial uses and transportation connections which are expected to attract greater numbers of riders commuting to and from the station than surrounding residential and open space destinations. The Proposed Project is not reasonably anticipated to generate additional demand for and usage of El Nido Park beyond the existing maintenance capacity of the City of Torrance Park Services Division. The Proposed Project would not construct any residential units and therefore would not directly result in an increase in the number of residents in the RSA; thus, the Proposed Project would not result in an increase in demand for or deterioration of parks and recreational facilities resulting in the need for new or expanded facilities.

Metro acknowledges that residents currently use the Metro ROW as recreational space, although it is not a designated park or walkway, and its primary purpose is rail transportation. Operation of the Proposed Project would result in a closure of the portion of the Metro ROW (which would include active light rail and freight service) where fencing has been breached to public access for the safety of residents. Nonetheless, the Proposed Project would not result in impacts to designated parks and recreational facilities. The Proposed Project would include the construction of a multi-use recreational paths parallel to Condon Avenue along the Metro ROW between 159th Street and 170th Street which would still allow residents to use a portion of the Metro ROW for recreational use. A second multi-use path would be located along the east side of the Metro ROW between Grant Ave and 182nd Street to provide access to the proposed Redondo Beach TC Station. These paths would increase the overall capacity of recreational uses. The provision of new recreational facilities could benefit other facilities by

potentially reducing the usage of other existing parks in the RSA. The existing parks and recreational facilities in the RSA would continue to serve the existing surrounding residential population during operations. Therefore, operational impacts of the Proposed Project would not result in the substantial deterioration of park facilities and this impact would be **less than significant**.

TRENCH OPTION

Less than Significant Impact. The Trench Option would not construct any residential units and therefore would not result in a direct increase in the number of residents in the RSA; thus, there would be no direct increase in demand for or use of existing parks and recreational facilities such that physical deterioration of these facilities would be accelerated. The Trench Option would also include the construction of a multi-use recreational path parallel to Condon Avenue along the Metro ROW between 159th Street and 170th Street which would still allow residents to use a portion of the Metro ROW for recreational and transportation use. A second multi-use path would be located along the east side of the Metro ROW between Grant Ave and 182nd Street to provide access to the proposed Redondo Beach TC Station. This would provide a benefit to the community and increased capacity of recreational facilities. Similar to the Proposed Project, the Trench Option is not anticipated to result in increased demand directly or indirectly for and usage of parks and recreational facilities in the RSA beyond the existing maintenance capacities of the respective recreational departments of the Cities of Hawthorne, Lawndale, Redondo Beach, and Torrance. Therefore, operational impacts of the Trench Option would not result in the substantial deterioration of park facilities and this impact would be **less than significant**.

HAWTHORNE OPTION

Less than Significant Impact. As with the Proposed Project, the Hawthorne Option would not construct any residential units and therefore would not result in a direct increase in the number of residents in the RSA or an increase in demand for or deterioration of parks and recreational facilities. Unlike the Proposed Project and Trench Option, the Hawthorne Option would not construct any recreational pathways. Pequeno Park could potentially experience increased demand for and usage of its facilities during operations due to its proximity to the South Bay Galleria Station, but the station would be located adjacent to high-volume commercial uses which are expected to attract greater numbers of riders than surrounding residential and open space destinations. Therefore, the Hawthorne Option is not reasonably anticipated to generate additional demand and usage of Pequeno Park beyond the existing maintenance capacity of the City of Torrance Park Services Division. The Hawthorne Option is not anticipated to indirectly result in increased demand for and usage of parks and recreational facilities in the RSA beyond the existing maintenance capacities of the respective recreational departments of the Cities of Hawthorne, Lawndale, Redondo Beach, and Torrance. Therefore, operational impacts of the Hawthorne Option would not result in the substantial deterioration of park facilities and this impact would be **less than significant**.

3.15-4.7 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?

3.15-4.7.1 Construction Impacts

Less than Significant Impact. The Proposed Project would include the construction of a multi-use recreational path parallel to Condon Avenue along the Metro ROW between 159th Street and 170th Street. A second multi-use path would be located along the east side of the Metro ROW between Grant Ave and 182nd Street to provide access to the proposed Redondo Beach TC Station. The multi-use paths

would be constructed within the Metro ROW and would not result in displacement of or physical impacts to adjacent residential uses. Expansion of existing recreational facilities would not be required. Although construction of the Proposed Project would create additional jobs in the project area, construction workers would temporarily work in the area and would not relocate to the area on a permanent basis. The Proposed Project would not include the construction of residential units which could potentially result in construction workers moving to the project area. Therefore, construction would not indirectly result in the population growth which would lead to the need for additional new parks or government facilities. Construction workers may utilize nearby parks or recreational facilities during lunchtime breaks, but such use would be temporary and nominal. Therefore, impacts related to adverse physical effects of construction of recreational facilities associated with Proposed Project would be **less than significant**.

TRENCH OPTION

Less than Significant Impact. Similar to the Proposed Project, the Trench Option would include the construction of two multi-use recreational paths, neither of which would not result in displacement of existing designated recreational facilities or adverse physical effects on the environment. Construction of the multi-use path would result in similar impacts as the Proposed Project. Construction workers would temporarily work in the area and would not relocate to the area on a permanent basis. The Trench Option would not include the construction of residential units which could potentially result in construction workers moving to the project area. Therefore, impacts related to adverse physical effects of construction of recreational facilities associated with Trench Option would be **less than significant**.

HAWTHORNE OPTION

Less than Significant Impact. Unlike the Proposed Project and Trench Option, the Hawthorne Option would not construct recreational paths. Construction workers would temporarily work in the area and would not relocate to the area on a permanent basis. The Hawthorne Option would not include the construction of residential units which could potentially result in construction workers moving to the project area. The Hawthorne Option would not construct or require the expansion of any recreational facilities. Therefore, impacts related to adverse physical effects of construction of recreational facilities associated with Hawthorne Option would be **less than significant**.

3.15-4.7.2 Operational Impacts

Less than Significant Impact. The Proposed Project would not construct any residential housing and thus operations of the Proposed Project would not result in a direct increase in the number of residents in the RSA. The Proposed Project is included in the 2020-2045 RTP/SCS as a planned transit project and is thus factored into demographic forecasts for future population, household, and employment growth for the Cities of Lawndale, Hawthorne, Redondo Beach, and Torrance (SCAG, 2020a). Accordingly, the Proposed Project would not indirectly induce unplanned population growth that would impact the demand for recreational facilities. The Proposed Project would include the construction of a multi-use recreational path on Condon Avenue between 159th Street and 170th Street. A second multi-use path would be located along the east side of the Metro ROW between Grant Ave and 182nd Street to provide access to the proposed Redondo Beach TC Station.

Operation of the two new multi-use paths would not result in adverse environmental impacts and would provide passive recreation uses. The primary purpose of the multi-use paths would be transportation for pedestrians and bicyclists. Effects of the multi-use paths would be similar to the existing usage of the Metro ROW as a non-designated recreational greenspace. The new multi-use paths are anticipated to be

utilized by existing residents in the RSA and would not induce demand or new vehicle trips such as a new regional park or recreational facility. Metro acknowledges that residents currently use the Metro ROW where the multi-use paths would be constructed as recreational space, although it is not a designated park or walkway, and its primary purpose is transportation. Operation of the Proposed Project would result in repairing breeched fencing along the portion of the Metro ROW (which would include active light rail and freight service) to public access for the safety of residents. Nonetheless, the Proposed Project would not result in impacts to designated parks and recreational facilities which would require replacement with new facilities. The multi-use paths would still allow residents to use a portion of the Metro ROW for recreational use. The Proposed Project would not include stations at parks adjacent to the Metro ROW and therefore would not result in an increased usage of these facilities. The Proposed Project would not construct any residential units and thus would not directly result in an increase in the number of residents in the RSA; thus, there would be no direct increase in demand for or use of parks and recreational facilities such that new or expanded facilities would need to be constructed. Therefore, impacts related to adverse physical effects of operation of recreational facilities associated with Proposed Project would be **less than significant**.

TRENCH OPTION

Less than Significant Impact. The Trench Option would not construct any residential housing and thus operations of the Trench Option would not result in a direct increase in the number of residents in the RSA. Accordingly, the Trench Option would not indirectly induce unplanned population growth that would impact the demand for recreational facilities. Similar to the Proposed Project, the Trench Option would include the construction of a multi-use recreational path parallel to Condon Avenue along the Metro ROW between 159th Street and 170th Street and a second multi-use path along the east side of the Metro ROW between Grant Ave and 182nd Street. Operation of the new multi-use path along Condon Avenue would not result in adverse environmental impacts and would be a passive recreation use. Therefore, impacts related to adverse physical effects of operation of recreational facilities associated with Trench Option would be **less than significant**.

HAWTHORNE OPTION

No Impact. The Hawthorne Option would not construct any residential housing and thus operations of the Hawthorne Option would not result in a direct increase in the number of residents in the RSA. Accordingly, the Hawthorne Option would not indirectly induce unplanned population growth that would impact the demand for recreational facilities. The Hawthorne Option would not construct any recreational paths. Operations of the Hawthorne Option would not construct or require the expansion of any recreational facilities. Therefore, **no impact would occur**.

3.15-5 Mitigation Measures

No mitigation measures are required, as there are no significant impacts related to public services.

3.15-6 Project Impacts Remaining After Mitigation

As described in Section 3.15-5, no mitigation measures are required to reduce construction and operation impacts to a level below significance.

3.15-7 Cumulative Impacts

The methodology for cumulative analysis and a description of relevant projects and projections are included in Section 3.0, Introduction. The geographic scope of the cumulative analysis for fire and police protection services, schools, and parks is the is the RSA, which is discussed in detail in Section 3.15-3, as this is the area most likely to be affected by the potential combined impacts of a project.

3.15-7.1 Proposed Project

Fire protection services in the RSA are provided by LACoFD, Redondo Beach FD, and Torrance FD. LACoFD has approximately 7,320 personnel, Redondo Beach FD has approximately 67 personnel, and Torrance FD has approximately 58 personnel. The average response time for LACoFD, Redondo Beach FD, and Torrance FD is six minutes and five seconds, four minutes and 16 seconds, and seven minutes and 24 seconds, respectively. The Proposed Project is within the services area of three LACoFD stations, one Redondo Beach FD station, and four Torrance FD stations.

Probable future projects could have the potential to impact fire protection services within the RSA by requiring lane closures or drawing on emergency responders to respond to emergency incidents. Projects such as the Inglewood Avenue Intersection Improvements and Grant Avenue Signal Improvements are close enough to the Metro ROW to be potentially disruptive to service if construction occurred concurrently, but given the shorter and more intermittent duration of the nature of these types of roadway improvement projects, overlap of construction periods would be minimal, if at all. If concurrent construction were to occur, it is reasonable to assume that the probable future projects would implement their own measures to reduce impacts to emergency services by implementing detours and appropriate notification of agencies. Therefore, construction and operation of the Proposed Project in combination with past, present, and probable future projects is not expected to result in a cumulatively significant impact related to the provision of new or altered fire service.

Police protection services in the RSA are provided by LASD, Hawthorne PD, Redondo Beach PD, and Torrance PD. LASD has approximately 18,300 sworn and non-sworn personnel, Hawthorne PD has approximately 173 personnel, Redondo Beach PD has approximately 136 personnel, and Torrance PD has approximately 371 personnel. Response times were not available for each agency. Redondo Beach PD had a response time of approximately 38 seconds for emergency calls and two minutes and 58 seconds for non-emergency calls, and Torrance PD has an internal response time standard of six minutes and 30 seconds.

Probable future projects could have the potential to impact police protection services with the RSA by requiring lane closures or drawing on emergency responders to respond to emergency incidents. Projects such as the Inglewood Avenue Intersection Improvements and Grant Avenue Signal Improvements are close enough to the Metro ROW to be potentially disruptive to service if construction occurred concurrently, but given the shorter and more intermittent duration of the nature of these types of roadway improvement projects, overlap of construction periods would be minimal, if at all. If concurrent construction were to occur, it is reasonable to assume that the probable future projects would implement their own measures to reduce impacts to emergency services by implementing detours and appropriate notification of agencies.

Past, present, and probable future projects could cumulatively increase demand for police protection services by an increase in the number of residents. Construction and operation of the Proposed Project would not result in direct population growth that would necessitate new police facilities and police services or otherwise substantially impact police services. However, the Proposed Project could

indirectly affect population, housing, and employment growth as a result of and in combination with probable future projects in the region. Changes in demographics associated with new development opportunities are anticipated to be consistent with the SCAG adopted growth projections since these growth projections are based on the General Plan land use designations of local jurisdictions. Therefore, construction and operation of the Proposed Project in combination with past, present, and probable future projects is not expected to result in a cumulatively significant impact related to the provision of new or altered police service.

There are 11 schools within the RSA, which are identified above in Table 3.15-9. Past, present, and probable future projects could cumulatively demand for schools during construction as a result of and increased workforce to build the Proposed Project. However, construction workers would not be anticipated to relocate their households or permanent places of residence as a consequence of working on the Proposed Project or other local projects; therefore, no significant demand for unplanned new school facilities is anticipated during construction.

Past, present, and probable future projects could cumulatively increase demand for schools during operation by an increase in the number of residents. The Proposed Project would not directly result in an increase in the number of residents; thus, there would be no direct increase in demand for school facilities. Additionally, changes in demographics associated with new development opportunities that could result in demand for school facilities, including the cumulative projects listed in Chapter 3.0, Introduction, are anticipated to be consistent with the SCAG adopted growth projections since these growth projections are based on the General Plan land use designations of local jurisdictions. These projections, which include the Proposed Project and cumulative projects, are accounted for in population increases that affect the provision new school facilities. Therefore, the Proposed Project's incremental contribution to cumulatively significant impacts to schools would therefore not be cumulatively considerable.

There are eight parks within the RSA, which are identified above in Table 3.15-11. Past, present, and probable future projects could cumulatively increase use of parks during construction as a result of and increased workforce to build the Proposed Project. However, construction workers would not be anticipated to relocate their households or permanent places of residence as a consequence of working on the Proposed Project or other local projects; therefore, no significant long-term demand on parks is anticipated during construction.

Past, present, and probable future projects could cumulatively increase demand for parks and recreational facilities during operation by an increase in the number of residents. The Proposed Project would not directly result in an increase in the number of residents; thus, there would be no direct increase in demand for parks or recreational facilities. Therefore, the Proposed Project would not result in significant impacts to parks or recreational facilities related to construction or operational activities. However, the Proposed Project could indirectly affect population, housing, and employment growth as a result of and in combination with probable future projects in the region. Changes in demographics associated with new development opportunities are anticipated to be consistent with the SCAG adopted growth projections since these growth projections are based on the General Plan land use designations of local jurisdictions. These projections, which include the Proposed Project and cumulative projects, are accounted for in population increases that affect planning for park facilities. Therefore, the Proposed Project's incremental contribution to cumulatively significant impacts to parks and recreational facilities would therefore not be cumulatively considerable.

There are no libraries located within quarter-mile of the Proposed Project. Regionally, past, present, and probable future projects could impact the provision of new of physically altered library service during construction as a result of and increased workforce to build the Proposed Project. However, construction workers would not be anticipated to relocate their households or permanent places of residence as a consequence of working on the Proposed Project or other local projects; therefore, no significant long-term demand on libraries is anticipated during construction.

The Proposed Project would not directly result in an increase in the number of residents; thus, there would be no direct increase in demand for library facilities. However, the Proposed Project and cumulative projects could indirectly affect population, housing, and employment growth as a result of and in combination with probable future projects in the region. Changes in demographics associated with new development opportunities are anticipated to be consistent with the SCAG adopted growth projections since these growth projections are based on the General Plan land use designations of local jurisdictions. These projections, which include the Proposed Project and cumulative projects, are accounted for in population increases that affect the provision of libraries. Therefore, the Proposed Project's incremental contribution to cumulatively significant impacts to libraries would therefore not be cumulatively considerable.

3.15-7.2 Trench Option

Because of the physical overlap of the Trench Option with the Proposed Project and their relatively similar construction methods and identical operations, the cumulative analysis and impacts presented in Section 3.15-7.1 would be the same for the Trench Option.

3.15-7.3 Hawthorne Option

Because of the close proximity of the Hawthorne Option with the Proposed Project with regards to the provision of public services, their relatively similar construction methods, and their nearly identical operations, the cumulative analysis and impacts presented in Section 3.15-7.1 would be the same for the Hawthorne Option.

3.16 OTHER CEQA CONSIDERATIONS

This section addresses other CEQA considerations that are required as part of an EIR, including, growth inducing impacts, irreversible environmental changes, effects determined not to be significant as subjects to be discussed in a Draft EIR, as well as significant and unavoidable impacts of the Proposed Project and Options.

3.16-1 Growth Inducing Impacts

Section 15126.2(e) of the CEQA Guidelines requires an EIR to address any growth-inducing impacts that would result from the Proposed Project and its Options should it be implemented. Specifically, Section 15126.2(e) states:

> 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. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

The analysis in this section focuses on whether the Proposed Project, Trench Option, and Hawthorne Option, would directly or indirectly induce economic, population, or housing growth. This includes increases in the population that may strain existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. For purposes of this analysis, the Proposed Project and its Options are considered to have the same impacts, as they would require a similar number of workers and would occur within the same cities, by which future growth would be contemplated by the respective city where such growth would occur. Therefore, throughout this section, the Proposed Project refers to the Proposed Project and its Options as a whole.

Construction of the Proposed Project would create temporary construction-related jobs. However, the work requirements of most transportation construction projects are highly specialized such that construction workers remain at a job site only for the time in which their specific skills are needed to complete a particular phase of the construction process. The Proposed Project would draw from the existing regional pool of construction workers who typically move from project to project as work is available. The Construction Careers Policy and the Project Labor Agreement were approved by the Metro Board on January 26, 2012, subsequently renewed on January 26, 2017, to encourage construction employment and training opportunities to those who reside in economically disadvantaged areas on Metro construction projects. In addition, the Proposed Project-related construction workers would not be anticipated to relocate their households; permanent places of residence as a consequence of working on the Proposed Project and, therefore, no new permanent residents are expected to be generated during construction of the Proposed Project. Additionally, the number of jobs created by the Proposed Project is anticipated in the planned growth within the Southern California Association of Government's (SCAG) 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Accordingly, construction of the Proposed Project and Options would not induce substantial population growth or result in substantial use of existing community service facilities.

City and county governments regulate population growth and economic development through zoning, land use plans, policies, and decisions on specific development proposals. Similarly, cities and utility companies base their capital improvement projects and future demand on local and regional population and employment projections. Typically, growth-inducing potential of a project would be considered significant if it stimulates human population growth or a population concentration above what is assumed in local and regional land use plans, or in projections made by regional planning authorities. Significant growth potential could also occur if the project provides infrastructure or service capacity to accommodate growth levels beyond those planned by local or regional plans and policies.

The Proposed Project is a transit project aimed at improving transit services and increasing intermodal connectivity. As discussed later in Section 3.16-2, Effects Found Not to be Significant, the Proposed Project does not propose construction of any new residential units or businesses, and therefore would not result in direct impacts associated with population growth. In addition, cities within the Project Area are established communities that have generally experienced relatively stable population and housing growth with a mix of gains and losses in employment depending on the national and regional economy. The following section further illustrates that the Proposed Project would have no significant project-induced growth and development.

The Proposed Project is designed to serve the current and planned growth in population, housing, and employment along the study corridor and to support the development of a multi-modal corridor consistent with local planning goals. The Proposed Project is centrally located in a major transportation corridor that connects with several other transit services, including Metro, Beach Cities Transit, Gardena Transit, Los Angeles Department of Transportation, and Torrance Transit. The current regional transportation plan (the 2020-2045 RTP/SCS) approved by SCAG identifies long-range transportation planning efforts and models anticipated regional housing, jobs, and land use projections for the South Bay region. The projections from these models help regional and local jurisdictions with their long-range planning effort mandated by federal and state regulations, one of which is the RTP/SCS. As shown in Table 3.16-1, the 2020-2045 RTP/SCS Demographics and Growth Forecast Technical Report shows an estimated 11% increase in the population of Los Angeles County over the next two decades, to 11.67 million inhabitants by 2045. The percent increase over the same period of time for the cities in which the Project Area are located (Cities of Hawthorne, Lawndale, Redondo Beach, and Torrance) is estimated to be around 4.5%. In addition, the Proposed Project was included in SCAG's 2020-2045 RTP/SCS and Metro's 2020 Long Range Transportation Plan (LRTP); the Proposed Project's construction and operational potential for inducing population, housing and employment was accounted for therein.

Table 3.16-1. Projected Population, Housing, and Employment Growth - 2016-2045

Area	Year	2016	2045	Percent Change
Los Angeles County	**Population**	10,110,000	11,674,000	15.5%
	Employment	4,743,000	5,382,000	13.5%
	Households	3,319,000	4,119,000	24.1%
Hawthorne	**Population**	89,400	92,900	3.9%
	Employment	29,700	31,600	6.4%
	Households	28,500	31,700	11.2%
Lawndale	**Population**	33,400	34,400	3.0%
	Employment	7,400	8,300	12.1%
	Households	9,700	10,200	5.2%
Redondo Beach	**Population**	68,200	72,900	6.9%
	Employment	25,400	28,300	11.4%
	Households	29,200	31,100	6.5%
Torrance	**Population**	147,100	153,100	4.1%
	Employment	126,600	133,800	5.7%
	Households	55,600	57,300	3.1%

Source: SCAG, 2020c
Note: Projected city data is only available for 2016 and 2045 in SCAG's Connect SoCal 2020 Demographics and Growth Forecast Technical Report

The 2020-2045 RTP identifies the Project Area as being within a priority growth area—more specifically, as being within a Transit Priority Area (TPA) (within one half-mile of the Torrance TC), High Quality Transit Areas (HQTA), and Neighborhood Mobility Areas (NMAs). TPA refers to an area within a half-mile of a major transit stop that is existing or planned. HQTAs are corridor-focused Priority Growth Areas within a half-mile of an existing or planned fixed guideway transit stop or a bus transit corridor where buses pick up passengers at a frequency of every 15 minutes (or less) during peak commuting hours. NMAs focus on creating, improving, restoring and enhancing safe and convenient connections to schools, shopping, services, places of worship, parks, greenways and other destinations. NMAs are Priority Growth Areas with robust residential to non-residential land use connections, high roadway intersection densities and low-to-moderate traffic speeds.

By extending light rail service to the South Bay and, therefore, enhancing transit service in the area, the Proposed Project and Options would assist in accommodating the transportation demand anticipated from the existing and projected population and employment by improving transit access in the South Bay area. Growth that may indirectly result from implementation of the Proposed Project and Options would be consistent with local and regional planning efforts to manage growth. It is not anticipated that the level of development that could be stimulated by the Proposed Project or Options would exceed any regional growth projections given the already densely developed condition of the South Bay area. While the Proposed Project and Options would provide transit service within the Project Area, it does not propose a major infrastructure system extension that could serve as a vector for growth and expansion into a new or rural area where growth is not anticipated.

It should be noted that by improving transportation along the alignment, by increasing alternative transportation modes and improving access to neighborhoods, civic resources, and employment opportunities, the Proposed Project and Options could potentially increase the incentive for

development on undeveloped or underutilized lots. Such development on underutilized land would largely represent a redistribution of the anticipated regional growth near the station rather than a large-scale development boom and would potentially result in a greater concentration of residential and commercial uses near the proposed transit stations. As discussed above, development in the Proposed Project area is anticipated. The general plans for the cities along the alignment each designate the types of uses allowable. Development along the Proposed Project and Options would be in accordance with the cities' approved general plans and zoning codes and any potential future growth, or lack thereof, would be under the cities' jurisdictions. Any new transit-oriented development projects would be subject to environmental and development review and approval by the appropriate jurisdiction.

With the implementation of the Proposed Project or Options, the opportunities for growth around transit would be improved and facilitated while helping to reduce reliance on personal automobiles in the region. In this regard, the Proposed Project would not only support the growth management goals of the affected jurisdictions, but it would also help to reduce potential environmental impacts associated with foreseeable growth anticipated in the region. Growth that may indirectly result from implementation of the Proposed Project or Options would not be unplanned, but rather would be consistent with local and regional planning efforts to manage growth. It is not anticipated that the level of development that could be stimulated by the Proposed Project or Options would exceed any regional growth projections given the already densely developed condition of the area the Proposed Project and Options would serve. Therefore, no adverse effects associated with growth-inducement are anticipated.

3.16-2 Effects Found Not to be Significant

Section 15128 of the CEQA Guidelines states: "An EIR shall contain a statement briefly indicating the reasons that various possible effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR." Metro has determined that the Proposed Project and Options would not have the potential to cause significant impacts related to agricultural and forestry resources, mineral resources, population and housing, and wildfire. Similarly, there is no potential for the Proposed Project to combine with past, present, and reasonably probable future projects to create a cumulative impact to these resources. These resource areas are briefly addressed in this section. Each resource area was assessed using Appendix G of the CEQA Guidelines.

3.16-2.1 Agricultural and Forestry Resources

Based on Appendix G of the CEQA Guidelines, the Proposed Project and Options would have a significant impact on agricultural and forestry resources if the Proposed Project or Options would:

- 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.
- Conflict with existing zoning for agricultural use, or a Williamson Act contract.
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code [PRC] Section 12220(g)), timberland (as defined by PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g)).
- Result in the loss of forest land or conversion of forest land to non-forest use.
- 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.

3.16-2.1.1 Would the Proposed Project 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

No Impact. The entirety of the Proposed Project and Options lie within what the California Department of Conservation defines as Urban and Built-Up Land (California Department of Conservation, 2022). Areas designated as Urban and Built-Up Land are not considered Important Farmland under PRC Sections 21060.1 and 21095. The California Department of Conservation does not identify any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance within or adjacent to the footprint of the Proposed Project, Trench Option, or Hawthorne Option footprint. Therefore, neither the construction nor operations of the Proposed Project or Options would convert these farmlands into non-agricultural use and there would be **no impact**.

3.16-2.1.2 Would the Proposed Project conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. There are no identified agricultural resources or agricultural use within or adjacent to the footprints of the Proposed Project, Trench Option, or Hawthorne Option. Further, Los Angeles County does not participate in the Williamson Act program. Therefore, neither the construction nor operations of the Proposed Project or Options would conflict with agricultural zoning, use, or a Williamson Act contract and there would be **no impact**.

3.16-2.1.3 Would the Proposed Project conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC Section 12220(g)), timberland (as defined by PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

No Impact. The footprints of the Proposed Project, Trench Option, and the Hawthorne Option and their adjacent lands are situated within a highly developed urban area with no forest land or timberland as defined by PRC Section 12220(g), Section 4526, or Section 51104(g). Therefore, neither the construction nor operations of the Proposed Project or Options would conflict existing zoning for or cause the rezoning of forest land, timberland, or timberland zoned Timberland Production and there would be **no impact**.

3.16-2.1.4 Would the Proposed Project result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. The footprints of the Proposed Project, Trench Option, and Hawthorne Option and their adjacent lands are situated within a highly developed urban area with no forest land within or adjacent to the project footprint. Therefore, neither the construction nor operations of the Proposed Project or Options would result in the loss of forest land or conversion of forest land into non-forest use and there would be **no impact**.

3.16-2.1.5 Would the Proposed Project 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?

No Impact. As described in Sections 3.16-2.1.1 through 3.16-2.1.5 there are no farmland or forest land resources or land designated for farmland or forest land use within or adjacent to the footprints of the Proposed Project or Options and there would be **no impact**.

3.16-2.2 Mineral Resources

Based on Appendix G of the CEQA Guidelines, the Proposed Project would have a significant impact related to mineral resources if it would:

- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state
- Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan

3.16-2.2.1 Would the Proposed Project 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?

No Impact. The Proposed Project and Options overlie parts of the Lawndale and Torrance oil fields in Los Angeles County, though there are no active oil wells within or adjacent to the footprints of the Proposed Project/Trench Option or Hawthorne Option. Several idle and abandoned/plugged oil/gas wells were identified within 1,500 feet of the footprints of the Proposed Project and Options, though none is directly within the bounds of where construction or operation of the Proposed Project or Options would occur (CalGEM, 2011). Refer to Figure 3.9-2 in Section 3.9, Hazardous Materials of Chapter 3, Environmental Impacts, in this Draft EIR for a detailed map of locations and statuses of wells in the vicinity of the Proposed Project and Options.

No other known mineral resources of value to region or residents of the state located within or adjacent to the footprints of the Proposed Project and Options and the Proposed Project and Options would neither directly nor indirectly result in the loss of availability of a known mineral resource that would be of value to the region and residents of the state during construction and operation; therefore, there would be **no impact**.

3.16-2.2.2 Would the Proposed Project 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?

No Impact. As discussed in Section 3.16-2.2.1, while the Proposed Project and Options do overlie the Lawndale and Torrance oil fields, there are no active, idle, or abandoned/plugged oil wells within or adjacent to the footprints of the Proposed Project or Options. The general plans for the Cities of Lawndale, Redondo Beach, and Torrance address mineral resources (primarily oil) within their jurisdictions, but none delineate mineral resource recovery sites within or adjacent to the Proposed Project and option footprints (City of Lawndale, 1992f; City of Redondo Beach, 1993b and d; City of Torrance, 2010c). Therefore, the Proposed Project and Options would not result in the loss of a locally-important mineral resource recovery site delineated on a local plan during construction or operation and there would be **no impact**.

3.16-2.3 Population and Housing

Based on Appendix G of the CEQA Guidelines, the Proposed Project and Options would have a significant impact related to population and housing if it would:

- Induce substantial unplanned 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).

> Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

3.16-2.3.1 Would the Proposed Project induce substantial unplanned 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)?

No Impact. The Proposed Project and Options do not propose new homes or businesses and, as discussed in Section 3.16-1, are designed to serve the current and planned growth in population, housing, and employment along the study corridor and to support the development of a multi-modal corridor consistent with local planning goals. While the Proposed Project and Options could potentially increase the incentive for development on undeveloped or underutilized lots by increasing alternative transportation modes and improving access, such development on underutilized land would largely represent a redistribution of the anticipated regional growth near the station rather than a large-scale development boom. In addition, the 2020-2045 SCAG RTP/SCS identifies the project area as a priority growth area and accounts for a light rail extension from the current Metro C Line (Green) terminus at the Redondo Beach (Marine) Station to Torrance in its population and housing projections (SCAG, 2020a). Therefore, the Proposed Project and Options would not induce substantial unplanned population growth during construction or operation and there would be **no impact**.

3.16-2.3.2 Would the Proposed Project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. As described in Chapter 2, Project Description, of this Draft EIR, the Proposed Project and Trench Option would be built and operated within an existing railroad right-of-way or median of a major arterial (Hawthorne Boulevard). Few full acquisitions of adjacent property are needed to construct or operate the Proposed Project and Options and the vast majority of these acquisitions are commercial use; no residential properties are considered for acquisition. Therefore, construction and operation of the Proposed Project and Options would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere and there would be **no impact**.

3.16-2.4 Wildfire

No Impact. Based on Appendix G of the CEQA Guidelines, the significance of impacts for wildfire are associated with projects that are located in or near state responsibility areas or lands classified as very high fire hazard severity zones.

Because the Proposed Project and Options are not located within or near a state responsibility area or very high fire hazard severity zone, the Proposed Project and Options would not result in wildfire-related impacts during construction and operation and there would be **no impact**.

3.16-3 Significant and Unavoidable Impacts

This section is prepared in accordance with Section 21100(b)(2)(A) of the PRC and Section 15126.2(c) of the CEQA Guidelines, which require the discussion of any significant environmental effects that cannot be avoided if a project is implemented. These include impacts that can be mitigated but cannot be reduced to a less than significant level. An analysis of Proposed Project's and Options' environmental impacts is contained in Chapter 3, Environmental Impacts, of this Draft EIR.

This environmental impact analysis determines that there are no feasible mitigation measures to reduce significant impacts of regional air quality emissions during construction of the Trench Option or noise and vibration during construction of the Proposed Project and Options and operation of the Proposed

Project to less than significant. As such, the construction and operation of the Proposed Project and Options would result in significant and unavoidable impacts related to air quality and noise and vibration as summarized below and discussed in further detail in Section 3.4, Air Quality and Section 3.6, Noise and Vibration.

3.16-3.1 Air Quality

3.16-3.1.1 Construction Impacts

Only the Trench Option has a significant and avoidable impact related to regional emissions during construction. The Proposed Project and Hawthorne Option do not have significant and unavoidable impacts during construction or operation.

TRENCH OPTION

Significant and Unavoidable Impact. As the Trench Option would require more excavation than the Proposed Project or Hawthorne Option, more truck trips to haul excavated materials would be required to construct the trench. These increased truck trips would result in a temporary increase of regional NO_X emissions, in excess of the South Coast Air Quality Management District's (SCAQMD) daily threshold. While mitigation measure MM-AQ-1 would be implemented to require the use of zero or near zero emissions vehicles for the hauling of excavated materials to the extent feasible, the availability of these vehicles cannot be guaranteed in the timeframe required to bring the NO_X emissions below SCAQMD's daily regional emissions threshold. Therefore, the impacts related to construction air quality emissions of the Trench Options would be **significant and unavoidable**.

3.16-3.2 Noise and Vibration

3.16-3.2.1 Construction Impacts

Noise

Significant and Unavoidable Impact. The Proposed Project, Trench Option, and Hawthorne Option, would result in temporary and periodic increases in ambient noise levels due to construction activity that would exceed Federal Transit Administration's (FTA) standards, and, where applicable, the standards established by the local noise ordinances. While Mitigation Measure MM-NOI-1 would be implemented as a part of the project, which would include noise-reducing measures, there would still be temporary or periodic increases in ambient noise levels that exceed FTA construction impact criteria. There are no feasible mitigation measures to reduce construction noise levels below the FTA's threshold of a significant impact. Therefore, impacts related to construction noise would be **significant and unavoidable**.

Vibration

Significant and Unavoidable Impact. Construction of the Proposed Project would result in significant damage and annoyance vibration impacts, resulting from operation of the construction equipment (e.g., vibratory roller and impact pile driver) near residential structures and sensitive land uses. Mitigation measure MM-VIB-1 would require the contractor to prepare a Vibration Control Plan, conduct monitoring to demonstrate compliance with the vibration limits, and use alternative construction methods to reduce vibration impacts as feasible. MM-VIB-2 would require that operation of vibratory rollers within 26 feet of a building structure would be in static mode only, and that the use of vibratory pile drivers not occur within 22 feet of a building, as well as require the use of alternative pile driving techniques, such as CIDH, when feasible. After implementation of MM-VIB-1 and MM-VIB-2, potential damage impacts would remain at a multifamily residential structure near the relocated Grant Avenue

freight bridge, where impact pile driving is required. The analysis conservatively assumes that it would be infeasible to use a less impactful type of equipment to construct the freight bridge. Implementation of MM-VIB-3 would require the contractor to perform pre- and post-construction surveys to document preexisting damage, and damage that may have occurred from construction activities, and repair any damage caused by the project. Even with implementation of mitigation measures, the Proposed Project would have a **significant and unavoidable impact** related to vibration damage during construction.

While the Trench Option and Hawthorne Option do not require the reconstruction of the Grant Avenue bridge and thus do not necessitate impact pile driving near residences, operation of other construction equipment could result in annoyance impacts during construction of the Trench Option and Hawthorne Option, as well as the Proposed Project. MM-VIB-1 would reduce vibration levels, but annoyance impacts would remain, as there are no feasible mitigation measures to fully reduce vibration levels below FTA thresholds for annoyance. The Proposed Project would have a **significant and unavoidable impact** during construction related to vibration for annoyance.

3.16-3.2.2 Operational Impacts

Noise

Significant and Unavoidable Impact. Operation of the Proposed Project would result in increases in noise levels that exceed the FTA standards, and there would be a significant impact for sensitive uses (e.g., homes, parks) in some areas along the corridor. The light rail would cross at-grade at 170th and 182nd Streets, where there would be crossing signals that would contribute to noise near sensitive uses. Noise would also be contributed by the freight trains that operate within the Metro ROW today and would continue to operate on the freight track, some portions of which would be shifted by the Project. The majority of noise associated with freight trains is from warning horns that are sounded within one quarter mile of at-grade crossings. As part of PF-NV-1, the at-grade freight crossings have been designed and would be constructed to include all the safety infrastructure and improvements needed to allow the local jurisdictions to establish a quiet zone(s). Mitigation measure MM-NOI-4 would require Metro to coordinate with and support the cities of Redondo Beach, Lawndale, and Torrance in establishing quiet zone(s) and for those cities to follow the Federal Railroad Administration (FRA) requirements for designating quiet zone(s). The quiet zone(s) made possible by the Proposed Project could extend from north of Inglewood Avenue to south of 182nd Street, thereby eliminating freight horn noise for approximately three miles through residential areas within Lawndale, Redondo Beach, and Torrance. PF-NV-2 and PF-NV-3 would reduce signal bell noise at 170th and 182nd Streets, subject to California Public Utilities Commission (CPUC) authorization. Mitigation measures MM-NOI-2 and MM-NOI-3 would be implemented, which would require installation of soundwalls near identified sensitive uses and special trackwork including low impact frogs at crossovers. However, some light rail noise impacts would still remain near the 170th Street at-grade crossing. Even with implementation of mitigation measures MM-NOI-2, MM-NOI-3, and MM-NOI-4, the Proposed Project would have a **significant and unavoidable impact** during operation related to noise.

With implementation of mitigation measures MM-NOI-2, MM-NOI-3, and MM-NOI-4, the Trench Option would have a less than significant impact. However, if Cities did not implement quiet zone(s) pursuant to MM-NOI-4 to reduce freight horn noise, the Trench Option would have a **significant and unavoidable impact** during operation.

3.16-4 Significant and Irreversible Environmental Changes

Public Resources Code Section 21100(b)(2)(B) and Section 15126.2(d) of the CEQA Guidelines require that an EIR discuss the extent to which the project's primary and secondary effects would impact the environment and commit nonrenewable resources to uses that future generations would not be able to reverse, involves uses in which irreversible damage could result from any potential environmental accidents associated with the Proposed Project (including Options), or entails the consumption of resources that is not justified.

Less than Significant Impact. Construction and operation of the Proposed Project and Options would use nonrenewable resources, including fossil fuels, natural gas, water, and building materials. Construction would result in the irretrievable commitment of these nonrenewable energy resources, primarily fossil fuels and natural gas. However, the use of energy for construction activities would be consistent with other Metro construction projects and would not substantially affect the availability of such resources. Operation of the Proposed Project and Options would also consume nonrenewable resources. However, the consumption of resources for operation would be consistent with other Metro light rail lines and would provide a regional transportation benefit; therefore, it would not represent a wasteful or unnecessary use of energy.

As discussed in Section 3.11, Utilities and Service Systems and 3.12, Energy, the amount and rate of consumption of nonrenewable resources from the construction and operation of the Proposed Project and Options would not result in significant environmental impacts or result in the unnecessary, inefficient, or wasteful use of resources. Therefore, impacts related to significant and irreversible environmental changes would be **less than significant**.

4 EVALUATION OF ALTERNATIVES

4.1 INTRODUCTION

CEQA requires an analysis of a reasonable range of potentially feasible alternatives to the Proposed Project to substantially reduce or eliminate significant impacts associated with project development. Section 15126.6(a) of the CEQA Guidelines states:

> *"An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation."*

The range of feasible alternatives is selected and discussed in a manner intended to foster meaningful public participation and informed decision making.

An EIR must briefly describe the rationale for selection and rejection of alternatives. Alternatives may be eliminated from detailed consideration in the EIR if they fail to meet most of the project objectives, are infeasible, or do not substantially reduce or avoid any significant environmental effects.

4.2 ALTERNATIVES CONSIDERED AND REJECTED

As described in Chapter 2, Project Description, the Proposed Project has been evaluated in three previous studies (2009 Harbor Subdivision Alternatives Analysis, 2010 Environmental Study, and 2018 Supplemental Alternatives Analysis) that have contributed to the current project that is being studied in the Draft EIR.

Throughout the alternative development and evaluation process, stakeholder, community concerns, and priorities were solicited and used to inform the refinement of alternatives. Over the course of the Proposed Project, this has included:

- Meetings with a Project Technical Advisory Committee in earlier phases of the project.
- Workshops and meetings with stakeholder groups, such as business associations, chambers of commerce, and active transportation advocacy organizations.
- Virtual tour and in-person neighborhood walks with residents
- Open houses with presentations, information boards, and opportunities for the public to make comments.
- Tours with community members and elected officials to existing Metro light rail lines.

Table 4.2-1 summarizes the alternatives considered and rejected during these studies based on the alternatives development and evaluation process described above. Some alternatives previously considered in earlier phases were considered again during scoping for this Draft EIR and eliminated for similar reasons as before.

Table 4.2-1. Summary of Alternatives Considered and Rejected

Projects and Phases	Alternatives	Reason Withdrawn
2009 Harbor Subdivision Alternatives Analysis	Bus Rapid Transit (BRT) Alternatives (dedicated bus lanes within the Metro ROW)	Safety and operational issues, ROW constraints, and lack of substantial travel time benefits over existing transit service
2010 Draft EIS/EIR (document put on hold)	Freight Track Alternative (previously named Regional Alternative) using self-propelled rail transit or commuter rail transit modes	Would not perform as well as the LRT and TSM (bus) Alternatives in meeting the primary Project objectives. Estimated to have higher costs, lower ridership, and greater noise and air quality impacts
	Inglewood Avenue Alignment	Estimated to have greater environmental impacts, the same or fewer ridership benefits, higher cost, and little community support
	Madrona Avenue Alignment	Estimated to have greater environmental impacts, the same or fewer ridership benefits, higher cost, and little community support
	SCE (utility corridor) ROW Alignment	Conflicts and incompatibility with SCE electrical infrastructure, higher costs, and more property acquisition
2017-2018 Supplemental Alternatives Analysis	Alternative 2: ROW Undercrossing (trench between Inglewood Ave and 162nd St)	Would not perform as well as the Metro ROW and Hawthorne alternatives in meeting the primary Project objectives. Had additional potential environmental impacts associated with trench construction, including air quality and noise
	Alternative 4: Hawthorne to Artesia	Would not perform as well as the Metro ROW and Hawthorne alternatives in meeting the primary Project objectives
2021 Scoping to Prepare Draft EIR	Deep Bore Tunnel Alignment	Requirements for deep bore tunnel boring expected to have significantly higher costs, real estate needs, and increased significant impacts during construction relative to its benefits in comparison to a trench configuration
2023 Draft EIR	At-Grade Hawthorne Alignment	Metro Grade Crossing Safety Policy analysis demonstrated inadequate safety for pedestrian crossings and all modes (light rail, vehicles, pedestrians) comingling at-grade

ROW = right-of-way
BRT = bus rapid transit
EIS = environmental impact statement
LRT = light rail transit
EIR = environmental impact report
TSM = transportation system management
SCE = Southern California Edison

4.3 SUMMARY OF IMPACTS FOR THE PROPOSED PROJECT AND OPTIONS

As discussed in Chapter 2, Project Description, the underlying purpose of the Proposed Project is to provide high-capacity transit service in the South Bay. Metro has identified the following project objectives:

- Improve mobility within the South Bay and encourage mode shift by:
    - Introducing high-frequency transit service options from the current C Line terminus south to Torrance.
    - Creating direct connections between the regional transit network and local transit hubs for convenient transfers.
    - Providing an alternative mode of transportation for commuters traveling along congested arterials and Interstate 405 (I-405).
    - Providing first-last Mile facilities to connect to neighborhoods to station areas.
- Reduce air pollution and greenhouse gas emissions by making transit a more viable transportation choice.
- Avoid and minimize environmental impacts on environmental resources to the maximum extent feasible.
- Provide a cost-effective project.
- Provide more equitable access to regional destinations by improving connections to the Metro.

In Chapter 3, Environmental Impacts, Sections 3.1 through 3.16 of this EIR provide a detailed analysis of all significant environmental impacts related to the Proposed Project. These sections identify feasible mitigation measures, where available, that could avoid or reduce significant impacts and determine whether the mitigation measures would reduce these impacts to a less than significant level. Chapter 3, Environmental Impacts also identifies the significant cumulative impacts resulting from the combined impacts of the Proposed Project and related past, present, and reasonably probable future projects considered in the cumulative analysis.

4.3-1 Proposed Project

The following sections summarize the impacts associated with the Proposed Project. The majority of these impacts can be mitigated to less-than-significant levels with implementation of feasible mitigation measures. However, there would be a **significant and unavoidable impact** during construction for noise and vibration, and a **significant and unavoidable impact** during operation for noise, even after the implementation of mitigation measures.

4.3-1.1 Transportation

4.3-1.1.1 Construction

Less than Significant Impact. Construction of the Proposed Project would not preclude any programs, plan ordinances, or policies addressing the circulation system, nor would it result in a substantial increase in vehicle miles traveled (VMT). Construction would not result in an increase in hazards as a construction traffic management plan (CTMP) would be prepared as part of PF-T-1, which would provide for safe separation of road users from construction activities and ensure visibility of pedestrians, as well as ensure adequate emergency access. The Proposed Project would result in a **less than significant impact** during construction related to transportation.

4.3-1.1.2 Operation

Less than Significant Impact. Operation of the Proposed Project would introduce a new transit mode, which would be consistent with local jurisdictions' policy objectives as well as with CEQA Guidelines Section 15064.3, Subdivision (b). The new light rail elements, such as support columns, bridges, and grade crossing infrastructure, would not result in a geometric design hazard or incompatible use. The Proposed Project would include light rail crossing gates at 170th and 182nd Streets; however, it would not result in inadequate emergency access, as the light rail gates would be down for temporary and intermittent periods. The Proposed Project would result in a **less than significant impact** during operation related to transportation.

4.3-1.2 Land Use and Planning

4.3-1.2.1 Construction

Less than Significant Impact. Construction of the Proposed Project would involve disruptions in traffic flow, including road closures and potential traffic delays where construction activities would occur. All construction impacts for the Proposed Project would be temporary, and the duration of activity would be limited. Construction would be completed in phases, and roadway disruptions would not occur at the same time, limiting the ability to physically divide communities. Additionally, PF-T-1 would be implemented, which would result in the preparation a CTMP to ensure access is maintained throughout the construction limits during all phases of construction. Construction of the Proposed Project would not physically divide an established community. Construction would also not conflict with land use plans, policies, and regulations. The Proposed Project would result in a **less than significant impact** during construction related to land use and planning.

4.3-1.2.2 Operation

Less than Significant Impact. Operation of the Proposed Project would include the light rail trains running within the Metro ROW, in addition to elements such as fencing, stations, and traction power substation sites. While fencing/barriers would be added along the Metro ROW in areas where it currently doesn't exist, all other existing crossings would be maintained and rebuilt with upgraded safety infrastructure. Light rail trains would operate every five to 10 minutes along the line, with a gate system installed for safety, but the gate down time would be short and only at two at-grade light rail crossings (170th and 182nd Streets). Therefore, operation of the Proposed Project would not physically divide the community. Additionally, the Proposed Project would not change the existing land use setting or conflict with the described relevant plans and policies adopted for the purpose of avoiding or mitigating environmental effects. The Proposed Project would result in a **less than significant impact** during operation related to land use and planning.

4.3-1.3 Aesthetics

4.3-1.3.1 Construction

Less than Significant Impact with Mitigation. Construction of the Proposed Project would not have any impacts on scenic resources or state scenic highways, nor would it conflict with local regulations regarding scenic quality. Construction activities are not anticipated to result in a substantial source of light or glare. However, if nighttime construction is required, implementation of mitigation measure MM-AES-1 would ensure that construction lighting would be shielded and directed downward and away from adjacent residential and commercial areas to reduce potential impacts from temporary construction-related lighting. The Proposed Project would have a **less than significant impact with mitigation** during construction related to aesthetics.

4.3-1.3.2 Operation

Less than Significant Impact. Operation of the Proposed Project would not have any impacts on scenic resources of state scenic highways, nor would it create a source of glare. There would be a visual change, but the Proposed Project would generally be consistent with the local policies regarding visual character and quality. The Proposed Project would have a **less than significant impact** during operation related to aesthetics.

4.3-1.4 Air Quality

4.3-1.4.1 Construction

Less than Significant Impact. Construction of the Proposed Project would generate temporary emissions, but it would not be in quantities that would result in a conflict with air quality plans, be in excess of South Coast Air Quality Management District (SCAQMD) thresholds, expose sensitive receptors to substantial pollutant concentrations, or create nuisance odors or dust plumes. The Proposed Project would implement PF-AQ-1, PF-AQ-2, PF-AQ-3, and PF-AQ-4, which would ensure compliance with Metro's Green Construction Policy, regulatory requirements, and employ best management practices (BMPs). The Proposed Project would have a **less than significant impact** during construction related to air quality.

4.3-1.4.2 Operation

Less than Significant Impact. Operation of the Proposed Project would extend existing Metro C Line (Green) service to the Torrance TC, and the light rail vehicles would be propelled by electricity and would not directly consume petroleum fuels whose combustion would create air pollutant emissions. The Proposed Project would have a **less than significant impact** during operation related to air quality.

4.3-1.5 Greenhouse Gas Emissions

4.3-1.5.1 Construction

Less than Significant Impact. Construction of the Proposed Project would generate greenhouse gas (GHG) emissions, but it would not be in quantities that would result in a substantial impact on the environment or conflicts with GHG plans. The Proposed Project would implement PF-AQ-1, PF-AQ-2, PF-AQ-3, and PF-AQ-4, which would ensure compliance with Metro's Green Construction Policy, regulatory requirements, and employ BMPs. The Proposed Project would have a **less than significant impact** during construction related to GHG emissions.

4.3-1.5.2 Operation

Less than Significant Impact. Operation of the Proposed Project would decrease regional on-road VMT and net GHG emissions in 2042. The Proposed Project would have a **less than significant impact** during operation related to GHG emissions.

4.3-1.6 Noise and Vibration

Noise

4.3-1.6.1 Construction

Significant and Unavoidable Impact. Construction of the Proposed Project would result in increases in noise levels that exceed the Federal Transit Administration (FTA) standards, and there would be a significant impact. Mitigation measure MM-NOI-1 would be implemented, which would require the contractor to prepare a Noise Control Plan describing noise-reducing methods, such as using specialty equipment, installing temporary noise barriers, and minimizing the use of impact devices. Even with

implementation of mitigation measure MM-NOI-1, in some instances, the FTA construction impact criteria may still be exceeded. There are no additional feasible mitigation measures that could be implemented to further reduce construction noise levels. The Proposed Project would have a **significant and unavoidable impact** during construction related to noise.

4.3-1.6.2 Operation

Significant and Unavoidable Impact. Operation of the Proposed Project would result in increases in noise levels that exceed the FTA standards, and there would be a significant impact for sensitive uses (e.g., homes, parks) in some areas along the corridor. The light rail would cross at-grade at 170th and 182nd Streets, where there would be crossing signals that would contribute to noise near sensitive uses. Mitigation measures MM-NOI-2 and MM-NOI-3 would be implemented, which would require installation of soundwalls near identified sensitive uses and special trackwork including low impact frogs at crossovers. Noise would also be contributed by the freight trains that operate within the Metro ROW today and would continue to operate on the freight track, some portions of which would be shifted by the Project. The majority of noise associated with freight trains is from warning horns that are sounded within one quarter-mile of at-grade crossings. As part of PF-NV-1, the at-grade freight crossings have been designed and would be constructed to include all the safety infrastructure and improvements needed to allow the local jurisdictions to establish a quiet zone(s). Mitigation measure MM-NOI-4 would require Metro to coordinate with and support the cities of Redondo Beach, Lawndale, and Torrance in establishing quiet zone(s) and for those cities to follow the Federal Railroad Administration (FRA) requirements for designating quiet zone(s). The quiet zone(s) made possible by the Proposed Project could extend from north of Inglewood Avenue to south of 182nd Street, thereby eliminating freight horn noise for approximately three miles through residential areas within Lawndale, Redondo Beach, and Torrance. PF-NV-2 and PF-NV-3 would reduce signal bell noise at 170th and 182nd Streets, subject to California Public Utilities Commission (CPUC) authorization. However, some light rail noise impacts would still remain near the 170th Street at-grade crossing. Even with implementation of mitigation measures MM-NOI-2, MM-NOI-3, and MM-NOI-4, the Proposed Project would have a **significant and unavoidable impact** during operation related to noise.

Vibration

4.3-1.6.3 Construction

Significant and Unavoidable Impact. Construction of the Proposed Project would result in significant damage and annoyance vibration impacts, resulting from operation of the construction equipment (e.g., vibratory roller and impact pile driver) near residential structures and sensitive land uses. Mitigation measure MM-VIB-1 would require the contractor to prepare a Vibration Control Plan, conduct monitoring to demonstrate compliance with the vibration limits, and use alternative construction methods to reduce vibration impacts as feasible. MM-VIB-2 would require that operation of vibratory rollers within 26 feet of a building structure would be in static mode only, and that the use of vibratory pile drivers not occur within 22 feet of a building, as well as require the use of alternative pile driving techniques, such as CIDH, when feasible. After implementation of MM-VIB-1 and MM-VIB-2, potential damage impacts would remain at a multifamily residential structure near the relocated Grant Avenue freight bridge, where impact pile driving is required. The analysis conservatively assumes that it would be infeasible to use a less impactful type of equipment to construct the freight bridge. Implementation of MM-VIB-3 would require the contractor to perform pre- and post-construction surveys to document preexisting damage, and damage that may have occurred from construction activities, and repair any damage caused by the project. Even with implementation of mitigation measures, the Proposed Project would have a **significant and unavoidable impact** related to vibration damage during construction.

MM-VIB-1 and MM-VIB-2 would reduce vibration levels, but annoyance impacts would remain, as there are no feasible mitigation measures to fully reduce vibration levels below FTA thresholds for annoyance. The Proposed Project would have a **significant and unavoidable impact** during construction related to vibration for annoyance.

4.3-1.6.4 Operation

Less Than Significant Impact with Mitigation. Operation of the Proposed Project, which considers both light rail as well as freight, would result in vibration levels that exceed FTA criteria for annoyance, and there would be a significant impact. Mitigation measure MM-VIB-4 would be implemented, which would require special trackwork such as spring frogs to be installed at specific locations to reduce the impact from crossovers. Mitigation measures MM-VIB-5 and MM-VIB-6 would also be implemented, which would require the use of resilient fasteners and install ballast mats to reduce the vibration impacts. The Proposed Project would have a **less than significant impact with mitigation** during operation related to vibration for annoyance.

4.3-1.7 Biological Resources

4.3-1.7.1 Construction

Less Than Significant Impact with Mitigation. Construction of the Proposed Project would have the potential to directly and indirectly impact special-status plant and wildlife species, which could result in a potentially significant impact. Construction at the Torrance TC could directly impact southern tarplant or degrade the habitat. Mitigation measures MM-BIO-1 and MM-BIO-4 would require the delineation of work limits and buffers, a pre-construction rare plant survey prior to ground disturbance, and on-site monitoring by a qualified botanist. Construction may result in loss of nesting habitat from demolition of the Grant Avenue and Del Amo Boulevard bridges and from tree removal, and also indirectly impact breeding birds from construction-related disturbance and degradation of habitat. MM-BIO-2 would require a pre-construction nesting bird survey during the breeding season, work/construction buffers around active nests, and the monitoring of nesting activity by qualified biologists. Demolition of the Grant Avenue and Del Amo Boulevard bridges may also result in a loss of roosting habitat for bat species, and also indirectly impact bats from construction-related disturbance. MM-BIO-3 would require a bat roost habitat assessment and subsequent consultation with California Department of Fish and Wildlife and preparation of a mitigation plan if presence is detected. The Proposed Project would have a **less than significant impact with mitigation** during construction related to biological resources.

4.3-1.7.2 Operation

Less Than Significant Impact with Mitigation. Operation of the Proposed Project would involve routine operation, maintenance, and landscaping activities relating to tree and vegetation maintenance along the Metro ROW. Potential indirect impacts may occur to southern tarplant at the Torrance TC. MM-BIO-1 would be implemented, which would implement erosion and run-off control measures to ensure that contaminants would not enter the Open Space Preserve and degrade the habitat near the Torrance TC. The Proposed Project would have a **less than significant impact with mitigation** during operation related to biological resources.

4.3-1.8 Geology, Soils, and Paleontological Resources

4.3-1.8.1 Construction

Less Than Significant Impact with Mitigation. Construction of the Proposed Project would have a less than significant impact related to seismic events, landslides, or soils. Construction would involve excavation, which could cause potentially significant impacts to paleontological resources should they

be encountered and destroyed without intervention. Mitigation measure MM-GEO-1 would require hiring a qualified paleontologist to monitor grading and excavation within highly sensitive geologic formations, and direct subsurface microfossil testing when subsurface soil observation is not possible. The Proposed Project would have a **less than significant impact with mitigation** during construction related to paleontological resources.

4.3-1.8.2 Operation

Less Than Significant Impact. Operation of the Proposed Project would largely be limited to light rail operations on established tracks or facilities constructed as a part of the project and would not involve subsurface disturbance. The Proposed Project would result in a **less than significant impact** during operation related to geology and soils, or paleontological resources.

4.3-1.9 Hazards and Hazardous Materials

4.3-1.9.1 Construction

Less than Significant Impact. Construction of the Proposed Project would involve transport, use, and disposal of general construction materials, as well as require disposal of demolition waste, contaminated soil, and groundwater. Construction would also encounter multiple sources of potentially hazardous materials, such as oil and gas pipelines and buried utilities, and may also encounter recognized environmental conditions (REC) that are on a list of sites pursuant to Section 65962.5. The Proposed Project would implement PF-HHM-1 to PF-HHM-6, which would ensure compliance with all regulations and prescribe BMPs regarding transport, use, and disposal of hazardous materials and wastes, and handling of contaminated sites, limiting the potential to result in creating a significant hazard to the public or environment. The Proposed Project would result in a **less than significant impact** during construction related to hazards and hazardous materials.

4.3-1.9.2 Operation

Less than Significant Impact. Operation of the Proposed Project would use a small amount of chemicals during maintenance, but it would not generate, use, or store significant amounts of hazardous materials, and would not involve subsurface disturbance that could result in release of contaminants. The Proposed Project would result in a **less than significant impact** during operation related to hazards and hazardous materials.

4.3-1.10 Hydrology and Water Quality

4.3-1.10.1 Construction

Less than Significant Impact. Construction of the Proposed Project would introduce contaminants and dust into surface waters, require dewatering in some areas, use water for some activities, and potentially change drainage patterns. However, the Proposed Project would implement PF-HWQ-1, PF-HWQ-2, and PF-HWQ-8, which would ensure compliance with all regulatory requirements and employ BMPs during construction. The Proposed Project would also not risk the release of pollutants in flood hazard, tsunami, or seiche zones or conflict with water quality plans. The Proposed Project would have a **less than significant impact** during construction related to hydrology and water quality.

4.3-1.10.2 Operation

Less than Significant Impact. The Proposed Project would result in a net increase in impervious surfaces. However, the Proposed Project would not degrade surface water quality, interfere with groundwater supplies or groundwater recharge, substantially alter drainage patterns, risk release of pollutants due to project inundation in a flood hazard, tsunami, or seiche zone, or conflict with water quality plans.

Implementation of PF-HWQ-6 would retain stormwater runoff on site. The Proposed Project would have a **less than significant impact** during operation related to hydrology and water quality.

4.3-1.11 Utilities and Service Systems

4.3-1.11.1 Construction

Less than Significant Impact. Construction of the Proposed Project would require relocation of some stormwater and electric power facilities, but it would not result in environmental effects or disruption of services. PF-US-1 and PF-US-2 would ensure coordination with utility and service providers, which would minimize interruptions to services. The Proposed Project would use a minimal amount of water and generate minimal amounts of wastewater during construction. Regional landfills would have sufficient capacity to handle the construction waste, including a small amount of contaminated soil from the Metro ROW, and the Proposed Project would comply with all regulations related to solid waste. The Proposed Project would have a **less than significant impact** during construction related to utilities and service systems.

4.3-1.11.2 Operation

Less than Significant Impact. The Proposed Project would result in a potential increase in stormwater due to an increase in impervious surfaces and it would use electricity, but not in quantities that would affect stormwater facilities or necessitate expansion of existing electricity generation facilities. There would not be a significant long-term, permanent source of water use, wastewater, or solid waste. The Proposed Project would have a **less than significant impact** during operation related to utilities and service systems.

4.3-1.12 Energy

4.3-1.12.1 Construction

Less than Significant Impact. Construction of the Proposed Project would primarily use diesel fuel for construction vehicles and equipment, and would require energy for lighting. However, it would not result in wasteful, inefficient, or unnecessary consumption of energy resources. Implementation of PF-AQ-1, PF-AQ-3, and PF-AQ-4 would ensure that construction activities use energy efficiently. The Proposed Project would have a **less than significant impact** during construction related to energy.

4.3-1.12.2 Operation

Less than Significant Impact. Operation of the Proposed Project would consume energy for the light rail system, and would also indirectly change regional energy consumption through changes in regional VMT. There would not be a wasteful or inefficient use of energy resources, but rather, regional transportation energy efficiency would be improved. The Proposed Project would have a **less than significant impact** during operation related to energy.

4.3-1.13 Cultural Resources

4.3-1.13.1 Construction

Less Than Significant Impact with Mitigation. Construction of the Proposed Project would involve excavation, which could cause potentially significant impacts to unknown archaeological resources or human remains. Mitigation measures MM-CUL-1 and MM-CUL-2 would be implemented, which would require construction personnel to be trained in the identification of archaeological resources and establish procedures to stop work in the event of an archaeological discovery and ensure that discovered resources would be avoided or treated in accordance with a treatment plan developed in consultation with Metro. MM-CUL-3 would also be implemented, which would establish a monitoring

program as well as treatment measures and avoidance strategies for any human remains that are identified. The Proposed Project would have a **less than significant impact with mitigation** during construction related to cultural resources.

4.3-1.13.2 Operation

Less Than Significant Impact. Operation of the Proposed Project would largely be limited to light rail operations on established tracks or facilities constructed as a part of the project, and would not involve subsurface disturbance. The Proposed Project would result in a **less than significant impact** during operation related to cultural resources.

4.3-1.14 Tribal Cultural Resources

4.3-1.14.1 Construction

Less Than Significant Impact with Mitigation. Construction of the Proposed Project would involve excavation, which could cause potentially significant impacts to unknown tribal cultural resources or human remains. Mitigation measures MM-CUL-1 and MM-CUL-2 would be implemented, which would require construction personnel to be trained in the identification of archaeological resources and establish procedures to stop work in the event of an archaeological discovery and ensure that discovered resources would be avoided or treated in accordance with a treatment plan developed in consultation with Metro. MM-CUL-3 would also be implemented, which would establish a monitoring program as well as treatment measures and avoidance strategies for any human remains that are identified. If Native American remains are encountered, these remains would be treated with appropriate deference through compliance with legal requirements pursuant to Health and Safety Code Section 7050.5 and Public Resource Code Section 5097.98. The Proposed Project would have a **less than significant impact with mitigation** during construction related to tribal cultural resources.

4.3-1.14.2 Operation

Less than Significant Impact. Operation of the Proposed Project would largely be limited to light rail operations on established tracks or facilities constructed as a part of the project and would not involve subsurface disturbance. The Proposed Project would result in a **less than significant impact** during operation related to tribal cultural resources.

4.3-1.15 Public Services

4.3-1.15.1 Construction

Less Than Significant Impact. Construction of the Proposed Project would not directly impact fire stations, police stations, educational facilities, or libraries, or result in deterioration of parks. Roadways may be closed during construction, which could change access to these facilities, but access would be maintained through detour routes, per PF-T-1. The Proposed Project would have a **less than significant impact** during construction related to public services.

4.3-1.15.2 Operation

Less than Significant Impact. Operation of the Proposed Project could cause delays at the two at-grade crossings at 170th and 182nd Streets; however, it would not necessitate the construction of new fire protection or police facilities to maintain service. The Proposed Project would not induce unplanned population increases that would impact the demand for these facilities, or for schools, libraries, or parks, such that new facilities would need to be constructed. The Proposed Project would result in a **less than significant impact** during operation related to public services.

4.3-2 Trench Option

Overall, the impacts during construction and operation of the Trench Option would be similar to the Proposed Project for most environmental topics. However, there are some environmental topics where the Trench Option impacts differ notably from the Proposed Project, such as in the type, location, or severity of impact, and therefore result in different CEQA impact determinations. The following sections describe the impacts for the Trench Option, focusing on areas of difference from the Proposed Project. The Trench Option would have a **significant and unavoidable impact** during construction for air quality, noise, and vibration, even after the implementation of mitigation measures.

4.3-2.1 Transportation

4.3-2.1.1 Construction

Less than Significant Impact. Construction of the Trench Option would be longer in duration, compared to the Proposed Project, and temporary road closures or detours may last longer. However, the impacts would be similar to the Proposed Project, as discussed in Section 4.3-1.1.1. The Trench Option would result in a **less than significant impact** during construction related to transportation.

4.3-2.1.2 Operation

Less than Significant Impact. Operation of the Trench Option would be within a trench, fully grade-separated from all roadways, compared to the Proposed Project which would have two at-grade crossings at 170th and 182nd Streets. However, this difference would not result in changes in impacts to transportation, and overall, the Trench Option impacts would be similar to the Proposed Project, as discussed in 4.3-1.1.2. The Trench Option would result in a **less than significant impact** during operation related to transportation.

4.3-2.2 Land Use and Planning

4.3-2.2.1 Construction

Less than Significant Impact. Construction of the Trench Option would be longer in duration, compared to the Proposed Project, and temporary road closures or detours may last longer. However, the impacts would be similar to the Proposed Project, as discussed in Section 4.3-1.2.1. The Trench Option would result in a **less than significant impact** during construction related to land use and planning.

4.3-2.2.2 Operation

Less than Significant Impact. Operation of the Trench Option would be within a trench, fully grade-separated from all roadways, compared to the Proposed Project which would have two at-grade crossings at 170th and 182nd Streets. However, this difference would not result in changes in impacts to land use, and overall, the Trench Option impacts would be similar to the Proposed Project, as discussed in Section 4.3-1.2.2. The Trench Option would have a **less than significant impact** during operation related to land use and planning.

4.3-2.3 Aesthetics

4.3-2.3.1 Construction

Less than Significant Impact with Mitigation. Construction of the Trench Option would be longer in duration, compared to the Proposed Project, and the visual elements associated with construction would be present longer. However, the impacts would be similar to the Proposed Project, as discussed in Section 4.3-1.3.1, and if nighttime construction is required, implementation of MM-AES-1 would ensure that construction lighting would be shielded and directed downward and away from adjacent residential and commercial areas to reduce potential impacts from temporary construction-related

lighting. The Trench Option would result in a **less than significant impact with mitigation** during construction related to aesthetics.

4.3-2.3.2 Operation

Less than Significant Impact. Operation of the Trench Option would be within a trench, fully grade-separated from all roadways. There would not be an elevated guideway or light rail crossing infrastructure, and the OCS and other infrastructure would be within a trench. However, this difference would not result in changes in impacts to aesthetics, and overall, the Trench Option impacts would be similar to the Proposed Project, as discussed in 4.3-1.3.2. The Trench Option would result in a **less than significant impact** during operation related to aesthetics.

4.3-2.4 Air Quality

4.3-2.4.1 Construction

Significant and Unavoidable Impact. Construction of the Trench Option would involve approximately 1.8 miles of excavation and a longer construction schedule. This would result in notably higher maximum daily emissions than the Proposed Project. While most emissions would remain below the applicable SCAQMD mass daily thresholds, NO_X emissions would be over the threshold. Mitigation measure MM-AQ-1 would require the contractor to use zero or near-zero emissions vehicles to haul materials to the extent feasible. However, because the availability of enough zero or near-zero emissions vehicles to haul all the materials required cannot be guaranteed, a significant impact would remain. Metro would have implemented all other best practices to reduce emissions as a part of the project, as described in PF-AQ-1, Metro Green Construction Policy. The Trench Option would have a **significant and unavoidable impact** during construction related to air quality, compared to less than significant for the Proposed Project.

4.3-2.4.2 Operation

Less than Significant Impact. Operation of the Trench Option would have the same impacts as the Proposed Project, as discussed in Section 4.3-1.4.2, as operation of the light rail in a trench would not change the emissions. The Trench Option would have a **less than significant impact** during operation related to air quality.

4.3-2.5 Greenhouse Gas Emissions

4.3-2.5.1 Construction

Less than Significant Impact. Construction of the Trench Option would take longer and generate more GHG emissions than the Proposed Project. However, the difference would not result in a substantial impact on the environment or conflicts with GHG plans, and the impacts would be similar to the Proposed Project, as discussed in Section 4.3-1.5.1. The Trench Option would have a **less than significant impact** during construction related to GHG emissions.

4.3-2.5.2 Operation

Less than Significant Impact. Operation of the Trench Option would have the same impacts as the Proposed Project, as discussed in Section 4.3-1.5.2, as operation of the light rail in a trench would not change the emissions generated by the light rail system. The Trench Option would have a **less than significant impact** during operation related to GHG emissions.

4.3-2.6 Noise and Vibration

Noise

4.3-2.6.1 Construction

Significant and Unavoidable Impact. Construction of the Trench Option would require similar types of equipment as the Project. However, construction would be longer in duration. Pile driving would occur in different locations, compared to the Proposed Project, such as along the trench walls where the alignment is transitioning down into or up out of the trench, for temporary shoring. Overall, there would be a significant impact, similar to the Proposed Project as discussed in Section 4.3-1.6.1, and mitigation measure MM-NOI-1 would be required. Even with implementation of mitigation measure NOI-1, in some instances, the FTA construction impact criteria may still be exceeded. The Trench Option would have a **significant and unavoidable impact** during construction related to noise.

4.3-2.6.2 Operation

Less than Significant Impact with Mitigation/Significant and Unavoidable without MM-NOI-4. Compared to the Proposed Project, operation of the Trench Option would cause fewer exceedances of FTA's noise criteria near 170th and 182nd Streets, as the light rail would travel under those streets and eliminate the need for crossing signals and the associated light rail bells and gates. However, the Trench Option would be the same as the Proposed Project with regard to freight noise, as the freight trains would generate noise impacts from warning horns at the at-grade crossings. The Trench Option light rail noise in combination with freight noise would result in significant impacts to sensitive receivers. The Trench Option would implement PF-NV-1, and require the same mitigation measures as the Proposed Project, including soundwalls, special trackwork, and a requirement for local jurisdictions to comply with FRA requirements to establish a quiet zone(s) and for Metro to support the local jurisdictions in that effort. With implementation of mitigation measures MM-NOI-2, MM-NOI-3, and MM-NOI-4, the Trench Option would result in a **less than significant impact with mitigation** during operation related to noise. If the local jurisdictions do not establish a quiet zone(s) to reduce freight horn noise, the Trench Option would have a **significant and unavoidable impact without MM-NOI-4** during operation.

Vibration

4.3-2.6.3 Construction

Significant and Unavoidable Impact. Construction of the Trench Option would use similar equipment as the Proposed Project (e.g., vibratory roller), and result in significant damage and annoyance vibration impacts. Pile driving would be needed in different areas than the Proposed Project, such as for temporary shoring of trench walls where the alignment is transitioning into or out of the trench, as well as for construction of a pump house. The Trench Option would not require relocation of the Grant Avenue freight bridge, and therefore would not have the damage impacts in that vicinity resulting from the use of an impact driver, as would occur under the Proposed Project. Mitigation measure MM-VIB-1 would prepare a Vibration Control Plan, and MM-VIB-2 would limit the use of vibratory rollers and vibratory impact pile drivers near residential structures and sensitive uses. With implementation of these mitigation measures, the Trench Option would have a **less than significant impact with mitigation** during construction related to vibration for damage.

However, similar to the Proposed Project, annoyance impacts would remain, and the Trench Option would have a **significant and unavoidable impact** during construction related to vibration for annoyance.

4.3-2.6.4 Operation

Less Than Significant Impact with Mitigation. Operation of the Trench Option would have similar vibration impacts as the Proposed Project, except the location of impacts would be different for the crossover track area (which is north of Grant Avenue for the Trench Option). There would be 12 additional impacts at sensitive land uses. Similar to the Proposed Project, mitigation measures MM-VIB-4, MM-VIB-5, and MM-VIB-6 would be implemented, and the Trench Option would have a **less than significant impact with mitigation** during operation related to vibration for annoyance.

4.3-2.7 Biological Resources

4.3-2.7.1 Construction

Less Than Significant Impact with Mitigation. Construction of the Trench Option would have similar impacts as the Proposed Project, discussed in Section 4.3-1.7.1. The location and type of construction would be similar, with one difference being the longer construction schedule would require a longer duration of mitigation. Similar to the Proposed Project, mitigation measures MM-BIO-1, MM-BIO-2, MM-BIO-3, and MM-BIO-4 would be implemented, and the Trench Option would have a **less than significant impact with mitigation** during construction related to biological resources.

4.3-2.7.2 Operation

Less Than Significant Impact with Mitigation. Operation of the Trench Option would have the same impacts as the Proposed Project, as discussed in Section 4.3-1.7.2, as operation of the light rail in a trench would not change the types of impacts to biological resources. Similar to the Proposed Project, MM-BIO-1 would be implemented to ensure no degradation of southern tarplant habitat near the Torrance TC during maintenance. The Trench Option would have a **less than significant impact with mitigation** during operation related to biological resources.

4.3-2.8 Geology, Soils, and Paleontological Resources

4.3-2.8.1 Construction

Less Than Significant Impact with Mitigation. Construction of the Trench Option would have similar impacts as the Proposed Project, as discussed in Section 4.3-1.8.1. One difference is that the Trench Option would encounter groundwater in the northern part of the segment, near Inglewood Avenue, where the trench would be approximately 30 to 40 feet deep. Changes in the subsurface drainage conditions could lead to soil instability, but PF-GEO-1 would be implemented, which would ensure that the design would follow Metro's geotechnical design standards, including conducting a geotechnical investigation which would include measures addressing issues such as groundwater and settlement. Similar to the Proposed Project, the Trench Option would have a less than significant impact during construction related to geology and soils. The Trench Option would include more excavation overall than the Proposed Project, which increases the likelihood of encountering paleontological resources. Similar to the Proposed Project, MM-GEO-1 would be implemented, and the Trench Option would have a **less than significant impact with mitigation** during construction related to paleontological resources.

4.3-2.8.2 Operation

Less Than Significant Impact. Operation of the Trench Option would have the same impacts as the Proposed Project, as discussed in Section 4.3-1.8.2, as operation of the light rail in a trench would not involve subsurface disturbance. The Trench Option would have a **less than significant impact** during operation related to geology, soils, and paleontological resources.

4.3-2.9 Hazards and Hazardous Materials

4.3-2.9.1 Construction

Less Than Significant Impact. Construction of the Trench Option would have similar impacts as the Proposed Project, as discussed in Section 4.3-1.9.1. However, deeper excavation would be required for the Trench Option, increasing the risk of encountering contaminated groundwater, especially in the northern part of the segment. It would also result in greater amounts of contaminated soil excavated from the Metro ROW, which would need to be disposed of at a permitted landfill with capacity to process contaminated materials. However, contaminated groundwater and soil would be handled in the same way as the Proposed Project in accordance with all BMPs and regulations. Similar to the Proposed Project, the Trench Option would have a **less than significant impact** during construction related to hazards and hazardous materials.

4.3-2.9.2 Operation

Less Than Significant Impact. Operation of the Trench Option would have the same impacts as the Proposed Project, as discussed in Section 4.3-1.9.2, as operation of the light rail in a trench would not change the types of materials that may be used during maintenance or involve subsurface disturbance. The Trench Option would have a **less than significant impact** during operation related to hazards and hazardous materials.

4.3-2.10 Hydrology and Water Quality

4.3-2.10.1 Construction

Less than Significant Impact. Construction of the Trench Option would have similar impacts as the Proposed Project, as discussed in Section 4.3-1.10.1. One difference is that the trench would have a greater likelihood of encountering groundwater than the Proposed Project, potentially exposing it to hazardous substances. It also means a greater likelihood of requiring groundwater dewatering. Additionally, groundwater pressures may develop during trench excavation from groundwater seeping into the soil from construction activities. Similar to the Proposed Project, PF-HWQ-1 and PF-HWQ-2 would be implemented, which would ensure compliance with all regulatory requirements and employ BMPs during construction. The Trench Option would also implement PF-HHM-3, which would identify areas of contaminated water in excavation areas, as well as PF-HWQ-4 and PF-HWQ-5, which would ensure that measures be taken to relieve groundwater pressure buildup, collect runoff collected within the trench, and temporarily reroute storm drain runoff. The Trench Option would have a **less than significant impact** during construction related to hydrology and water quality.

4.3-2.10.2 Operation

Less than Significant Impact. Operation of the Trench Option would have similar impacts as the Proposed Project, as discussed in Section 4.3-1.10.2. One difference is that surface waters could collect within the trench, exposing it to water quality impacts. However, the Trench Option would implement PF-HWQ-7, which would ensure that surface runoff would be collected, treated if necessary, and discharged to existing storm drains, to avoid degrading surface water or groundwater quality. In some areas, the trench would be located below the level at which there is groundwater, but it would be lined with impervious walls and a paved bottom that would prevent groundwater from entering the trench in substantial volumes. Any groundwater that does permeate the trench would be collected, treated per relevant requirements of the RWQCB, and pumped into the storm drain system. The Trench Option segment would result in a greater increase in impervious areas, compared to the Proposed Project. However, similar to the Proposed Project, the Trench Option would implement PF-HWQ-6, which would

retain stormwater runoff on site. The Trench Option would have a **less than significant impact** during operation related to hydrology and water quality.

4.3-2.11 Utilities and Service Systems

4.3-2.11.1 Construction

Less than Significant Impact. Construction of the Trench Option would have similar impacts as the Proposed Project, as discussed in Section 4.3-1.11.1. However, there would be more water facilities that need to be relocated, but similar to the Proposed Project, the Trench Option would implement PF-US-1 and PF-US-2, which would minimize interruptions to utilities and services. Construction of the trench would require substantially more excavation than the Proposed Project, and it is estimated that there would over twice as much contaminated soil that would need to be disposed of at a permitted landfill. However, the two nearest landfills which accept contaminated soil would be able to process the soil generated by the Trench Option. Similar to the Proposed Project, the Trench Option would comply with the same regulatory control measures and implement PF-HHM-2, PF-HHM-3, and PF-HHM4 to minimize impacts related to contaminated soil. The Trench Option would have a **less than significant impact** during operation related to utilities and services systems.

4.3-2.11.2 Operation

Less than Significant Impact. Operation of the Trench Option would have similar impacts as the Proposed Project, as discussed in Section 4.3-1.11.2. During operation, the Trench Option may result in increased stormwater runoff, as it would have a greater impervious area. Similar to the Proposed Project, the Trench Option would implement PF-HWQ-6, which would ensure that stormwater would be retained onsite. The Trench Option would have a **less than significant impact** during operation related to utilities and service systems.

4.3-2.12 Energy

4.3-2.12.1 Construction

Less than Significant Impact. Construction of the Trench Option would have similar impacts as the Proposed Project, as discussed in Section 4.3-1.12.1. The construction schedule would be longer, and more fuel would be used for construction vehicles and equipment, but this difference would not result in different impacts to energy. The Trench Option would have a **less than significant impact** during construction related to energy.

4.3-2.12.2 Operation

Less than Significant Impact. Operation of the Trench Option would have the same impacts as the Proposed Project, as discussed in Section 4.3-1.12.2, as operation of the light rail in a trench would not change the energy consumption requirements. The Trench Option would have a **less than significant impact** during operation related to energy.

4.3-2.13 Cultural Resources

4.3-2.13.1 Construction

Less than Significant Impact with Mitigation. Construction of the Trench Option would have similar impacts as the Proposed Project, as discussed in Section 4.3-1.13.1. However, it would involve more excavation, which would increase the potential to encounter unknown archaeological resources or human remains. Similar to the Proposed Project, mitigation measures MM-CUL-1, MM CUL-2, and MM-CUL-3 would be implemented, and the Trench Option would have a **less than significant impact with mitigation** during construction related to cultural resources.

4.3-2.13.2 Operation

Less Than Significant Impact. Operation of the Trench Option would have the same impacts as the Proposed Project, as discussed in Section 4.3-1.13.2, as operation of the light rail in a trench would not involve subsurface disturbance. The Trench Option would have a **less than significant impact** during operation related to cultural resources.

4.3-2.14 Tribal Cultural Resources

4.3-2.14.1 Construction

Less than Significant Impact with Mitigation. Construction of the Trench Option would have similar impacts as the Proposed Project, as discussed in Section 4.3-1.14.1. Construction of the Trench Option would involve more excavation, which would increase the potential to encounter unknown tribal cultural resources or human remains. Similar to the Proposed Project, mitigation measures MM-CUL-1, MM CUL-2, and MM-CUL-3 would be implemented, and the Trench Option would have a **less than significant impact with mitigation** during construction related to tribal cultural resources.

4.3-2.14.2 Operation

Less Than Significant Impact. Operation of the Trench Option would have the same impacts as the Proposed Project, as discussed in Section 4.3-1.14.2, as operation of the light rail in a trench would not involve subsurface disturbance. The Trench Option would have a **less than significant impact** during operation related to tribal cultural resources.

4.3-2.15 Public Services

4.3-2.15.1 Construction

Less Than Significant Impact. Construction of the Trench Option would have similar impacts as the Proposed Project, discussed in Section 4.3-1.15.1. The construction schedule would be longer, but access to public facilities would be maintained through the duration of construction, per PF-T-1. The Trench Option would have a **less than significant impact** during construction related to public services.

4.3-2.15.2 Operation

Less than Significant Impact. Operation of the Trench Option would have similar impacts as the Proposed Project, discussed in Section 4.3-1.15.2. As the alignment would be in a trench under 170th and 182nd Streets, it would not cause delays to emergency response times. This would not result in changes in impacts to public services. The Trench Option would result in a **less than significant impact** during operation related to public services.

4.3-3 Hawthorne Option

Overall, the impacts during construction and operation of the Hawthorne Option would be similar to the Proposed Project for most environmental topics. However, there are some environmental topics where the Hawthorne Option impacts differ notably from the Proposed Project, such as in the type, location, or severity of impact, and therefore result in different CEQA impact determinations. The following sections describe the impacts for the Hawthorne Option, focusing on areas of difference from the Proposed Project. The Hawthorne Option would have a **significant and unavoidable impact** during construction for noise and vibration, even after the implementation of mitigation measures.

4.3-3.1 Transportation

4.3-3.1.1 Construction

Less than Significant Impact. Construction of the Hawthorne Option would have similar impacts as the Proposed Project, discussed in Section 4.3-1.1.1. However, there would be greater temporary impacts to circulation, as construction would primarily occur within Hawthorne Boulevard, which is a major arterial. However, construction would be staged to minimize disruptions to traffic, and similar to the Proposed Project, PF-T-1 would be implemented, which would ensure that there would be no safety hazards and adequate emergency access would be maintained. The Hawthorne Option would have a **less than significant impact** during construction related to transportation.

4.3-3.1.2 Operation

Less than Significant Impact. Operation of the Hawthorne Option would not affect existing roadways, as it would be entirely grade-separated. However, there would be some permanent changes to the roadway network along Hawthorne Boulevard, such as realigned left turn lanes, new signalization at 179th Street, and a closure of median access at 180th Street. However, these changes would not cause conflicts with plans, create safety hazards, or impair emergency access. The Hawthorne Option would have a **less than significant impact** during operation related to transportation.

4.3-3.2 Land Use and Planning

4.3-3.2.1 Construction

Less than Significant with Mitigation. During construction of the Hawthorne Option at locations where pedestrian crossings are more than 1,000 feet apart, intersection and roadway segment closures for construction work may pose a barrier to pedestrian access across the roadway. This could divide an established community for the duration of construction at some locations for several months, resulting in a potentially significant impact during construction. However, the implementation of Mitigation Measure MM-LU-1, Temporary Crossings would require pedestrian detours around closures, including temporary crosswalks where closed intersections do not have alternate crossings within 1,000 feet. The Hawthorne Option would have a **less than significant impact with mitigation** during construction related to land use and planning, compared to less than significant for the Proposed Project.

4.3-3.2.2 Operation

Less than Significant Impact. Operation of the Hawthorne Option would be on an elevated guideway, fully grade-separated from all roadways, compared to the Proposed Project which would have two at-grade crossings at 170th and 182nd Streets. However, this difference would not result in changes in impacts to land use, and overall, the Hawthorne Option impacts would be similar to the Proposed Project, as discussed in Section 4.3-1.2.2. The Hawthorne Option would have a **less than significant impact** during operation related to land use and planning.

4.3-3.3 Aesthetics

4.3-3.3.1 Construction

Less than Significant Impact with Mitigation. Construction of the Hawthorne Option would have similar impacts as the Proposed Project. As discussed in Section 4.3-1.3.1, if nighttime construction is required, implementation of Mitigation Measure MM-AES-1 would ensure that construction lighting would be shielded and directed downward and away from adjacent residential and commercial areas to reduce potential impacts from temporary construction-related lighting. The Hawthorne Option would result in a **less than significant impact with mitigation** during construction related to aesthetics.

4.3-3.3.2 Operation

Less than Significant Impact. Operation of the Hawthorne Option would be on a longer elevated guideway than the Proposed Project. However, this difference would not result in changes in impacts to aesthetics, and overall, the Hawthorne Option impacts would be similar to the Proposed Project, as discussed in 4.3-1.3.2. The Hawthorne Option would result in a **less than significant impact** during operation related to aesthetics.

4.3-3.4 Air Quality

4.3-3.4.1 Construction

Less than Significant Impact. Construction of the Hawthorne Option would have similar impacts as the Proposed Project, as discussed in Section 4.3-1.4.1. The Hawthorne Option would have a **less than significant impact** during construction related to air quality.

4.3-3.4.2 Operation

Less than Significant Impact. Operation of the Hawthorne Option would have the same impacts as the Proposed Project, as discussed in Section 4.3-1.4.2, as operation of the light rail on an elevated guideway would not change the emissions. The Hawthorne Option would have a slightly higher beneficial effect on air quality, as it would have a slightly higher VMT reduction. The Hawthorne Option would have a **less than significant impact** during operation related to air quality.

4.3-3.5 Greenhouse Gas Emissions

4.3-3.5.1 Construction

Less than Significant Impact. Construction of the Hawthorne Option would have similar impacts as the Proposed Project, as discussed in Section 4.3-1.5.1. The Hawthorne Option would generate fewer GHG emissions than the Proposed Project, as there would be reduced haul truck activities, but the difference would not result in different impacts. The Hawthorne Option would have a **less than significant impact** during construction related to GHG emissions.

4.3-3.5.2 Operation

Less than Significant Impact. Operation of the Hawthorne Option would have the same impacts as the Proposed Project, as discussed in Section 4.3-1.5.2, as operation of the light rail on an elevated guideway would not change the emissions generated by the light rail system. The Hawthorne Option would have a **less than significant impact** during operation related to GHG emissions.

4.3-3.6 Noise and Vibration

Noise

4.3-3.6.1 Construction

Significant and Unavoidable Impact. Construction of the Hawthorne Option would use similar equipment as the Proposed Project, and the length of construction would be approximately the same. There would be a significant impact during construction, similar to the Proposed Project as discussed in Section 4.3-1.6.1, and mitigation measure MM-NOI-1 would be required. Even with implementation of mitigation measure MM-NOI-1, in some instances, the FTA construction impact criteria may still be exceeded. The Hawthorne Option would have a **significant and unavoidable impact** during construction related to noise.

4.3-3.6.2 Operation

Less than Significant Impact with Mitigation. Operation of the Hawthorne Option would consist of the light rail on an elevated guideway grade-separated from all roadways. The source of noise would be above buildings, which results in different FTA criteria for noise analysis, and the operating speeds would be higher than the Proposed Project, which would generate louder noise from the light rail train pass-bys. Unlike the Proposed Project, there would not be any freight track relocations within the Hawthorne Option segment, and therefore there would not be impacts associated from freight train warning horns; this would result in fewer noise impacts overall for the Hawthorne Option. Wheel squeal may occur for the Hawthorne Option in two areas where there are track curves with a radius of less than 1,000 feet, which would be mitigated by Mitigation Measure MM-NOI-5. The Hawthorne Option would result in a **less than significant impact with mitigation** during operation related to noise, compared to significant and unavoidable for the Proposed Project. However, the Hawthorne Option would not construct the features along the Metro ROW at-grade crossings that would allow the cities to establish a quiet zone, and the existing noise associated with the freight train would remain.

Vibration

4.3-3.6.3 Construction

Significant and Unavoidable Impact. Construction of the Hawthorne Option would use similar equipment as the Proposed Project (e.g., vibratory roller), and result in significant damage and annoyance vibration impacts. The number of impacts would be substantially fewer, as the alignment is not located near as many sensitive receivers as the Proposed Project. Mitigation Measure MM-VIB-1 would prepare a Vibration Control Plan, and MM-VIB-2 would limit the use of vibratory rollers and vibratory impact pile drivers near residential structures and sensitive uses. With implementation of these mitigation measures, the Hawthorne Option would have a **less than significant impact with mitigation** during construction related to vibration for damage.

Similar to the Proposed Project, annoyance impacts would remain, and the Hawthorne Option would have a **significant and unavoidable impact** during construction related to vibration for annoyance.

4.3-3.6.4 Operation

Less than Significant Impact. Operation of the Hawthorne Option would result in different vibration impacts, compared to the Proposed Project. The Hawthorne Option track alignment would have an increased distance from residential structures and sensitive land uses, as the tracks would be on an elevated structure. The elevated structure itself would also provide some vibration reduction. The medium that the vibration travels through are the columns supporting the elevated rail track, and the vibration thresholds around each column do not intersect with any sensitive structures or land uses. The Hawthorne Option would therefore have a **less than significant impact** during operation related to vibration, compared to less than significant with mitigation for the Proposed Project.

4.3-3.7 Biological Resources

4.3-3.7.1 Construction

Less Than Significant Impact with Mitigation. Construction of the Hawthorne Option would have similar impacts as the Proposed Project, discussed in Section 4.3-1.7.1. One difference is the Hawthorne Option doesn't intersect with park areas, though it does include areas with trees that are not special-status. Similar to the Proposed Project, mitigation measures MM-BIO-1, MM-BIO-2, MM-BIO-3, and MM-BIO-4 would be implemented, and the Hawthorne Option would have a **less than significant impact with mitigation** during construction related to biological resources.

4.3-3.7.2 Operation

Less Than Significant Impact with Mitigation. Operation of the Hawthorne Option would have the same impacts as the Proposed Project, as discussed in Section 4.3-1.7.2, as operation of the light rail on an elevated guideway would not change the types of impacts to biological resources. Similar to the Proposed Project, MM-BIO-1 would be implemented to ensure no degradation of southern tarplant habitat near the Torrance TC during maintenance. The Trench Option would have a **less than significant impact with mitigation** during operation related to biological resources.

4.3-3.8 Geology, Soils, and Paleontological Resources

4.3-3.8.1 Construction

Less Than Significant Impact with Mitigation. Construction of the Hawthorne Option would have similar impacts as the Proposed Project, as discussed in Section 4.3-1.8.1. Similar to the Proposed Project, the Hawthorne Option would have a less than significant impact related to geology and soils. With implementation of MM-GEO-1, and the Hawthorne Option would have a **less than significant impact with mitigation** during construction related to paleontological resources.

4.3-3.8.2 Operation

Less Than Significant Impact. Operation of the Hawthorne Option would have the same impacts as the Proposed Project, as discussed in Section 4.3-1.8.2, as operation of the light rail in a trench would not involve subsurface disturbance. The Hawthorne Option would have a **less than significant impact** during operation related to geology, soils, and paleontological resources.

4.3-3.9 Hazards and Hazardous Materials

4.3-3.9.1 Construction

Less than Significant Impact. Construction of the Hawthorne Option would require more property acquisitions than the Proposed Project to construct the elevated guideway, which means more demolition of structures and a greater rick of encountering demolition waste. However, the Hawthorne Option would comply with the same regulatory control measures as described for the Proposed Project to deal with hazardous waste generated during construction, and would also implement PF-HHM-1 and PF-HHM-2. The amount of contaminated soil expected to be excavated would be significantly lower than the Proposed Project, as would the risk of encountering oil and gas pipelines, as the Hawthorne Option segment is not located within the Metro ROW. The Hawthorne Option would also have a lesser impact related to RECs, as construction would occur near fewer REC sites compared to the Proposed Project. However, the Hawthorne Option would have a greater risk of disrupting municipal buried utilities, such as sewer or domestic water lines, which may result in a release of contaminated water. Implementation of PF-US-1 would ensure coordination with utility owners to determine utility locations. The Hawthorne Option would have a **less than significant impact** during construction related to hazards and hazardous materials.

4.3-3.9.2 Operation

Less Than Significant Impact. Operation of the Hawthorne Option would have the same impacts as the Proposed Project, as discussed in Section 4.3-1.9.2, as operation of the light rail on an elevated guideway would not change the types of materials that may be used during maintenance or involve subsurface disturbance. The Hawthorne Option would have a **less than significant impact** during operation related to hazards and hazardous materials.

4.3-3.10 Hydrology and Water Quality

4.3-3.10.1 Construction

Less than Significant Impact. Construction of the Hawthorne Option would have similar impacts as the Proposed Project, as discussed in Section 4.3-1.10.1. One difference is that the Hawthorne Option would reroute several pieces of storm drain infrastructure, which could result in temporary disruption of inflows and a potential to introduce pollutants to inflows. Similar to the Proposed Project, PF-HWQ-1 and PF-HWQ-2 would be implemented, which would ensure compliance with all regulatory requirements and employ BMPs during construction. The Hawthorne Option would implement PF-HWQ-5, which would capture rerouted stormwater inflows, and treated and discharge per all regulatory requirements. The Hawthorne Option would have a **less than significant impact** during construction related to hydrology and water quality.

4.3-3.10.2 Operation

Less than Significant Impact. Operation of the Hawthorne Option would have similar impacts as the Proposed Project, as discussed in Section 4.3-1.10.2. The Hawthorne Option segment would result in a greater increase in impervious areas, compared to the Proposed Project. However, similar to the Proposed Project, the Hawthorne Option would implement PF-HWQ-6, which would retain stormwater runoff on site. The Hawthorne Option would have a **less than significant impact** during operation related to hydrology and water quality.

4.3-3.11 Utilities and Service Systems

4.3-3.11.1 Construction

Less than Significant Impact. Construction of the Hawthorne Option would have similar impacts as the Proposed Project, as discussed in Section 4.3-1.11.1. However, different utilities would need to be relocated, including an additional sewer line and several pieces of storm drainage infrastructure. Similar to the Proposed Project, the Hawthorne Option would implement PF-US-1 and PF-US-2, which would ensure coordination with utility and service providers, which would minimize interruptions to services. The Hawthorne Option would have a **less than significant impact** during construction related to utilities and service systems.

4.3-3.11.2 Operation

Less than Significant Impact. Operation of the Hawthorne Option would have similar impacts as the Proposed Project, as discussed in Section 4.3-1.11.2. During operation, the Hawthorne Option may result in increased stormwater runoff, as it would have a greater impervious area. Similar to the Proposed Project, the Trench Option would implement PF-HWQ-6, which would ensure that stormwater would be retained onsite. The Hawthorne Option would have a **less than significant impact** during operation related to utilities and service systems.

4.3-3.12 Energy

4.3-3.12.1 Construction

Less than Significant Impact. Construction of the Hawthorne Option would have similar impacts as the Proposed Project, as discussed in Section 4.3-1.12.1. The construction schedule would be the same, and approximately the same amount of fuel would be used for construction vehicles and equipment. The Hawthorne Option would have a **less than significant impact** during construction related to energy.

4.3-3.12.2 Operation

Less than Significant Impact. Operation of the Hawthorne Option would have the same impacts as the Proposed Project, as discussed in Section 4.3-1.12.2, as operation of the light rail in a trench would not change the energy consumption requirements. The Hawthorne Option would have a **less than significant impact** during operation related to energy.

4.3-3.13 Cultural Resources

4.3-3.13.1 Construction

Less than Significant Impact with Mitigation. Construction of the Hawthorne Option could affect three historical resources located along Hawthorne Boulevard. However, these three resources are not identified as sensitive receptors for noise impacts, and there would not be vibration damage impacts. Construction activities would not alter the immediate surroundings so that the historical significance would be materially impaired. The Hawthorne Option would have a less than significant impact to historical resources. Impacts to unknown archaeological resources or human remains would be similar to the Proposed Project, as discussed in Section 4.3-1.13.1. Similar to the Proposed Project, mitigation measures MM-CUL-1, MM CUL-2, and MM-CUL-3 would be implemented, and the Hawthorne Option would have a **less than significant impact with mitigation** during construction related to cultural resources.

4.3-3.13.2 Operation

Less Than Significant Impact. Operation of the Hawthorne Option would not impair the historical resources' character defining features or historic integrity. The visual, audible, and atmospheric intrusions on the immediate surroundings of the historical resources would not substantially change the existing characteristics of the immediate surroundings or alter in an adverse manner any of the characteristics of the historical resources that convey historical significance. Impacts to unknown archaeological resources and human remains would be the same as the Proposed Project, as discussed in Section 4.3-1.13.2, as operation of the light rail on an elevated guideway would not involve subsurface disturbance. The Hawthorne Option would have a **less than significant impact** during operation related to cultural resources.

4.3-3.14 Tribal Cultural Resources

4.3-3.14.1 Construction

Less than Significant Impact with Mitigation. Construction of the Hawthorne Option would have similar impacts as the Proposed Project, as discussed in Section 4.3-1.14.1. Similar to the Proposed Project, mitigation measures MM-CUL-1, MM CUL-2, and MM-CUL-3 would be implemented, and the Hawthorne Option would have a **less than significant impact with mitigation** during construction related to tribal cultural resources.

4.3-3.14.2 Operation

Less Than Significant Impact. Operation of the Hawthorne Option would have the same impacts as the Proposed Project, as discussed in Section 4.3-1.14.2, as operation of the light rail on an elevated guideway would not involve subsurface disturbance. The Hawthorne Option would have a **less than significant impact** during operation related to tribal cultural resources.

4.3-3.15 Public Services

4.3-3.15.1 Construction

Less Than Significant Impact. Construction of the Hawthorne Option would have similar impacts as the Proposed Project, discussed in Section 4.3-1.15.1. The Hawthorne Option would have a **less than significant impact** during construction related to public services.

4.3-3.15.2 Operation

Less than Significant Impact. Operation of the Hawthorne Option would have similar impacts as the Proposed Project, discussed in Section 4.3-1.15.2. As the alignment would be on an elevated guideway and grade-separated from all streets, it would not cause delays to emergency response times, and this would not result in changes in impacts to public services. The Hawthorne Option would result in a **less than significant impact** during operation related to public services.

4.4 ALTERNATIVES TO THE PROPOSED PROJECT

CEQA, the CEQA Guidelines, and related court cases do not specify a precise number of alternatives to be evaluated in an EIR. Rather, "the range of alternatives required in an EIR is governed by the rule of reason that sets forth only those alternatives necessary to permit a reasoned choice." At the same time, CEQA Guidelines Section 15126.6(b) requires that "...the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project" and Section 15126.6(f) requires that, "[t]he alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project." Accordingly, alternatives that would not address potentially significant effects are not considered herein. The CEQA Guidelines require that a No Project Alternative must be included in the EIR.

Alternatives should be selected based on their ability to attain all or most of the basic objectives of the project, while reducing the project's potentially significant environmental effects. Section 15126.6(c) of the CEQA Guidelines states that "...[t]he EIR should briefly describe the rationale for selecting alternatives to be discussed [and]...shall include sufficient information to allow meaningful evaluation, analysis and comparison with the proposed project." The feasibility of the alternatives is another consideration in the selection of alternatives. The CEQA Guidelines, Section 15126.6(f)(1) states that "among the factors that may be considered when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations [and] jurisdictional boundaries. The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making." Alternatives that are considered remote or speculative, or whose effects cannot be reasonably predicted, do not require consideration.

4.4-1 No Project Alternative

The No Project Alternative is required by CEQA Guidelines Section 15126.6(e)(2) and assumes that the Proposed Project would not be implemented by Metro. No additional light rail tracks or stations would be added to the Metro C Line (Green) south of its existing terminus at the Redondo Beach (Marine) Station as part of the No Project Alternative. Limited BNSF freight traffic (one to two trains a day) would continue to operate on the existing freight tracks within the Metro ROW under the No Project Alternative, and safety improvements associated with the Proposed Project's at-grade crossings would not be added. The No Project Alternative is based on a review of local general plans, capital improvement programs, and regional transportation plans, including the Southern California Association of Government (SCAG) 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and Metro's 2020 Long-Range Transportation Plan (LRTP). The No Project Alternative is

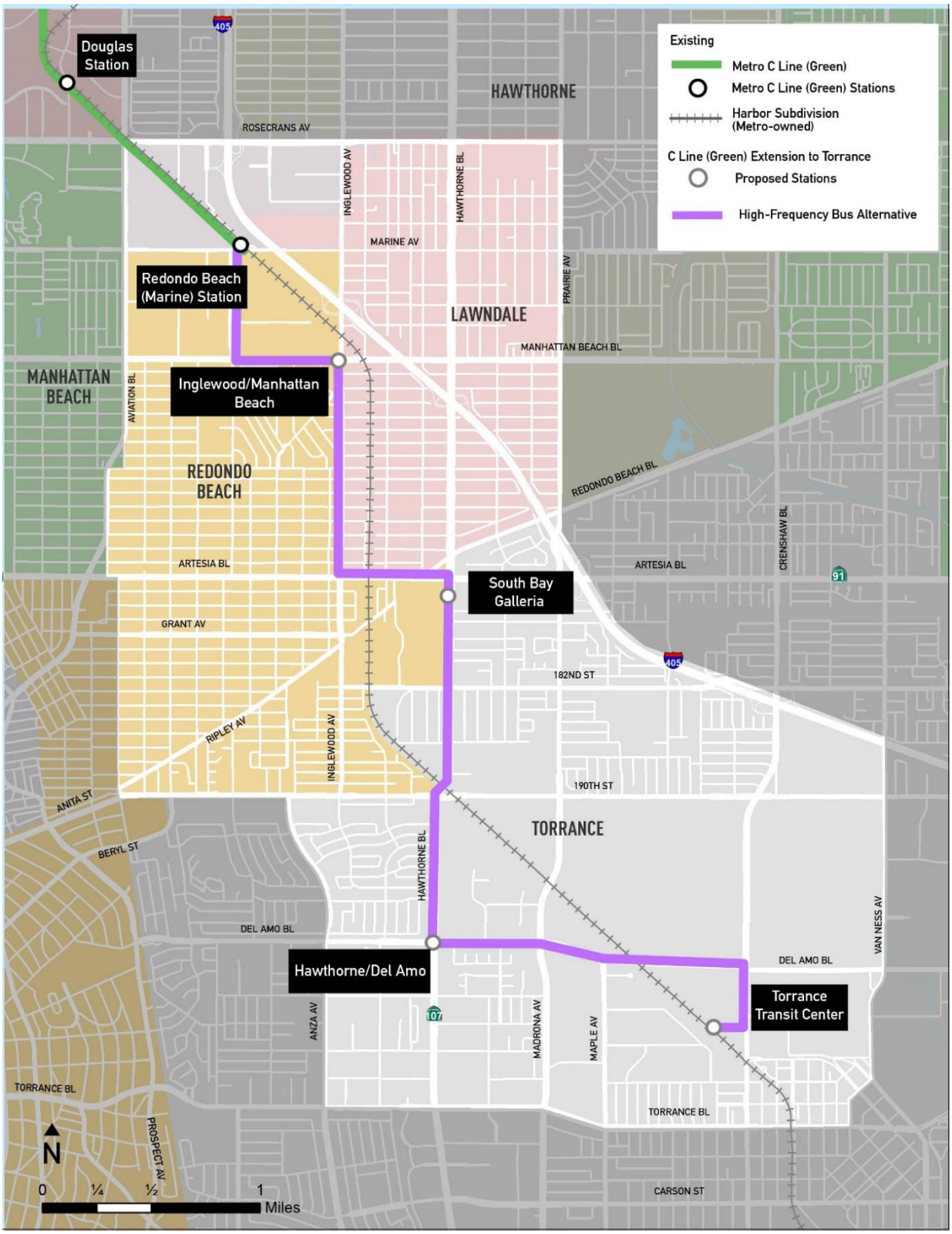
evaluated in the context of the existing transportation facilities in the South Bay and assumes development of other funded and programmed capital transportation improvements and/or transit and highway operational enhancements that are reasonably foreseeable. Such projects include the Metro K Line (Crenshaw/LAX), the LAX/Metro Transit Center Station, the Los Angeles International Airport (LAX) Automated People Mover, Metro's NextGen Bus Improvements, and all projects included in Section 3.0, Introduction that are evaluated under the cumulative analysis.

4.4-2 High-Frequency Bus Alternative

The High-Frequency Bus (HFB) Alternative would implement a rapid bus service instead of a light rail extension. The bus line would be a local express service with some bus rapid transit (BRT) characteristics. The service may be as frequent as that proposed for light rail, though its ability to attract as much ridership would be less due to less travel time savings and amenities. The buses would operate in mixed-flow traffic with transit signal priority systems, which give priority to transit vehicles at signalized intersections by giving an early green signal or holding a green signal. There would be a total of four bus stops between the existing Redondo Beach (Marine) Station and Torrance TC, compared to two light rail stations in the Proposed Project (not including the existing Redondo Beach (Marine) Station and Torrance TC Station). Travel times from end to end would be about 25 minutes, which is faster than local bus service (approximately one hour, with a transfer), but slower than the travel times expected from the Proposed Project (approximately seven minutes). Stops would be located at existing bus stops or improved relocated stops. Physical improvements would be limited to new signs at bus stops, shelters as well with solar lighting, benches, and trash receptacles, as a minimum level of bus stop amenities. Where practical, the HFB Alternative may include curb extensions, elimination of street parking, or other improvements to the sidewalk area near new bus stops. Construction of the HFB Alternative would be limited to existing roadways and sidewalks, to implement potential minor improvements such as restriping, curb extensions, or bus stop amenities. Like the Proposed Project, this Alternative would not require a maintenance facility, as buses would be maintained at existing Metro facilities. Buses would have low-floor design to allow for faster and easier boarding and alighting.

A potential route for the HFB Alternative for purposes of evaluation is depicted in Figure 4.4-1.

Figure 4.4-1. Potential Route and Stops for the HFB Alternative

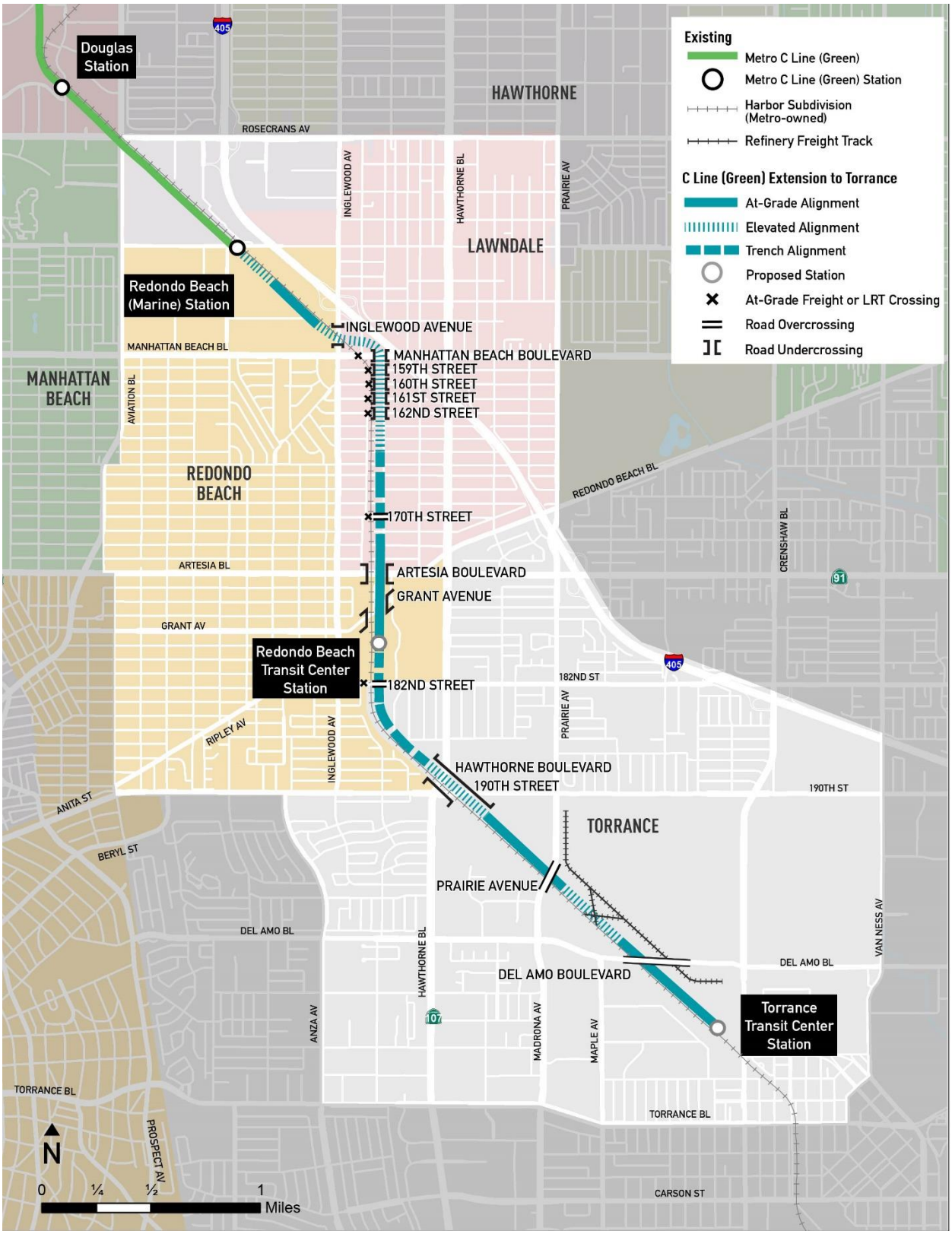


Source: STV, 2022

4.4-3 170th/182nd Grade-Separated Light Rail Transit Alternative

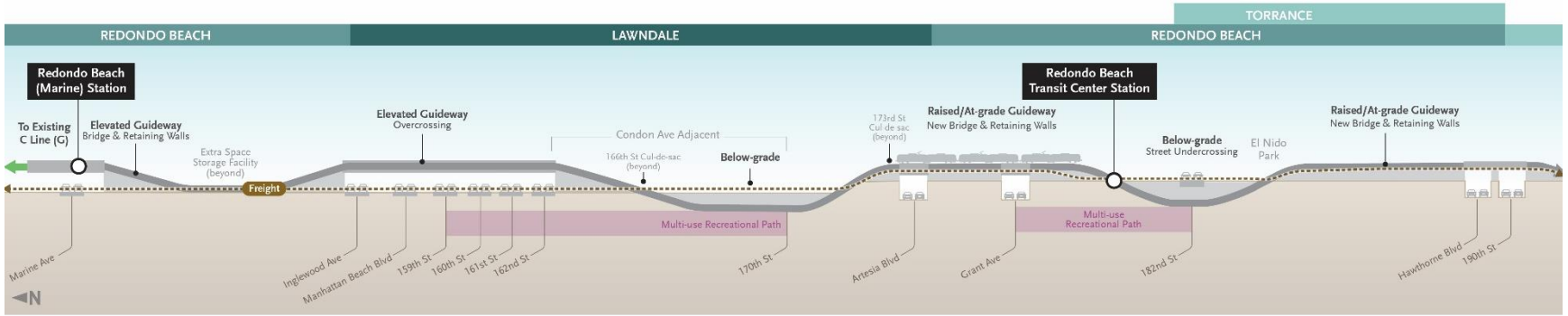
The 170th/182nd Grade-Separated Light Rail Transit Alternative would be identical to Proposed Project, except the light rail would be grade-separated from the roadways at 170th Street and 182nd Street, with the light rail tracks located below street level in a trench to reduce significant noise impacts during operations and significant vibration impacts during construction. Between 170th Street and 182nd Street, the alternative would be identical to the Trench Option, including the Redondo Beach TC Station configuration. All other aspects of the project, including ancillary facilities, track geometry, and vertical configuration would be the same as the Proposed Project. Figure 4.4-2 shows an overview of the alignment, and Figure 4.4-3 shows the vertical profile of the 170th/182nd Grade-Separated Light Rail Transit Alternative and all the roadways that it would cross. This Alternative would be entirely grade-separated with six over-crossings in the north (between Inglewood Ave and 162nd Street) and two below-grade crossings at 170th and 182nd Streets. Freight crossings would remain at-grade as they are today, and PF-NV-1 (described in more detail in Section 3.6, Noise and Vibration) would be implemented to include all the safety infrastructure and improvements that are anticipated to be needed to allow for the local jurisdictions to establish a quiet zone. Construction activities for the 170th/182nd Grade-Separated Light Rail Transit Alternative would be generally the same as the Proposed Project, except more excavation would be required to construct the trench areas, and the construction schedule would be slightly longer.

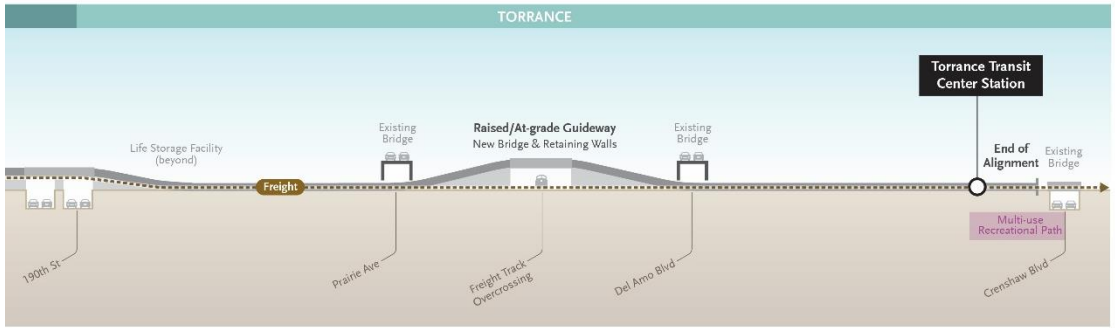
Figure 4.4-2. Overview of 170th/182nd Grade-Separated LRT Alternative



Source: STV, 2022

Figure 4.4-3. 170th/182nd Grade-Separated Light Rail Transit Alternative – Vertical Profile Diagram





Note: Transition to vertical profile not to scale

PROPOSED
Station
Alignment

Source: Cityworks Design, 2022
Not to scale.

4.5 ALTERNATIVES ANALYSIS

Under CEQA Guidelines Section 15126.6(d), each alternative is evaluated in sufficient detail to allow meaningful evaluation, analysis, and comparison with the Proposed Project (including the route options). The alternatives analysis addresses the same environmental topics that were evaluated in Chapter 3, Environmental Impacts. The following sections describe the impacts of the No Project Alternative, HFB Alternative, and 170th/182nd Grade-Separated Light Rail Transit Alternative.

4.5-1 Analysis of the No Project Alternative

To compare impacts of the No Project Alternative to the Proposed Project, the RSAs for the No Project Alternative for the topics of analysis are the same as that of the Proposed Project, defined in each relevant section of Chapter 3, Environmental Impacts.

4.5-1.1 Transportation

4.5-1.1.1 Construction

Less than Significant Impact. The No Project Alternative would not construct a new light rail line, and therefore would not include physical changes during construction that could affect the transportation system. There would not be construction activities that would increase vehicle trips, create hazards, or affect emergency access. The No Project Alternative would have **less than significant impact** during construction related to transportation.

4.5-1.1.2 Operation

Significant and Unavoidable Impact. The No Project Alternative includes minor roadway changes proposed in the 2020-2045 SCAG RTP/SCS, but there would not be a notable change in operating conditions on roadways. However, there would be a conflict with programs and plans addressing the circulation system. The Proposed Project is included within Metro's LRTP, with funding programmed through Measure M, as well as within the City of Redondo Beach General Plan Circulation Element and the 2020-2045 SCAG RTP/SCS. Therefore, the No Project Alternative would have a **significant and unavoidable impact** during operation related to consistency with transportation plans.

4.5-1.2 Land Use and Planning

4.5-1.2.1 Construction

Less than Significant Impact. The No Project Alternative would not construct a new light rail line, and therefore would not include physical changes associated with the Proposed Project that could affect land use and planning. The No Project Alternative would result in a **less than significant impact** during construction related to land use and planning.

4.5-1.2.2 Operation

Significant and Unavoidable Impact. The No Project Alternative would not operate a new light rail line, and therefore would not result in a physical division of a community. The No Project Alternative would not be consistent with the 2020-2045 SCAG RTP/SCS or with the City of Redondo Beach's General Plan Circulation Element, which plan for the extension of the Metro C Line (Green). The No Project Alternative would result in a **significant and unavoidable impact** during operation related to land use and planning.

4.5-1.3 Aesthetics

4.5-1.3.1 Construction

Less than Significant Impact. The No Project Alternative would not construct a new light rail line, and therefore would not include physical changes associated with the Proposed Project that could affect scenic resources or state scenic highways, conflict with local land use plans regarding scenic quality, or create glare. Other development would continue, thus causing temporary construction disruptions to the viewshed; however, it would be to a lesser degree than the Proposed Project. The No Project Alternative would result in a **less than significant impact** during construction related to aesthetics.

4.5-1.3.2 Operation

Less than Significant Impact. The No Project Alternative would not operate a new light rail line; however, the freight line would continue to operate, and the tracks would remain within the Metro ROW, maintaining a similar railroad/industrial view along much of the corridor; however, this view would be more similar to the existing condition than the Proposed Project. Therefore, the No Project Alternative would result in a **less than significant impact** during operation related to aesthetics.

4.5-1.4 Air Quality

4.5-1.4.1 Construction

No Impact. The No Project Alternative would not construct a new light rail line, and therefore would not include construction activities that would increase criteria pollutants or emissions, or exposure sensitive populations to concentrated pollutants. The No Project Alternative would have **no impact** during construction related to air quality.

4.5-1.4.2 Operation

Significant and Unavoidable Impact. The No Project Alternative would have a less than significant impact with respect to local pollutant concentrations. However, the C Line (Green) extension was assumed to be implemented and was included in the transportation projects of the 2020-2045 RTP/SCS. Under the No Project Alternative, the project would not be implemented. Therefore, the No Project Alternative would have a **significant and unavoidable impact** with respect to consistency with applicable air quality plans.

4.5-1.5 Greenhouse Gas Emissions

4.5-1.5.1 Construction

No Impact. The No Project Alternative would not construct a new light rail line, and therefore would not include construction activities that would increase GHG emissions. The No Project Alternative would have **no impact** during construction related to GHG emissions.

4.5-1.5.2 Operation

Significant and Unavoidable Impact. As compared to existing conditions, the No Project Alternative would result in a decrease in operational GHG emissions over time. This reduction reflects reductions associated with improvements to passenger vehicle emission control technologies expected in the region irrespective of the Proposed Project offsetting increases associated with traffic growth.

Relative to future (2042) conditions, there would be no increase in GHG emissions under the No Project Alternative. However, the Project is a component of 2020-2045 RTP/SCS, and the No Project Alternative would not be consistent with the RTP/SCS. The No Project Alternative would have a **significant and unavoidable impact** during operation related to GHG.

4.5-1.6 Noise and Vibration

4.5-1.6.1 Construction

Less than Significant Impact. The No Project Alternative would not construct a new light rail line, and therefore would not include physical changes associated with the Proposed Project that could affect noise and vibration. Future levels of noise and vibration are anticipated to be similar to existing conditions as the regular construction of similar scale development as in the past would continue. The No Project Alternative would result in a **less than significant impact** during construction related to noise and vibration.

4.5-1.6.2 Operation

Less than Significant Impact. The No Project Alternative would not operate a new light rail line, and therefore would not cause a new noise or vibration source beyond existing conditions. The existing transportation network and land use developments would continue to operate and generate operational noise and transportation improvements defined in Section 3.0, Introduction would increase the ambient noise and vibration. This would be to a lesser degree than with the Proposed Project, and the No Project Alternative would result in a **less than significant impact** during operation related to noise and vibration. However, the No Project Alternative would not include the features at at-grade crossings along the Metro ROW that would allow for cities to establish a quiet zone along the Metro ROW, which would have eliminated one of the primary sources of noise from freight trains, the horn. In most cases, implementation of the quiet zone under the Proposed Project would have reduced freight noise below existing conditions. Under the No Project Alternative, the freight noise would be higher compared to the Proposed Project.

4.5-1.7 Biological Resources

4.5-1.7.1 Construction

Less than Significant Impact. The No Project Alternative would not construct a new light rail line, and therefore would not include physical changes associated with the Proposed Project that could directly or indirectly affect biological resources. Other projects would be built (like those described in Section 3.0, Introduction), resulting in potential impacts to biological resources; however, due to the built-out nature of the environment and the mitigations implemented by these projects, the No Project Alternative would result in a **less than significant impact** related to biological resources.

4.5-1.7.2 Operation

Less than Significant Impact. The No Project Alternative would not operate a new light rail line that could impact biological resources. Other projects would operate, resulting in potential impacts to biological resources; however, due to the built-out nature of the environment and the mitigations implemented by these projects, and therefore would result in a **less than significant impact** related to biological resources.

4.5-1.8 Geology, Soils, and Paleontological Resources

4.5-1.8.1 Construction

Less than Significant Impact. The No Project Alternative would not construct a new light rail line, and therefore would not include physical changes associated with the Proposed Project that could affect geology, soils, and paleontological resources. Other projects would be constructed (like those described in Section 3.0, Introduction) and potentially impact geology, soils, and paleontological resources. However, these would be expected to adhere to construction practices or mitigation measures that

would not result in impacts related to earthquake faults, soil erosion, unstable soils, expansive soils, or destruction of paleontological resources. The No Project Alternative would result in a **less significant impact** during construction related to geology, soils, and paleontological resources.

4.5-1.8.2 Operation

Less than Significant Impact. The No Project Alternative would not operate a new light rail line, and therefore would not include physical changes associated with the Proposed Project that could affect geology, soils and paleontological resources. Other projects would operate and potentially impact geology, soils, and paleontological resources. However, these would be expected to adhere to building and seismic codes, or mitigation measures, and therefore would result in a **less than significant impact** related to geology, soils, and paleontological resources.

4.5-1.9 Hazards and Hazardous Materials

4.5-1.9.1 Construction

No Impact. The No Project Alternative would not construct a new light rail line, and therefore would not include physical changes associated with the Proposed Project that could cause impacts related to hazards and hazardous materials. There would not be any ground disturbance or excavation that could encounter contaminated groundwater or soil, demolition of existing structures that could release hazardous materials, or impacts on potential RECs. The No Project Alternative would have **no impact** during construction related to hazards and hazardous materials.

4.5-1.9.2 Operation

No Impact. The No Project Alternative would not operate a new light rail line, and therefore would not include physical changes associated with the Proposed Project that could cause impacts related to hazards and hazardous materials. There would not be any ground disturbance or use of hazardous materials associated with light rail maintenance. The No Project Alternative would have **no impact** during operation related to hazards and hazardous materials.

4.5-1.10 Hydrology and Water Quality

4.5-1.10.1 Construction

No Impact. The No Project Alternative would not construct a new light rail line, and therefore would not include physical changes associated with the Proposed Project that could affect hydrology or water quality. There would not be any construction activities that could result in impacts to surface or groundwater resources, and existing drainage facilities would be unchanged. The No Project Alternative would have **no impact** during construction related to hydrology and water quality.

4.5-1.10.2 Operation

No Impact. The No Project Alternative would not operate a new light rail line, and therefore would not include physical changes associated with the Proposed Project that could affect hydrology or water quality. There would not be any new pollutants to affect surface or groundwater. There would not be an increase in impervious surfaces, and existing drainage patterns and runoff quantities would remain the same. The No Project Alternative would have **no impact** during operation related to hydrology and water quality.

4.5-1.11 Utilities and Service Systems

4.5-1.11.1 Construction

No Impact. The No Project Alternative would not construct a new light rail line, and therefore would not increase demand for utilities and service systems. The No Project Alternative would have **no impact** during construction related to utilities and service systems.

4.5-1.11.2 Operation

No Impact. The No Project Alternative would not operate a new light rail line, and therefore would not increase demand for utilities or service systems. The No Project Alternative would have **no impact** during operation related to utilities and service systems.

4.5-1.12 Energy

4.5-1.12.1 Construction

No Impact. The No Project Alternative would not construct a new light rail line, and therefore would not include physical changes associated with the Proposed Project that could affect utilities and service systems. There would not be a consumption of energy resources associated with the construction of light rail. The No Project Alternative would have **no impact** during construction related to energy.

4.5-1.12.2 Operation

Significant and Unavoidable. The No Project Alternative would not operate a new light rail line, and therefore would not consume energy resources. However, the No Project Alternative would not contribute to a regional VMT reduction, and therefore it would not decrease the consumption of energy used by private automobile trips that would have shifted to light rail, as assumed in the 2020-2045 SCAG RTP/SCS. The No Project Alternative would have a **significant and unavoidable impact** during operation related to consistency with energy plans.

4.5-1.13 Cultural Resources

4.5-1.13.1 Construction

Less than Significant Impact. The No Project Alternative would not construct a new light rail line, and therefore would not include physical changes that could directly or indirectly affect cultural resources. Other projects would be constructed (like those described in the introduction to Chapter 3, Environmental Impacts) and could destroy or otherwise impact cultural resources, they would be expected to mitigate to a similar extent as the Proposed Project. The No Project Alternative would result in a **less than significant impact** during construction related to cultural resources.

4.5-1.13.2 Operation

Less than Significant Impact. The No Project Alternative would not operate a new light rail lin. Other projects would operate and could impact cultural resources, but they would be expected to mitigate to a similar extent as the Proposed Project; therefore, the No Project Alternative would result in a **less than significant impact** during operation related to cultural resources.

4.5-1.14 Tribal Cultural Resources

4.5-1.14.1 Construction

Less than Significant Impact. The No Project Alternative would not construct a new light rail line, and therefore would not include physical changes that could affect tribal cultural resources. Other projects would be constructed (like those described in Section 3.0, Introduction) and could destroy or otherwise

impact cultural resources, but they would be expected to be mitigated to a similar extent as the Proposed Project. The No Project Alternative would result in a **less than significant impact** during construction related to tribal cultural resources.

4.5-1.14.2 Operation

Less than Significant Impact. The No Project Alternative would not operate a new light rail line. Other projects would operate and could impact cultural resources, but they would be expected to be mitigated to a similar extent as the Proposed Project; therefore, the No Project Alternative would result in a **less than significant impact** during operation related to tribal cultural resources.

4.5-1.15 Public Services

4.5-1.15.1 Construction

No Impact. The No Project Alternative would not construct a new light rail line, and therefore would not include physical changes that could affect public services or recreational facilities. The conditions of existing public service resources and recreational facilities are not expected to change except to accommodate anticipated growth. The No Project Alternative would result in a **no impact** during construction related to public services.

4.5-1.15.2 Operation

No Impact. The No Project Alternative would not operate a new light rail line, and therefore would not include physical changes that could affect public services or recreational facilities. The conditions of existing public service resources and recreational facilities are not expected to change, except as planned by local jurisdictions to accommodate expected growth. The No Project Alternative would result in **no impact** during operation related to public services.

4.5-2 Analysis of the High-Frequency Bus Alternative

Construction of the HFB Alternative would be limited to existing roadways and sidewalks, to implement potential minor improvements such as restriping, curb extensions, or bus stop amenities. Operation of the HFB Alternative would be akin to bus service currently operated in the area, but with greater speed and frequency. The following sections discuss the construction and operational impacts of the HFB Alternative.

4.5-2.1 Transportation

4.5-2.1.1 Construction

Less than Significant Impact. Construction of the HFB Alternative would require changes to the roadway, which would affect circulation. However, the changes would be minor and limited to restriping or curb extensions, and they would not result an increase in hazards or result in inadequate emergency access. Construction of the HFB Alternative would not increase VMT. Therefore, the HFB Alternative would have a **less than significant impact** during construction related to transportation.

4.5-2.1.2 Operation

Less Than Significant Impact. Operation of the HFB Alternative would involve additional buses running within the existing transportation network, which would not result in impacts related to VMT, circulation, or hazards. The extension of Metro C Line's light rail service is included within Metro's LRTP, with funding programmed through Measure M, as well as within the City of Redondo Beach General Plan Circulation Element and the 2020-2045 SCAG RTP/SCS. Although the HFB Alternative is not an extension of the light rail line, it would nevertheless provide a transit option connecting the existing C Line terminus at the Redondo Beach (Marine) Station to the Torrance TC, with stops along the way. In

this way, the HFB Alternative would fulfill the intent of the applicable transportation plans, although to a lesser extent than the Proposed Project. Overall, the HFB Alternative would have a **less than significant impact** during operation related to consistency with transportation plans.

4.5-2.2 Land Use and Planning

4.5-2.2.1 Construction

Less than Significant Impact. During construction, the HFB Alternative would primarily require physical changes to roadways through Lawndale, Redondo Beach, and Torrance. This could include temporary road closures shorter in duration than those associated with the Proposed Project, particularly on Hawthorne Boulevard, but could include temporary closures on other roadways along the route (see Figure 4.4-1) other than Hawthorne Boulevard to complete the connection between the Redondo Beach (Marine) Station and the Torrance Transit Center. However, construction efforts would generally be limited to restriping and curb extensions, which do not typically last for more than a week in a single location and are localized and are thus unlikely to divide an established community or conflict with local plans and policies. The HFB Alternative would result in a **less than significant impact** during construction related to land use and planning.

4.5-2.2.2 Operation

Less Than Significant Impact. Operation of the HFB Alternative would not result in a physical division of a community. Compared to the Proposed Project, the HFB Alternative would be less consistent with the 2020-2045 SCAG RTP/SCS and with the City of Redondo Beach's General Plan, both of which plan for the extension of the C Line (Green). Nevertheless, the HFB Alternative would provide a high-frequency transit line that connects the existing C Line (Green) terminus at the Redondo Beach (Marine) Station with the Torrance TC, with stops along the way. Therefore, the HFB Alternative is generally consistent with local plans' goals for circulation improvements, community access and development, and air pollutant emissions and GHG reductions. The HFB Alternative would therefore result in a **less than significant impact** during operation related to land use and planning.

4.5-2.3 Aesthetics

4.5-2.3.1 Construction

Less than Significant Impact. Construction for the HFB Alternative would not require intensive activity that would affect scenic resources or state scenic highways, or conflict with local land use plans regarding scenic quality. Construction equipment, vehicles, signs, staging, and personnel would present temporary disruptive visual elements, but construction activities are temporary in nature. Construction activities are not anticipated to result in a substantial source of light or create glare. The HFB Alternative would result in a **less than significant impact** during construction related to aesthetics.

4.5-2.3.2 Operation

Less than Significant Impact. Operation of the HFB Alternative would involve additional buses running within the existing transportation network and would not impact scenic resources or state scenic highways, conflict with local land use plans regarding scenic quality, or create a source of glare. The HFB Alternative would result in a **less than significant impact** during operations related to aesthetics.

4.5-2.4 Air Quality

4.5-2.4.1 Construction

Less than Significant Impact. Construction of the HFB Alternative would require minor changes to the roadway, such as restriping or curb extensions, which would require the use of a small number of

construction vehicles. Truck haul trips would be minimal. Construction would occur for a short duration. Overall, construction would generate minimal pollutants and emissions, and would not conflict with air quality plans. The HFB Alternative would result in a **less than significant impact** during construction related to air quality.

4.5-2.4.2 Operation

Less Than Significant Impact. As part of its initiative to minimize the environmental consequences of its operations, Metro has committed to implementing a cleaner fleet of buses and service vehicles that reduce air pollutants. Between 2012 and 2017, Metro reduced its systemwide NO_X emissions by 40% and reduced its systemwide hydrocarbon and particulate matter emissions by over 50%; and in 2017 alone Metro reduced NOX emissions from service vehicles by 26%. These benefits are consistent with regional emission reduction strategies incorporated into the 2016 Air Quality Management Plan. On July 27, 2017, the Metro Board unanimously voted to transition the entire Metro bus fleet to zero-emission vehicles by 2030. The HFB Alternative would not interfere with Metro's efforts to reduce its systemwide air pollutant emissions and would not conflict with implementation of the Air Quality Management Plan. Further, although the extension of Metro C Line's light rail service is included within Metro's LRTP, with funding programmed through Measure M, as well as within the City of Redondo Beach General Plan Circulation Element and the 2020-2045 SCAG RTP/SCS, the HFB Alternative would still provide a transit option that connect the current Metro C Line terminus at the Redondo Beach (Marine) Station to the Torrance TC, with stops along the way. Therefore, the impact of the HFB Alternative on regional air quality and consistency with plans to address air quality would be **less than significant**.

4.5-2.5 Greenhouse Gas Emissions

4.5-2.5.1 Construction

Less than Significant Impact. Construction of the HFB Alternative would require minor changes to the roadway, such as restriping or curb extensions, which would require the use of a small number of construction vehicles. Truck haul trips would be minimal. Construction would occur for a short duration. Overall, construction would generate very minimal emissions. The HFB Alternative would result in a **less than significant impact** during construction related to GHG emissions.

4.5-2.5.2 Operation

Less Than Significant. As discussed in 4.5-2.4.2, Metro is transitioning the Metro bus fleet to zero-emission vehicles by 2030. The HFB Alternative would therefore not generate substantial GHG emissions. Further, although the extension of Metro C Line's light rail service is included within Metro's LRTP, with funding programmed through Measure M, as well as within the City of Redondo Beach General Plan Circulation Element and the 2020-2045 SCAG RTP/SCS, the HFB Alternative would still provide a transit option that connect the current C Line terminus at the Redondo Beach (Marine) Station to the Torrance TC, with stops along the way. The HFB Alternative would have a **less than significant impact** during operation related to GHG emissions.

4.5-2.6 Noise and Vibration

4.5-2.6.1 Construction

Less than Significant Impact. Construction for the HFB Alternative would not require intensive activity, and the equipment list would be minimal compared to the Proposed Project, likely including equipment such as paving machines and rollers. There would not be many sensitive receivers adjacent to construction limits, as the alignment would be along major arterials. There would not be exceedances in

ambient noise levels or vibration impacts. The HFB Alternative would result in a **less than significant impact** during construction related to noise and vibration.

4.5-2.6.2 Operation

Less than Significant Impact. Operation of the HFB Alternative would involve additional buses running within the existing transportation network and would not result in substantial increases in ambient noise levels or generation of vibration impacts that exceed thresholds, would be less than those of a light rail vehicle and, in some areas, further away from sensitive receivers. Additionally, rubber-tired bus vehicles like Metro and municipal providers operate tend to cause less noise and vibration than steel-wheeled light rail vehicles. Therefore, the HFB Alternative would result in a **less than significant impact** during operation related to noise and vibration.

4.5-2.7 Biological Resources

4.5-2.7.1 Construction

Less than Significant Impact. Construction of the HFB Alternative would not require removing vegetation, modifying bridges, or modifying the Torrance TC (where southern tarplant is located), and there would not be a potential to impact any special-status species of plants or wildlife directly or indirectly. Additionally, there would not be a potential to adversely affect riparian habitats and wetlands because construction activities required by the proposed Project would not be located near riparian habitats or wetlands. Construction of the HFB Alternative would comply with all applicable local regulations protecting biological resources and therefore would not conflict with those regulations. The HFB Alternative would result in a **less than significant impact** during construction related to biological resources.

4.5-2.7.2 Operation

Less than Significant Impact. Operation of the HFB Alternative would involve additional buses running within the existing transportation network, and the existing conditions would largely remain the same. There would not be a potential to impact any special-status species directly or indirectly. The HFB Alternative would result in a **less than significant impact** during operation related to biological resources.

4.5-2.8 Geology, Soils, and Paleontological Resources

4.5-2.8.1 Construction

Less than Significant Impact. Construction for the HFB Alternative would not require excavation and therefore there would be no potential to result in impacts related to earthquake faults, soil erosion, unstable soils, expansive soils, or destruction of paleontological resources. The HFB Alternative would result in a **less than significant impact** during construction related to geology, soils, and paleontological resources.

4.5-2.8.2 Operation

Less than Significant Impact. Operation of the HFB Alternative would involve additional buses running within the existing transportation network, and the existing conditions would largely remain the same. While the HFB Alternative would add more buses to the road, which would increase loads on the pavement, these roads are already built to handle the loads of an operating transit bus and there would be no potential to result in impacts related to soil and seismic hazards. Additionally, there would be no subsurface disturbance during operation. Therefore, the HFB Alternative would result in a **less than significant impact** during operation related to geology, soils, and paleontological resources.

4.5-2.9 Hazards and Hazardous Materials

4.5-2.9.1 Construction

Less than Significant Impact. Construction of the HFB Alternative would require minor changes to the roadway, such as restriping or curb extensions. Ground disturbance or excavation would be minimal and occur at shallow depths, and the potential of encountering contaminated groundwater or soil would be low. There would not be any demolition of existing structures that could release hazardous materials, nor would there be impacts on potential RECs. The HFB Alternative would have a **less than significant impact** during construction related to hazards and hazardous materials.

4.5-2.9.2 Operation

Less than Significant Impact. Operation of the HFB Alternative would involve additional buses running within the existing transportation network. There would not be any subsurface ground disturbance, and use of hazardous materials would be limited to typical materials associated with bus operation and maintenance. The HFB Alternative would have a **less than significant impact** during operation related to hazards and hazardous materials.

4.5-2.10 Hydrology and Water Quality

4.5-2.10.1 Construction

Less than Significant Impact. Construction of the HFB Alternative would require minor changes to the roadway, and there would not be any construction activities that could result in impacts to surface or groundwater resources. Any changes to curbs and gutters or existing drainage facilities would comply with all regulatory requirements and employ BMPs during construction. The HFB Alternative would have a **less than significant impact** during construction related to hydrology and water quality.

4.5-2.10.2 Operation

Less than Significant Impact. The HFB Alternative would be located within an existing roadway, and would not result in a net increase in impervious surfaces. Operation of the buses would not degrade surface water quality, interfere with groundwater supplies or groundwater recharge, substantially alter drainage patterns, risk release of pollutants due to project inundation in a flood hazard, tsunami, or seiche zone, or conflict with water quality plans. The HFB Alternative would have a **less than significant impact** during operation related to hydrology and water quality.

4.5-2.11 Utilities and Service Systems

4.5-2.11.1 Construction

Less than Significant Impact. Construction of the HFB Alternative would require minor changes to the roadway, and likely would not require any utility relocations, and therefore would not result in environmental effects or disruption of services. The HFB Alternative would have a **less than significant impact** during construction related to utilities and service systems.

4.5-2.11.2 Operation

Less than Significant Impact. Operation of the HFB Alternative would involve additional buses running within the existing transportation network, and it would not result in a significant long-term, permanent source of water use, wastewater, or solid waste. The HFB Alternative would have a **less than significant impact** during operation related to utilities and service systems.

4.5-2.12 Energy

4.5-2.12.1 Construction

Less than Significant Impact. Construction of the HFB Alternative would primarily use diesel fuel for construction vehicles and equipment, and would require energy for lighting. However, construction activities would be minimal, compared to the Proposed Project, and it would not result in wasteful, inefficient, or unnecessary consumption of energy resources. The HFB Alternative would have a **less than significant impact** during construction related to energy.

4.5-2.12.2 Operation

Less than Significant Impact. Operation of the HFB Alternative would consume energy for the buses, and would also indirectly change regional energy consumption through changes in regional VMT. There would not be a wasteful or inefficient use of energy resources. However, the reduction of VMT associated with the HFB Alternative would be significantly lower than for the Proposed Project, and it would not result in as much regional transportation energy efficiency improvements. The HFB Alternative would have a **less than significant impact** during operation related to energy.

4.5-2.13 Cultural Resources

4.5-2.13.1 Construction

Less than Significant Impact. Construction for the HFB Alternative would not require excavation and therefore there would not be a potential to result in impacts related to disturbing unknown cultural resources or human remains. The HFB Alternative would result in a **less than significant impact** during construction related to cultural resources.

4.5-2.13.2 Operation

Less than Significant Impact. Operation of the HFB Alternative would involve additional buses running within the existing transportation network, and the existing conditions would largely remain the same. It would not physically demolish, destroy, relocate, or alter any historical resources that may be located along the route, nor would it alter the immediate surroundings to cause an indirect impact. The HFB Alternative would result in a **less than significant impact** during operation related to cultural resources.

4.5-2.14 Tribal Cultural Resources

4.5-2.14.1 Construction

Less than Significant Impact. Construction for the HFB Alternative would not require excavation and therefore there would not be a potential to result in impacts related to disturbing unknown cultural resources or human remains. The HFB Alternative would result in a **less than significant impact** during construction related to tribal cultural resources.

4.5-2.14.2 Operation

Less than Significant Impact. Operation of the HFB Alternative would involve additional buses running within the existing transportation network, and the existing conditions would largely remain the same. There would not be a potential to disturb any buried tribal cultural resources, nor would it alter any existing setting that would impact a Tribal Cultural Resource. The HFB Alternative would result in a **less than significant impact** during operation related to tribal cultural resources.

4.5-2.15 Public Services

4.5-2.15.1 Construction

Less than Significant Impact. Construction of the HFB Alternative would be located within the roadway, and would not directly impact fire stations, police stations, educational facilities, or libraries, or result in deterioration of parks. Construction may require lanes closures, but it would be unlikely that the entire roadway would need to be closed, and access to public facilities would not be impacted. The HFB Alternative would have a **less than significant impact** during construction related to public services.

4.5-2.15.2 Operation

Less than Significant Impact. Operation of the HFB Alternative would involve additional buses running within the existing transportation network, and there would not be any direct impacts to public facilities. The HFB Alternative also would not induce unplanned population increases that would impact the demand for public facilities. The HFB Alternative would result in a **less than significant impact** during operation related to public services.

4.5-3 Analysis of the 170th/182nd Grade-Separated Light Rail Transit Alternative

Construction and operation of the 170th/182nd Grade-Separated Light Rail Transit Alternative would be similar to the Proposed Project, except for the area between 170th and 182nd Streets, where the alignment would be in a trench. In these areas, the potential impacts would be similar to that of the Trench Option. Like the Trench Option, the two grade separations, with mitigations, eliminate significant noise impacts during operations and significant vibration impacts during construction related to building damage. However, due to less excavation than the Trench Option, this alternative reduces air quality impacts during construction to less than significant, similar to the Proposed Project. Therefore, the following sections focus on the area between 170th Street and 182nd Street to determine the impacts of the 170th/182nd Grade-Separated Light Rail Transit Alternative.

4.5-3.1 Transportation

4.5-3.1.1 Construction

Less than Significant Impact. Construction of the trench alignment under 170th and 182nd Streets would have similar impacts as the Trench Option, as discussed in Section 4.3-2.1.1. The 170th/182nd Grade-Separated Light Rail Transit Alternative would result in a **less than significant impact** during construction related to transportation.

4.5-3.1.2 Operation

Less than Significant Impact. Operation of the trench alignment under 170th and 182nd Streets would have the same impacts as the Trench Option, as discussed in Section 4.3-2.1.2, with the light rail fully grade-separated from all roadways. The 170th/182nd Grade-Separated Light Rail Transit Alternative would result in a **less than significant impact** during operation related to transportation.

4.5-3.2 Land Use and Planning

4.5-3.2.1 Construction

Less than Significant Impact. Construction of the trench alignment under 170th and 182nd Streets would have similar impacts as the Trench Option, as discussed in Section 4.3-2.2.1. The 170th/182nd Grade-Separated Light Rail Transit Alternative would result in a **less than significant impact** during construction related to land use and planning.

4.5-3.2.2 Operation

Less than Significant Impact. Operation of the trench alignment under 170th and 182nd Streets would have the same impacts as the Trench Option, as discussed in Section 4.3-2.2.2. The 170th/182nd Grade-Separated Light Rail Transit Alternative would result in a **less than significant impact** during operation related to land use and planning.

4.5-3.3 Aesthetics

4.5-3.3.1 Construction

Less than Significant Impact with Mitigation. Construction of the trench alignment under 170th and 182nd Streets would have the same impacts as the Trench Option, as discussed in Section 4.3-2.3.1. Mitigation Measure MM-AES-1 would be implemented to ensure that construction lighting would be shielded and directed downward and away from adjacent residential and commercial areas to reduce potential impacts from temporary construction-related lighting. The 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact with mitigation** during construction related to aesthetics.

4.5-3.3.2 Operation

Less than Significant Impact. Operation of the trench alignment under 170th and 182nd Streets would have the same impacts as the Trench Option, as discussed in Section 4.3-2.3.2. The 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact** during operation related to aesthetics.

4.5-3.4 Air Quality

4.5-3.4.1 Construction

Less than Significant Impact. Construction of the trench alignment under 170th and 182nd Streets would involve approximately 0.7 miles of excavation and would increase the duration of construction, compared to the Proposed Project. Maximum daily emissions would be slightly higher than the Proposed Project, though lower than the Trench Option, but emissions would remain below the applicable SCAQMD mass daily thresholds. The 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact** during construction related to air quality.

4.5-3.4.2 Operation

Less than Significant Impact. Operation of the trench alignment under 170th and 182nd Streets would not result in any differences in impacts, compared to the Proposed Project. The 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact** during operation related to air quality.

4.5-3.5 Greenhouse Gas Emissions

4.5-3.5.1 Construction

Less than Significant Impact. Construction of the trench alignment under 170th and 182nd Streets would take longer and generate more GHG emissions than the Proposed Project, though not as much as the Trench Option. However, the difference in GHG emissions would be substantial, and there would not be conflicts with GHG plans. The 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact** during construction related to GHG emissions.

4.5-3.5.2 Operation

Less than Significant Impact. Operation of the trench alignment under 170th and 182nd Streets would not result in any differences in impacts to GHG emissions, compared to the Proposed Project. The 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact** during operation related to GHG emissions.

4.5-3.6 Noise and Vibration

Noise

4.5-3.6.1 Construction

Significant and Unavoidable Impact. Construction of the trench alignment under 170th and 182nd Streets would require slightly more intensive activities in these areas, compared to the Proposed Project. The equipment types would be the same as those used for the Trench Option, and temporary shoring of trench walls would be needed where the alignment is transitioning down into or up out of the trench, which could require pile driving near areas where there are sensitive receivers within 50 feet of the alignment. Like the Trench Option, the 170th/182nd Grade-Separated Light Rail Transit Alternative would not require relocation of the Grant Avenue freight bridge. Construction noise levels for the 170th/182nd Grade-Separated Light Rail Transit Alternative would exceed FTA standards, and there would be a significant impact. Mitigation measure MM-NOI-1 would be implemented, which would require the contractor to prepare a Noise Control Plan describing noise-reducing methods, but in some instances, the FTA construction impact criteria may still be exceeded. There are no additional feasible mitigation measures that could be implemented to further reduce construction noise levels. The 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **significant and unavoidable impact** during construction related to noise.

4.5-3.6.2 Operation

Less than Significant Impact with Mitigation/Significant and Unavoidable without MM-NOI-4. Operation of the trench alignment under 170th and 182nd Streets would result in similar impacts as the Trench Option, as discussed in Section 4.3-2.6.2. The light rail trains would travel under 170th and 182nd Streets in a trench, and there would not be a need for light rail at-grade crossing bells and gates. Implementation of mitigation measures MM-NOI-2 and MM-NOI-3 would install soundwalls and low impact frogs, reducing the light rail noise impacts in these areas to less than significant. However, the freight trains would generate noise impacts from warning horns at the at-grade crossings, and the combined light rail and freight noise would result in significant impacts to sensitive receivers. Like the Proposed Project, pursuant to PF-NV-1, the at-grade freight crossings for the 170th/182nd Grade Separated Light Rail Transit Alternative would be designed and constructed to include all the safety infrastructure and improvements needed to allow the local jurisdictions to establish a quiet zone(s). Further, mitigation measure MM-NOI-4 would require Metro to support the cities of Redondo Beach, Lawndale, and Torrance in establishing a quiet zone(s) and for the cities to comply with FRA requirements for doing so. Therefore, with implementation of mitigation measure MM-NOI-4, the 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact with mitigation** during operation related to noise. If the local jurisdictions do not establish a quiet zone(s) to reduce freight horn noise, the 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **significant and unavoidable impact without MM-NOI-4** during operation.

Vibration

4.5-3.6.3 Construction

Significant and Unavoidable. Construction of the trench alignment under 170th and 182nd Streets would have similar impacts as the Trench Option, as discussed in Section 4.3-2.6.3. The equipment types would be the same as those used for the Trench Option, and temporary shoring of trench walls would be needed where the alignment is transitioning down into or up out of the trench, which could require pile driving near areas where there are residential structures or sensitive land uses. Like the Trench Option, the 170th/182nd Grade-Separated Light Rail Transit Alternative would not require relocation of the Grant Avenue freight bridge, and therefore there would not be the damage impacts in that vicinity resulting from the use of an impact driver, as would occur under the Proposed Project. Mitigation measure MM-VIB-1 would prepare a Vibration Control Plan, and MM-VIB-2 would limit the use of vibratory rollers and vibratory impact pile drivers near residential structures and sensitive uses. The 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact** during construction related to vibration for damage.

However, annoyance impacts would remain, and the 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **significant and unavoidable impact** during construction related to vibration for annoyance.

4.5-3.6.4 Operation

Less than Significant Impact with Mitigation. Operation of the trench alignment under 170th and 182nd Streets would result in annoyance impacts similar to that of the Trench Option, as discussed in Section 4.3-2.6.4. There would be a significant impact. Mitigation measures MM-VIB-4, MM-VIB-5, MM-VIB-6 would implement special trackwork such as spring frogs, resilient fasteners, and ballast mats in those areas, which would reduce the vibration impact. The 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact with mitigation** during operation related to vibration.

4.5-3.7 Biological Resources

4.5-3.7.1 Construction

Less than Significant Impact with Mitigation. Construction of the trench alignment under 170th and 182nd Streets would result in similar potential impacts to biological resources as the Trench Option, as discussed in Section 4.3-2.7.1. Mitigation measures MM-BIO-1, MM-BIO-2, MM-BIO-3, and MM-BIO-4 would be implemented, which would reduce the level of impact. The 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact with mitigation** during construction related to biological resources.

4.5-3.7.2 Operation

Less than Significant Impact with Mitigation. Operation of the trench alignment under 170th and 182nd Streets would result in similar potential impacts to biological resources as the Trench Option, as discussed in Section 4.3-2.7.2. MM-BIO-1 would be implemented to ensure no degradation of southern tarplant habitat near the Torrance TC, but no mitigation measures would be needed for the areas by 170th Street and 182nd Street. The 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact with mitigation** during operation related to biological resources.

4.5-3.8 Geology Soils, and Paleontological Resources

4.5-3.8.1 Construction

Less than Significant Impact with Mitigation. Construction of the trench alignment under 170th and 182nd Streets would have similar impacts to geology, soils, and paleontological resources as the Trench Option, as discussed in Section 4.3-2.8.1. The impact related to soils and seismic hazards would be less than significant. The excavation for the trench would result in a greater potential to encounter paleontological resources and mitigation measure MM-GEO-1 would be implemented and the 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact with mitigation** during construction related to paleontological resources.

4.5-3.8.2 Operation

Less than Significant Impact. Operation of the trench alignment under 170th and 182nd Streets would not result in any differences in impacts. The 170th/182nd Grade-Separated Light Rail Transit Alternative would result in a **less than significant impact** during operation related to geology and soils, or paleontological resources.

4.5-3.9 Hazards and Hazardous Materials

4.5-3.9.1 Construction

Less Than Significant Impact. Construction of the trench alignment under 170th and 182nd Streets would have similar impacts as the Trench Option, as discussed in Section 4.3-2.9.1. The excavation for the trench would result in greater amounts of contaminated soil excavated from the Metro ROW than the Proposed Project, though less than the Trench Option, which would need to be disposed of at a permitted landfill with capacity to process contaminated materials. However, contaminated soil would be handled in accordance with all BMPs and regulations. The 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact** during construction related to hazards and hazardous materials.

4.5-3.9.2 Operation

Less Than Significant Impact. Operation of the trench alignment under 170th and 182nd Streets would not result in any differences in impacts. The 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact** during operation related to hazards and hazardous materials.

4.5-3.10 Hydrology and Water Quality

4.5-3.10.1 Construction

Less than Significant Impact. Construction of the trench alignment under 170th and 182nd Streets would have similar impacts related to run-off as the Trench Option, as discussed in Section 4.3-2.10.1. PF-HWQ-4 and PF-HWQ-5 would be implemented, which would ensure surface runoff flowing into the trench and storm drain inflows would be appropriately capture, treated, and discharged. The 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact** during construction related to hydrology and water quality.

4.5-3.10.2 Operation

Less than Significant Impact. Operation of the trench alignment under 170th and 182nd Streets would have similar impacts as the Trench Option, as discussed in Section 4.3-1.10.2. Surface waters could collect within the trench, exposing it to water quality impacts. PF-HWQ-7 would be implemented, which would ensure that surface runoff would be collected, treated if necessary, and discharged to existing storm drains, to avoid degrading surface water or groundwater quality. There would be slightly more

impervious areas, compared to the Proposed Project, but PF-HWQ-6 would ensure that stormwater runoff is retained on site. The 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact** during operation related to hydrology and water quality.

4.5-3.11 Utilities and Service Systems

4.5-3.11.1 Construction

Less than Significant Impact. Construction of the trench alignment under 170th and 182nd Streets would have similar impacts as the Trench Option, as discussed in Section 4.3-2.11.1. The underground water and power facilities in those areas would be relocated or protected in place. The 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact** during operation related to utilities and services systems.

4.5-3.11.2 Operation

Less than Significant Impact. Operation of the trench alignment under 170th and 182nd Streets would have similar impacts as the Trench Option, as discussed in Section 4.3-2.11.2. The trench would increase the impervious area and increase stormwater runoff. PF-HWQ-6 would be implemented, which would ensure that stormwater would be retained onsite. The 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact** during operation related to utilities and service systems.

4.5-3.12 Energy

4.5-3.12.1 Construction

Less than Significant Impact. Construction of the trench alignment under 170th and 182nd Streets would increase the construction duration, compared to the Proposed Project, and more fuel would be used for construction vehicles and equipment, but this difference would not result in a notable difference in impacts to energy. The 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact** during construction related to energy.

4.5-3.12.2 Operation

Less than Significant Impact. Operation of the trench alignment under 170th and 182nd Streets would not result in any differences in impacts. The 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact** during operation related to energy.

4.5-3.13 Cultural Resources

4.5-3.13.1 Construction

Less than Significant Impact with Mitigation. Construction of the trench alignment under 170th and 182nd Streets would result in similar potential impacts as the Trench Option, as discussed in Section 4.3-2.13.1. There would be more excavation to construct the trench, and therefore greater potential to encounter unknown archaeological resources or human remains. Mitigation measures MM-CUL-1, MM-CUL-2, and MM-3 would be implemented, and the 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact with mitigation** during construction related to cultural resources.

4.5-3.13.2 Operation

Less than Significant Impact. Operation of the trench alignment under 170th and 182nd Streets would not result in any differences in impacts. The 170th/182nd Grade-Separated Light Rail Transit Alternative would result in a **less than significant impact** during operation related to cultural resources.

4.5-3.14 Tribal Cultural Resources

Less than Significant Impact with Mitigation. Construction of the trench alignment under 170th and 182nd Streets would result in similar potential impacts as the Trench Option, as discussed in Section 4.3-2.14.1. There would be more excavation to construct the trench, and therefore greater potential to encounter unknown tribal cultural resources or human remains. Mitigation measures MM-CUL-1, MM-CUL-2, and MM-CUL-3 would be implemented, and the 170th/182nd Grade-Separated Light Rail Transit Alternative would have a **less than significant impact with mitigation** during construction related to tribal cultural resources.

Less than Significant Impact. Operation of the lowered alignment at 170th and 182nd Streets would not result in any differences in impacts. The 170th/182nd Grade-Separated Light Rail Transit Alternative would result in a **less than significant impact** during operation related to tribal cultural resources.

4.5-3.15 Public Services

4.5-3.15.1 Construction

Less Than Significant Impact. Construction of the trench alignment under 170th and 182nd Streets would result in similar impact as the Trench Option, as discussed in Section 4.3-2.15.1. The construction schedule would be longer, but access to public facilities would be maintained through the duration of construction, per PF-T-1. The Trench Option would have a **less than significant impact** during construction related to public services.

4.5-3.15.2 Operation

Less than Significant Impact. Operation of the trench alignment under 170th and 182nd Streets would have similar impacts as the Trench Option, as discussed in Section 4.3-2.15.2. The Trench Option would result in a **less than significant impact** during operation related to public services.

4.5-4 Comparison of Alternatives

Table 4.5-1 summarizes the impacts of the No Project Alternative, HFB Alternative, and 170th/182nd Grade-Separated Light Rail Transit Alternative relative to the Proposed Project and Options' impacts. As shown in the table, the No Project Alternative has significant and unavoidable impacts for transportation, land use, air quality, GHG emissions, and energy related to potential inconsistency with the 2020-2045 RTP/SCS, but otherwise it would avoid or reduce the other significant impacts associated with the Proposed Project. The HFB Alternative would have less than significant impacts for all topics.

For most of the 170th/182nd Grade-Separated Light Rail Transit Alternative, the impacts would be the same as the Proposed Project, except in the area between 170th and 182nd Streets, where the impacts would be similar to the Trench Option. Notably, the 170th/182nd Grade-Separated Light Rail Transit Alternative would have a less than significant impact with mitigation for noise during operation, compared to a significant and unavoidable impact for the Proposed Project. As the Alternative would be located in a trench to cross under 170th and 182nd Streets, it would reduce the noise impacts associated with the at-grade crossings, and implementation of MM-NOI-2 through MM-NOI-4 would result in a less than significant impact. However, if the local jurisdictions do not establish a quiet zone(s) to reduce freight horn noise, the 170th/182nd Grade-Separated Light Rail Transit Alternative would have a significant and unavoidable impact without MM-NOI-4 during operation.

Additionally, the 170th/182nd Grade-Separated Light Rail Transit Alternative would have a less than significant impact with mitigation for vibration damage during construction, compared to significant and unavoidable for the Proposed Project (however, the significant and unavoidable vibration annoyance impact would be the same during construction). The Alternative would not require relocating the freight

bridge at Grant Avenue, which requires impact pile driving, and therefore would have reduced potential for building damage in that vicinity. Mitigation measures would be able to reduce the potential damage impacts of the 170th/182nd Grade-Separated Light Rail Transit Alternative to less than significant.

Table 4.5-1. Comparison of Alternatives' Environmental Impacts to the Proposed Project

Topics		Proposed Project	Trench Option	Hawthorne Option	No Project Alternative	HFB Alternative	170th/182nd Grade-Separated Alternative
Transportation	Construction	LTS	LTS	LTS	LTS	LTS	LTS
	Operation	LTS	LTS	LTS	SUI	LTS	LTS
Land Use and Planning	Construction	LTS	LTS	LTSM	LTS	LTS	LTS
	Operation	LTS	LTS	LTS	SUI	LTS	LTS
Aesthetics	Construction	LTSM	LTSM	LTSM	LTS	LTS	LTSM
	Operation	LTS	LTS	LTS	LTS	LTS	LTS
Air Quality	Construction	LTS	SUI	LTS	LTS	LTS	LTS
	Operation	LTS	LTS	LTS	SUI	LTS	LTS
Greenhouse Gas Emissions	Construction	LTS	LTS	LTS	LTS	LTS	LTS
	Operation	LTS	LTS	LTS	SUI	LTS	LTS
Noise	Construction	SUI	SUI	SUI	LTS	LTS	SUI
	Operation	SUI	SUI/LTSM[1]	LTSM	LTS	LTS	SUI/LTSM[1]
Vibration	Construction	SUI	SUI	SUI	LTS	LTS	SUI
	Operation	LTSM	LTSM	LTSM	LTS	LTS	LTSM
Biological Resources	Construction	LTSM	LTSM	LTSM	LTS	LTS	LTSM
	Operation	LTSM	LTSM	LTSM	LTS	LTS	LTSM
Geology, Soils, and Paleontological Resources	Construction	LTSM	LTSM	LTSM	LTS	LTS	LTSM
	Operation	LTS	LTS	LTS	LTS	LTS	LTS
Hazards and Hazardous Materials	Construction	LTS	LTS	LTS	LTS	LTS	LTS
	Operation	LTS	LTS	LTS	LTS	LTS	LTS
Hydrology and Water Quality	Construction	LTS	LTS	LTS	LTS	LTS	LTS
	Operation	LTS	LTS	LTS	LTS	LTS	LTS
Utilities and Service Systems	Construction	LTS	LTS	LTS	LTS	LTS	LTS
	Operation	LTS	LTS	LTS	LTS	LTS	LTS

Topics		Proposed Project	Trench Option	Hawthorne Option	No Project Alternative	HFB Alternative	170th/182nd Grade-Separated Alternative
Energy	Construction	LTS	LTS	LTS	LTS	LTS	LTS
	Operation	LTS	LTS	LTS	SUI	LTS	LTS
Cultural Resources	Construction	LTSM	LTSM	LTSM	LTS	LTS	LTSM
	Operation	LTS	LTS	LTS	LTS	LTS	LTS
Tribal Cultural Resources	Construction	LTSM	LTSM	LTSM	LTS	LTS	LTSM
	Operation	LTS	LTS	LTS	LTS	LTS	LTS
Public Services	Construction	LTS	LTS	LTS	LTS	LTS	LTS
	Operation	LTS	LTS	LTS	LTS	LTS	LTS

[1] With establishment of quiet zones by the Cities of Lawndale, Redondo Beach, and Torrance (MM-NOI-4), the Trench Option and 170th /182nd Street Grade-Separated Alternative would have a less than significant impact with mitigation for operational noise.

4.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA Guidelines Section 15126.6 requires that an "environmentally superior" alternative be identified. The environmentally superior alternative is the alternative that would be expected to generate the fewest adverse impacts. If the environmentally superior alternative is the No Project alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.

As shown in Table 4.5-1, the No Project Alternative would avoid many of the construction and operational impacts as identified for the Proposed Project, but it would have significant and unavoidable impacts during operation related to transportation, land use and planning, air quality, GHG emissions, and energy as it would conflict with plans and programs that assumed the Proposed Project would be built. The HFB Alternative would reduce all construction and operational impacts as identified for the Proposed Project. Therefore, the HFB Alternative is the environmentally superior alternative as it would avoid or reduce impacts to a less than significant level. However, the HFB Alternative would not realize the same level of benefits from vehicle miles traveled reduction, air quality improvements, GHG emissions reduction, and energy savings that would result from the Proposed Project and Options.

Metro staff will prepare a recommendation on its preferred alignment in Spring 2023 based on findings from the Draft EIR, public comments made during the comment period, technical analysis, stakeholder input, and other factors such as cost, ridership, and project objectives.

5. REFERENCES

Advanced Geo Environmental (AGE). (2018). *Well installation and Additional Site Assessment, 15708 Inglewood Avenue, Lawndale, CA.* 2018, September 28.

Advanced Geo Environmental (AGE). (2021). *Groundwater Monitoring Report – First Quarter 2021. Westwood Building Materials (LA-RWQCB CASE # I-11593A). 15708 Inglewood Avenue, Lawndale, California.*

Advanced Geo Environmental (AGE). (2022, March 4). *Well destruction Report, Westwood Building Materials, 15708 Inglewood Avenue, Lawndale, CA.*

AECOM. (2019, March 15). *Torrance Refinery Posse Area Light Non-Aqueous Phase Liquid and Methyl Tertbutyl Ether Investigation Report.*

AECOM. (2020, March 6). *Pilot Permeable Reactive Barrier Workplan, 305 Crenshaw Boulevard, Torrance, CA.*

AEI Consultants. (2020, February 27). *Limited Soil Vapor Investigation, 15624 Inglewood Avenue, Lawndale, CA.*

AEI Consultants. (2021, April 23). *Report on Further Groundwater Characterization, 15624 Inglewood Avenue, Lawndale, CA.*

American Public Transportation Association (APTA). (2009). *APTA Sustainability Commitment*.

American Public Transportation Association (APTA). (2018). *Recommended Practice: Quantifying Greenhouse Gas Emissions from Transit*. Revised September 2018.

Arcadis. (2019). "Workplan for soil vapor sampling on private property, Vought Torrance K-6 facility, 640 Alaska Avenue, Torrance, CA." 2019, November 14.

Archives & Architecture. (2015). *Shattuck Avenue Commercial Corridor Historic Context and Survey*. Prepared for City of Berkeley.

Ardent. (2015). *Soil Management Plan, Former PPG Industries Property, 465 Crenshaw Boulevard, Torrance, CA, 90503*. 2015, November 4

ASTM International. (2013). *Designation E1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, Annual Book of Standards, Volumes 11.05.

Association of Environmental Professionals. (2020). *2020 CEQA Statute & Guidelines.*

Association of Environmental Professionals. (2021). *2021 CEQA Statute & Guidelines.* https://www.califaep.org/statute_and_guidelines.php

Beach Cities EWMP Group. (2016). *Enhanced Watershed Management Program (EWMP) for the Beach Cities Watershed Management Area (Santa Monica Bay and Dominguez Channel Watersheds).* https://www.waterboards.ca.gov/losangeles/water_issues/programs/stormwater/municipal/watershed_management/beach_cities/BeachCities_EWMP_February2016.pdf

Bedrossian, T.L., Roffers, P.D., Hayhurst, C.A… Utley, S (2012). *Geologic Compilation of Quaternary Surficial Deposits in Southern California, Onshore Portion of the Long Beach 30' x 60' Quadrangle*.

Buika, J. and Teng, T.-liang. (1979). *A Seismicity Study of Portions of the Los Angeles Basin, Santa Monica Basin, and Santa Monica Mountains, California*. U.S. Geological Survey (Tech No. 79-9).

California. California Code of Regulations, Title 24, Part 9, Sections 7703.2; 909.5.2; 1022.2. 2020.

California. California Code of Regulations, Title 8 § 1270; 6773.

California. California Education Code, Title 1.

California. California Health and Safety Code, Section 1300.

California. California Penal Code.

California. California Public Park Preservation Act, Public Resources Code, Sections 5400-5409. 1971.

California. California Public Utilities Code Division 10, Part 11, Sections 99000 – 99582.

California. (2002a). Clean Car Standards, 2002, Cal, Assemb. B. 1493. Chapter 200 (Cal.Stat.2002).

California. (2002b). California Renewables Portfolio Standard Program, Cal, Senate. B. 1078. Chapter 516 (Cal.Stat.2002).

California. (2005). Governor's Executive Order No. S-03-05. 2005, June 1.

California. (2006a). "California Renewables Portfolio Standard Program," Cal, Senate. B. 107. Chapter 464 (Cal.Stat.2006).

California. (2006b). "Global Warming Solutions Act of 2006," Cal, Senate. B. 32. Chapter 249 (Cal.Stat.2006). https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB32

California. (2006c). "Global Warming Solutions Act of 2006," Cal, Assemb. B. 32. Chapter 448 (Cal. Stat. 2006). https://ww2.arb.ca.gov/resources/fact-sheets/ab-32-global-warming-solutions-act-2006

California. (2007a). Governor's Executive Order No. S-01-07. 2007, January 18.

California. (2007b). Senate. B. 97. (Cal.Stat.2007).

California. (2008a). "Complete Streets Act of 2008," Cal, Assemb. B. 1358. Chapter 657 (Cal.Stat.2008). https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200720080AB1358

California. (2008b). Governor's Executive Order S-13-08.

California. (2008c). Governor's Executive Order S-14-08.

California. (2008d). "Sustainable Communities and Climate Protection Act of 2008," Cal, Senate. B. 375. Chapter 728 (Cal.Stat.2008). https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200720080SB375

California. (2011). "1,2 Renewable Portfolio Standard Procurement Rules," Cal, Senate. B. X. (Cal. Stat. 2011).

California. (2012). Governor's Executive Order B-16-12.

California. (2013). Senate. B. 743. Chapter 386 (Cal.Stat.2013). https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB743

California. (2015). Governor's Executive Order B-30-15. 2015, April 29.

California. (2016). "VMT and Greenhouse Gas Emission Reduction (Pavley)," Cal, Senate. B. 32. (Cal.Stat.2016).

California. (2018a). Governor's Executive Order B-55-18 To Achieve Carbon Neutrality. 2018, September 10.

California. (2018b). California 100% Clean Energy Act, Cal, Senate. B. 100. (Cal.Stat.2018).

California. (2019). Governor's Executive Order N-19-19. 2019, September 20.

California. (2020a). Governors Executive Order N-79-20.

California. (2020b). "Sustainable Communities and Climate Protection Act of 2008," Cal, Senate. B. 288. Chapter 200 (Cal.Stat.2020). https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200SB288

California Air Pollution Control Officers Association (CAPCOA). (2008). *CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*.

California Air Pollution Control Officers Association (CAPCOA). (2016). *California Emissions Estimator Model (Version 2016.3.2)*.

California Air Pollution Control Officers Association (CAPCOA). (2022a). *California Emissions Estimator Model (Version 2020.4.0)*.

California Air Pollution Control Officers Association. (2022b). *California Emissions Estimator Model User Guide (Version 2022.1) – Appendix G: Default Data Tables*.

California Air Resources Board (CARB). (2008a). *Climate Change Scoping Plan – A Framework for Change Pursuant to AB 32 The California Global Warming Solutions Act of 2006*.

California Air Resources Board (CARB). (2008b). *Comparison of Greenhouse Gas Reductions for the United States and Canada Under U.S. CAFÉ Standards and California Air Resources Board Greenhouse Gas Regulations*.

California Air Resources Board (CARB). (2014). *First Update to the Climate Change Scoping Plan: Building on the Framework Pursuant to AB 32, the California Global Warming Solutions Act of 2006*.

California Air Resources Board (CARB). (2016a). *Ambient Air Quality Standards.*

California Air Resources Board (CARB). (2016b). *Determination of Total Methane Emissions from the Aliso Canyon Natural Gas Leak Incident*.

California Air Resources Board (CARB). (2016c). *Mobile Source Strategy*.

California Air Resources Board (CARB). (2017). *California's 2017 Climate Change Scoping Plan – The Strategy for Achieving California' 2030 Greenhouse Gas Target*. https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf

California Air Resources Board (CARB). (2019a). *2017 Scoping Plan-Identified VMT Reductions and Relationships to State Climate Goals*.

California Air Resources Board (CARB). (2019b). Truck and Bus Regulation Compliance Requirement Overview https://ww2.arb.ca.gov/sites/default/files/2022-09/ComplianceOverview.pdf

California Air Resources Board (CARB). (2019c). *Final Regulation Order – Article 5: California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms*.

California Air Resources Board (CARB). (2021a). *2000-2019 GHG Inventory (2021 Edition).* https://ww2.arb.ca.gov/ghg-inventory-data

California Air Resources Board (CARB). (2021b). *2020 Mobile Source Strategy*.

California Air Resources Board (CARB). (2021c). *EMFAC2021 Volume I – User's Guide*.

California Air Resources Board (CARB). (2022a). *2022 Scoping Plan for Achieving Carbon Neutrality*.

California Air Resources Board (CARB). (2022b). *California Greenhouse Gas Emissions for 2000 to 2020 – Trends of Emissions and Other Indicators*.

California Air Resources Board (CARB). (2022C). "CARB OFFROAD2017 ORION Emissions Inventory Model." Retrieved November 2022.

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (CalGEM). (2011). "Online Well Finder." Retrieved June 2020. https://maps.conservation.ca.gov/doggr/wellfinder/

California Department of Conservation. (2022). "Important Farmland Categories." https://www.conservation.ca.gov/dlrp/fmmp/Pages/Important-Farmland-Categories.aspx

California Department of Fish and Wildlife (CDFW). (2020). *CNDDB Rarefind Program*. https://wildlife.ca.gov/Data/CNDDB/Maps-and-Data

California Department of General Services – Building Standards Commission. (2019). *CALGreen – 2019 California Green Building Standards Code (CCR, Title 24, Part 11)*.

California Department of Transportation (Caltrans). (2008). *Implementation Policy of Complete Streets: Integrating the Transportation System.* Retrieved November 17, 2020. https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/dd-64-r2-a11y.pdf

California Department of Transportation (Caltrans). (2013a). Technical Noise Supplement to the Traffic Noise Analysis Protocol.

California Department of Transportation (Caltrans). (2013b). *Memo to Designers, 20-10 Fault Rupture.*

California Department of Transportation (Caltrans). (2018a). *Standard Specifications*.

California Department of Transportation (Caltrans). (2018b). *Standard Special Provisions for Handling and Removal of Traffic Stripe and Pavement Marking with Hazardous Waste Residue.*

California Department of Transportation (Caltrans). (2019). *Caltrans Seismic Design Criteria.*

California Department of Transportation (Caltrans). (2020a). *Interim Land Development and Intergovernmental Review Safety Review Practitioner's Guide*. https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-07-01-interim-ldigr-safety-guidance-a11y.pdf

California Department of Transportation (Caltrans). (2020b). *Highway Design Manual* (7th Edition). https://dot.ca.gov/programs/design/manual-highway-design-manual-hdm

California Department of Transportation (Caltrans). (2020c). *Transportation Analysis Under CEQA First Edition – Evaluating Transportation Impacts of State Highway System Projects*.

California Department of Transportation (Caltrans). (2020d). Transportation and Vibration Guidance Manual. https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf

California Department of Transportation. (2020e). *Vehicle Miles Traveled-Focused Transportation Impact Study Guideline*. https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-05-20-approved-vmt-focused-tisg-a11y.pdf

California Department of Transportation (Caltrans). (2021a). *California Manual on Uniform Traffic Control Devices 2014 Revision 6*. https://dot.ca.gov/programs/safety-programs/camutcd

California Department of Transportation (Caltrans). (2021b) *Complete Streets Directive*. https://dot.ca.gov/-/media/dot-media/programs/sustainability/documents/dp-37-complete-streets-a11y.pdf

California Department of Transportation (Caltrans). (2021c). *California Transportation Plan 2050*.

California Department of Transportation (Caltrans). (2022). State Scenic Highway Program. Retrieved July 6, 2022. https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways

California Department of Water Resources (CA DWR) (2004). "*Bulletin 118, South Coast Hydrologic Region – Los Angeles County Coastal Plain West Coast Basin, Updated February 27, 2004.*"

California Department of Water Resources. (2022). SGMA Basin Prioritization Dashboard. https://gis.water.ca.gov/app/bp-dashboard/final/

California Energy Commission (CEC). (2020). *Final Project Report: Quantifying Methane from California's Plugged and Abandoned Oil and Gas Wells*, CEC-500-2020-052.

California Energy Commission (CEC). (2021). *2021 SB 100 Joint Agency Report Summary – Achieving 100% Clean Electricity in California*.

California Energy Commission (CEC). (2022a). *2020 Power Content Label – Southern California Edison.* https://www.energy.ca.gov/filebrowser/download/3902.

California Energy Commission (CEC). (2022b). *Electricity Consumption by Entity.* http://www.ecdms.energy.ca.gov/elecbyutil.aspx

California Energy Commission (CEC). (2022c). *Natural Gas Consumption by Entity.* http://www.ecdms.energy.ca.gov/gasbyutil.aspx

California Environmental Protection Agency (CalEPA, 2020). CalEPA Website. Retrieved June 2020. https://calepa.ca.gov/.

California Environmental Protection Agency and California Air Resources Board (CalEPA and CARB, 2005). *Air Quality and Land Use Handbook: A Community Health Perspective*.

California Geological Survey. (1986a). "Earthquake Zones of Required Investigation, Earthquake Fault Zones, Inglewood Quadrangle." 1986, July 1.

California Geological Survey. (1986b). "Earthquake Zones of Required Investigation, Earthquake Fault Zones, Torrance Quadrangle." 1986, July 1.

California Geological Survey (CGS). (1998a). "Seismic Hazard Zone Report for the Inglewood 7.5-Minute Quadrangle, Los Angeles County, California. "

California Geological Survey (CGS). (1998b). "Seismic Hazard Zone Report for the Torrance 7.5-Minute Quadrangle, Los Angeles County, California."

California Geological Survey (CGS). (1999). "Earthquake Zones of Required Investigation, Seismic Hazard Zones, Torrance Quadrangle." 1999, March 25.

California Geological Survey (CGS). (2008). *Special Publication 117A, Guidelines for Evaluating and Mitigating Seismic Hazards in California*.

California Geological Survey (CGS). (2010). "2010 Fault Activity Map of California."

California Geological Survey (CGS). (2020). Data Viewer layer for Alquist-Priolo Fault Traces. https://maps.conservation.ca.gov/cgs/DataViewer/

California Governor's Office of Emergency Services (Cal OES). (2021). "About Cal OES." CA.GOV. Available at: https://www.caloes.ca.gov/cal-oes-divisions/about-cal-oes

California Health and Safety Code. (1988). Division 26, Part 3, Chapter 5.5, Section 40400, *Lewis-Presley Air Quality Management Act,* 1988.

California Homeowners. (2020). *Fusion at South Bay HOA Hawthorne, CA.* Retrieved June 30, 2020. homeownerscalifornia.com/fusion-at-south-bay-homeowners-association-hawthorne-ca/

California Native Plant Society (CNPS). (2020). *Rare Plant Database*. https://www.cnps.org/rare-plants/cnps-inventory-of-rare-plants

California Office of Planning and Research. (OPR). (2008). *Technical Advisory – CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review.*

California Office of Planning and Research (OPR) and National Center for Sustainable Transportation. (2017). *White Paper – Cutting Greenhouse Gas Emissions Is Only the Beginning: A Literature Review of the Co-Benefits of Reducing Vehicle Miles Traveled*.

California Office of Planning and Research (OPR). (2018a). *Discussion Draft CEQA and Climate Change Advisory*.

California Office of Planning and Research (OPR). (2018b). *Technical Advisory on Evaluating Transportation Impacts in CEQA*.

California Office of Planning and Research (OPR). (2021). *CEQA Review of Sustainable Transportation Projects Technical Advisory*.

California Public Utilities Commission (CPUC). (2022a). "About the California Public Utilities Commission (CPUC)." https://www.cpuc.ca.gov/about-cpuc/cpuc-overview/about-us

California Public Utilities Commission (CPUC). (2022b). "California Broadband Interactive Map." https://www.broadbandmap.ca.gov/

California Public Utilities Commission (CPUC). (2022c). "Current Projects." https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/permitting-and-environmental-review/current-project

California State Transportation Agency (CalSTA). (2021). *Climate Action Plan for Transportation Infrastructure*.

California State Water Resources Control Board (SWRCB). (2013). "Adopted Order 2009-0009-DWQ (As amended by 2010-0014-DWQ and 2012-0006-DWQ." https://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/wqo_2009_0009_complete.pdf

California State Water Resources Control Board (SWRCB). (2018). *California Integrated Report* (Clean Water Act Section 303(d) List and 305(b) Report).

California State Water Resources Control Board (SWRCB). (2019a). "State Water Resources Control Board Resolution No. 2019-0015" (Posted 05/14/19). https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/rs2019_0015.pdf

California State Water Resources Control Board (SWRCB). (2019b). State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. (Posted 05/14/19; OAL approved 8/29/2019; NOD 8/30/2019; effective 05/28/2020) https://www.waterboards.ca.gov/water_issues/programs/cwa401/wrapp.html ; https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/dredge_fill/revised_guidance.pdf ; https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/procedures_conformed.pdf ; https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/staffrpt_conformed.pdf

California State Water Resources Control Board (SWRCB), GeoTracker. (2020). "GeoTracker." Retrieved June 2020. http://geotracker.waterboards.ca.gov/

California State Water Resources Control Board (SWRCB). (2021). *California Integrated Report* (Clean Water Act Section 303(d) List and 305(b) Report).

California State Water Resources Control Board (SWRCB). (2022a). "NPDES Construction Stormwater General Permit Reissuance." https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction/general_permit_reissuance.html

California State Water Resources Control Board (SWRCB). (2022b). "Water Quality and Watersheds." Retrieved May 27. https://www.waterboards.ca.gov/losangeles/water_issues/programs/regional_program/watershed/

California Utilities. (2021). *Excel database of GHG emission factors for delivered electricity provided to the Sacramento Metropolitan Air Quality Management District and ICF*, January through March 2021.

California Water Service (CWS). (2022). "District Information - Cal Water." https://www.calwater.com/about/district-information/rd/

CalRecycle. (2022). *SWIS Facility/Site Activity Details.* https://www2.calrecycle.ca.gov/SolidWaste/Site/Searchh

Catey, Beatrice. (1927). *The Pilot*. "Information Gained from Mrs. Frank Perry". P. 94. Redondo Beach High School Yearbook.

Centinela Valley High School District (CVHSD). (2021a). "Centinela Valley Independent Study School." https://www.cvalternatives.org/

Centinela Valley High School District (CVHSD). (2021b). "Lawndale High School." https://www.lawndalehs.org/

Centinela Valley High School District (CVHSD). (2021c). "R.K. Lloyde High School." https://www.lloydehs.org/

Chevron. (1996). "Closure of hydrocarbon-impacted soil site, 18900 Hawthorne Boulevard, City of Torrance (Board File No. 100.315)."

City of Hawthorne. (1989a). *City of Hawthorne General Plan - Land Use Element.* Amended 2016.

City of Hawthorne. (1989b). *City of Hawthorne General Plan- Safety Element.*

City of Hawthorne. (1989c). *City of Hawthorne General Plan – Open Space/Recreation Element*.

City of Hawthorne. (1990). *City of Hawthorne General Plan - Circulation Element.*

City of Hawthorne. (2019a). *Annual Budget FY 2020-21, Ch. 5 Public Safety*. December.

City of Hawthorne. (2019b). *City of Hawthorne Zoning Map.*

City of Hawthorne. (2020). *City of Hawthorne Municipal Code, Title 17 "Zoning."*

City of Hawthorne. (2021). "Recreation and Community Services."

City of Hawthorne. (2022). *City of Hawthorne Municipal Code.*

City of Lawndale. (1992a). *City of Lawndale General Plan.*

City of Lawndale. (1992b). *City of Lawndale General Plan - Circulation Element.*

City of Lawndale. (1992c). *City of Lawndale General Plan - Land Use Element.*

City of Lawndale. (1992d). *City of Lawndale General Plan - Noise Element*.

City of Lawndale. (1992e). *City of Lawndale General Plan - Open Space Element*.

City of Lawndale. (1992f). *City of Lawndale General Plan - Resource Management, Section 1. Open Space, Section 2. Conservation Element.*

City of Lawndale. (1996). *Air Quality Management Plan*.

City of Lawndale. (1999). *Hawthorne Boulevard Specific Plan*. Retrieved November 3, 2022.

City of Lawndale. (2004). *City of Lawndale Zoning Map.*

City of Lawndale. (2015). *City of Lawndale General Plan - Safety Element*.

City of Lawndale. (2017, December). *Climate Action Plan*.

City of Lawndale. (2020a, October). *City of Lawndale Municipal Code, Section 8.20.070*.

City of Lawndale. (2020b). *City of Lawndale Municipal Code, Title 17 "Zoning."*

City of Lawndale. (2020c). "The History of Lawndale." Retrieved May 27, 2020. http://www.lawndalecity.org/HTML/History.htm

City of Lawndale. (2021). *Parks and Recreation Division.* http://lawndalecity.org/html/DEPTHTML/CSD/ParksRec.htm

City of Lawndale. (2022). *City of Lawndale Municipal Code.*

City of Los Angeles. (2003). *Preservation Plan Workbook*. Retrieved August 6, 2020. http://www.preservation.lacity.org/hpoz/plan

City of Los Angeles. (2010). *Loyola Marymount University Master Plan Project Draft EIR, ENV-2008-1342-EIR, Section IV.E GEOLOGY.*

City of Los Angeles. (2019). *Air Quality and Health Effects – Sierra Club v. County of Fresno*.

City of Redondo Beach. (1989). *City of Redondo Beach California Municipal Code, Title 10* "Planning and Zoning", Chapter 4 Historic Resources Preservation. https://library.qcode.us/lib/redondo_beach_ca/pub/municipal_code/item/title_10-chapter_4-article_1-10_4_101

City of Redondo Beach. (1993a). *City of Redondo Beach General Plan.* https://www.redondo.org/civicax/filebank/blobdload.aspx?BlobID=29359

City of Redondo Beach. (1993b). *City of Redondo Beach General Plan - Environmental Hazards/Natural Hazards (Noise) Element.*

City of Redondo Beach. (1993c). *City of Redondo Beach General Plan - Geologic/ Seismic Hazards*

City of Redondo Beach. (1993d). *City of Redondo Beach General Plan - Infrastructure Systems and Community Services, Section 3.4 Conservation, Recreation and Parks, and Open Space.*

City of Redondo Beach. (1993e). *City of Redondo Beach General Plan - Land Use Element.*

City of Redondo Beach. (1993f). *City of Redondo Beach General Plan - Safety Element*.

City of Redondo Beach. (1993g). *City of Redondo Beach General Plan - Solid Waste Management and Recycling Element*.

City of Redondo Beach. (1993h). *City of Redondo Beach General Plan - Utilities Element.*

City of Redondo Beach. (2009a). *City of Redondo Beach General Plan - Circulation Element.*

City of Redondo Beach. (2009b). *City of Redondo Beach General Plan - Transportation Element.*

City of Redondo Beach. (2011). *City of Redondo Beach Zoning Map.*

City of Redondo Beach. (2017a). *City of Redondo Beach General Plan - Housing Element.*

City of Redondo Beach. (2017b). *Climate Action Plan*.

City of Redondo Beach. (2020a). *2020 – 2021 Proposed Budget: Fire*.

City of Redondo Beach. (2020b). *City of Redondo Beach Municipal Code, Section 4-24.503*.

City of Redondo Beach. (2021a). *City of Redondo Beach General Plan – Transportation and Circulation Element.* Revised 2021.

City of Redondo Beach. (2021b). "Recreation and Community Services." https://www.redondo.org/depts/recreation/default.asp

City of Redondo Beach. (2021c). "Welcome to the Redondo Beach Fire Department." https://www.redondo.org/depts/fire/default.asp

City of Redondo Beach. (2022). *City of Redondo Beach Municipal Code.*

City of Torrance. (n.d.) "Torrance History: Spanning the Years." Retrieved May 27, 2020. https://www.torranceca.gov/our-city/about-torrance/history

City of Torrance. (1996). *Hawthorne Boulevard Corridor Specific Plan*. Retrieved November 3, 2022. https://www.torranceca.gov/our-city/community-development/planning-division/development-review/hbcsp

City of Torrance. (2005). *City of Torrance General Plan - Land Use Policy Map*. https://www.torranceca.gov/home/showdocument?id=53869

City of Torrance. (2009). Final Environmental Impact Report for City of Torrance General Plan Update. https://www.torranceca.gov/home/showpublisheddocument/61699/637364685691400000

City of Torrance. (2010a). *City of Torrance General Plan*. https://www.torranceca.gov/our-city/community-development/general-plan/plan-2009

City of Torrance. (2010b). *City of Torrance General Plan - Circulation and Infrastructure Element*.

City of Torrance. (2010c). *City of Torrance General Plan - Community Resources Element.*

City of Torrance. (2010d). *City of Torrance General Plan - Land Use Element.*

City of Torrance. (2010e). *City of Torrance General Plan - Noise Element.*

City of Torrance. (2010f). *City of Torrance General Plan - Safety Element*.

City of Torrance . (2013a). *City of Torrance Stormwater Basin Enhancement Project Monitoring and Reporting Plan*. https://www.manhattanbeach.gov/home/showdocument?id=19853

City of Torrance. (2013b). "Historic Context Statement for the 2011 – 2013 Survey of Historic Resources, Olmstead Tract." Retrieved May 27, 2020. https://www.torranceca.gov/our-city/community-development/historical/summary

City of Torrance. (2015a). *City of Torrance Zoning Map.*

City of Torrance. (2015b). *Four Ultimate Receiving Waters of Torrance Storm Drainage*. https://www.torranceca.gov/home/showdocument?id=59759

City of Torrance. (2015d). "Notice of Determination, Torrance Regional Transit Center Project, 465 Crenshaw Boulevard, Torrance, CA, 90503."

City of Torrance. (2015e). "Supplemental #1 to Agenda Item 12A. Includes Report Prepared by Helix Environmental Planning and Letter from CDFW." https://www.torranceca.gov/home/showdocument?id=2988

City of Torrance. (2015f). *Street Tree Master Plan*. https://www.torranceca.gov/our-city/public-works/city-trees-landscapes/street-tree-master-plan

City of Torrance. (2017a). *2017 – 2022 Local Hazard Mitigation Plan*. https://www.torranceca.gov/home/showpublisheddocument/56546/637103721624500000

City of Torrance. (2017b). *Climate Action Plan*. https://www.torranceca.gov/our-city/community-development/sustainability/greenhouse-gas-emissions-and-climate-change

City of Torrance. (2018). *Torrance Tract Historic Preservation Plan*. Retrieved July 30, 2020. https://www.torranceca.gov/home/showpublisheddocument/46914/636789936595730000

City of Torrance. (2020a). *City of Torrance Municipal Code, Division 9 - Land Use.*

City of Torrance. (2020b). City of Torrance Website. https://www.torranceca.gov/home/

City of Torrance. (2020c). "Homeowner's Association (HOA) Lookup, ArcGIS Online Map." Retrieved June 30, 2020. https://torranceca.maps.arcgis.com/apps/InformationLookup/index.html?appid=76ff1fab99fe4a90965f91df9b3dd907

City of Torrance. (2020d). "Mary K. Giordano Regional Transit Center." https://www.torranceca.gov/our-city/public-works/park-and-ride-regional-terminal

City of Torrance. (2020e). "Stormwater Basins." https://www.torranceca.gov/government/city-manager/sumps

City of Torrance. (2020g). "Torrance RTC." https://www.torranceca.gov/our-city/public-works/park-and-ride-regional-terminal; https://www.torranceca.gov/?splash=http%3a%2f%2fwww.workzonecam.com%2fprojects%2fcityoftorrance%2fnewtransit%2fworkzonecam&isexternal=true

City of Torrance. (2021). "Parks." https://www.torranceca.gov/services/parks

City of Torrance. (2022a). *City of Torrance Municipal Code.*

City of Torrance. (2022b). *City of Torrance Municipal Code, Chapter 1.*

City of Torrance. (2022c). *City of Torrance Zoning Map.* https://www.torranceca.gov/home/showpublisheddocument/78857/638055129495170000

City of Torrance. (2022d). "Storm Drainage and Sumps." https://www.torranceca.gov/our-city/public-works/street-operations/storm-drainage-and-sumps

City of Torrance Fire Department (FD). (2022). Public Record Request W008801-010622. 2022, January 12

City of Torrance Police Department. (2019). The City of Torrance Updated Coyote Management Plan. https://www.torranceca.gov/home/showdocument?id=52793

City of Torrance Police Department. (2022). Reference: Response to PRA request W008800-010622. Sent by Jeremiah J. Hart, Chief of Police. 2022, January 18

Clark Seif Clark, Inc. (2020). "Offsite Groundwater Interim Remedial Action Plan, Former Matrix Science Facility, 355-455 Maple Avenue, Torrance, CA." 2020, May 28

Cooper Ecological Monitoring (Cooper). (2014). *Southern tarplant mitigation plan: Torrance Regional Transit Center site*. Prepared for Ted Semaan, Engineering Manager, City of Torrance. Revised February 2014.

Crouch, J.K., Suppe, J. (1993). "Late Cenozoic Tectonic Evolution of the Los Angeles Basin and Inner California borderland: A model for core-complex-like crustal extension." *Geological Society of America Bulletin, 105*, 1, 415 – 1,434.

CWE. (2013). *City of Torrance Stormwater Basin Enhancement Project Monitoring and Reporting Plan*. Prepared for: City of Torrance, Public Works Department. https://www.manhattanbeach.gov/home/showdocument?id=19853

Daily Breeze. (n.d.) Undated circa 1960-69 photograph from *Daily Breeze*. Retrieved November 5, 2020. http://blogs.dailybreeze.com/history/2013/12/

Daily Breeze. (1963). "Cemetery Uncovered" from *Daily Breeze.*

Daily Outlook. (1908). "Ghosts Writing in Redondo Cemetery" from *Daily Outlook.*

Department of Toxic Substance Control (DTSC). (2005). "Resource Conservation and Recovery Act facility Assessment, Northrop K6 facility, 640 Alaska Avenue, Torrance, Los Angeles, CA."

Department of Toxic Substances Control (DTSC). (2008). *Fact Sheet: Soil Cleanup Plan.* https://dtsc.ca.gov/wp-content/uploads/sites/31/2017/11/PPG_Industries_FS_Cleanup_Plan.pdf

Dibblee, T. W., Minch, J. A., & Dibblee Geology Center. (2007). *Geologic map of the Venice and Inglewood quadrangles, Los Angeles County, California*. Santa Barbara, Calif: Santa Barbara Museum of Natural History.

Dixon, W., & Roberts, J. (2005). *Hawthorne*. Arcadia Publishing.

Dominguez Channel Watershed Management Area Group (DCWMAG). (2004). *Dominguez Watershed Management Master Plan*. https://www.waterboards.ca.gov/losangeles/water_issues/programs/stormwater/municipal/watershed_management/workshops/docs/july_2018/04_DCEWMPPresentaion_Final.pdf

Dominguez Channel Watershed Management Area Group. (2015). *Final Enhanced Watershed Management Program for the Dominguez Channel Watershed Management Area Group*. https://www.waterboards.ca.gov/losangeles/water_issues/programs/stormwater/municipal/watershed_management/dominguez_channel/DCWMG_EWMPBody.pdf

Dominguez Channel Watershed EWMP Group. (2016). *Enhanced Watershed Management Program for the Dominguez Channel Watershed Management Area Group.* https://www.waterboards.ca.gov/losangeles/water_issues/programs/stormwater/municipal/watershed_management/dominguez_channel/DCWMG_EWMP_2-25-15.pdf

Department of Toxic Substance Control (DTSC). (2005). "Resource Conservation and Recovery Act Facility Assessment, Northrop K6 facility, 640 Alaska Avenue, Torrance, Los Angeles County, California 905503."

Department of Toxic Substance Control (DTSC). (2020). "California DTSC EnviroStor." Retrieved May/June 2020. http://envirostor.dtsc.ca.gov/

Department of Toxic Substance Control (DTSC). (2022a). "Approval of Supplemental Site Investigation Workplan for Area 2 and Area 3 - Soil Gas Assessment, Former Union Carbide Corporation Torrance Facility, 19500 Mariner Avenue, Torrance (Site Code: 400483)."

Department of Toxic Substance Control (DTSC). (2022b). "Conditional Approval of 2021 Annual Groundwater Monitoring Report, Former Union Carbide Corporation Torrance Facility, 19500 Mariner Avenue, Torrance (Site Code: 400483)."

Dyson, Carol J. (2008). *How to Work with Storefronts of the Mid-Twentieth Century: a Mid-Twentieth Century Storefront Components Guide [PowerPoint presentation]*. National Main Streets Conference. Retrieved August 6, 2020.

Edison International. (2021). *2021 Sustainability Report*.

Electric Railway Historical Association of Southern California. (1957). "Los Angeles & Redondo." Retrieved May 27, 2020. http://www.erha.org/la&r.htm

Employment Development Department, State of California. (2022a). *Lawndale City, Unemployment Rates (Labor Force), Historical Data*. Retrieved November 2020. https://labormarketinfo.edd.ca.gov/cgi/dataanalysis/areaselection.asp?tablename=labforce

Employment Development Department, State of California. (2022b). *Redondo Beach City, Unemployment Rates (Labor Force), Historical Data.* Retrieved November 2020. https://labormarketinfo.edd.ca.gov/cgi/dataanalysis/areaselection.asp?tablename=labforce

Employment Development Department, State of California. (2022c). *Torrance City, Unemployment Rates (Labor Force), Historical Data.* Retrieved November 2020. https://labormarketinfo.edd.ca.gov/cgi/dataanalysis/areaselection.asp?tablename=labforce

Environmental Charter Schools. (2021). "Environmental Charter High School – Lawndale*."* https://ecsonline.org/echs-lawndale/

Environmental Services. (2016). "Offsite Assessment Report, Former Thrifty Oil Co. Station No. 257, Former ARCO Station 9651, 16515 Hawthorne Boulevard, Lawndale, California 90260." 2016, December 1.

Envirosolve (Former Voi-Shan Facility). (2008). "4001 Inglewood Avenue, Redondo Beach, California, Anaerobic Reductive Dechlorination Remedial Action Plan." 2008, October 27

Erlandson, Jon M. (1994). *Early Hunter-Gatherers of the California Coast*. Plenum Press, New York.

Federal Emergency Management Agency (FEMA). (2022, March 9). "Flood Insurance*."* https://www.fema.gov/flood-insurance

Federal Highway Administration. (FHWA). (2006). *Roadway Construction Noise Model, User's Guide*. https://www.fhwa.dot.gov/ENVIRonment/noise/construction_noise/rcnm/rcnm.pdf

Federal Highway Administration (FHWA). (2011). *Highway Traffic Noise: Analysis and Abatement Guidance*. December, 2011.

Federal Railroad Administration (FRA). (2006). *Create Railroad Noise Model User Guide*.

Federal Highway Administration (FTA). (2008). *Roadway Construction Noise Model*.

Federal Transit Administration (FTA). (2014). *Transit and Climate Change Adaptation: Synthesis of FTA-Funded Pilot Projects*.

Federal Transit Administration (FTA). (2017). *Greenhouse Gas Emissions from Transit Projects: Programmatic Assessment*.

Federal Transit Administration (FTA). (2018,). *Transit Noise and Vibration Impact Assessment Manual.* https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

Field, E.H., Biasi, G.P., Bird, P., Dawson, T.E., Felzer, K.R., Jackson, D.D., Johnson, K.M., Jordan, T.H., Madden, C., Michael, A.J., Milner, K.R., Page, M.T., Parsons, T., Powers, P.M., Shaw, B.E., Thatcher, W.R., Weldon, R.J., II, and Zeng, Y. (2013). Uniform California earthquake rupture forecast, version 3 (UCERF3)—The time-independent model*. U.S. Geological Survey Open-File Report* 2013–1165, 97 p., *California Geological Survey Special Report* 228, and Southern California Earthquake Center Publication 1792 http://pubs.usgs.gov/of/2013/1165/

Firedepartment.net. (2021). "Los Angeles County Fire Department – Fire Equipment." https://www.firedepartment.net/directory/california/los-angeles-county/los-angeles/los-angeles-county-fire-department/fire-equipment

Freeman, Daniel. (2010). Freeman Family Papers. Loyola Marymount University William H. Lannon Library CSLA Collection, 2010. Retrieved May 27, 2020. http://www.oac.cdlib.org/findaid/ark:/13030/kt038nc4wm/

Friends of Madrona Marsh. (2016). *Marsh Mailing- Madrona Marsh Preserve and Nature Center Mailing. Spring*. https://friendsofmadronamarsh.com/newsletter/mm-2016-spring.pdf

Galvin Preservation Associates (GPA). (2012). *Historic Resources Survey Report: Harbor Gateway Community Plan Area*. Prepared for City of Los Angeles, Department of City Planning, Office of Historic Resources.

Geotechnical Consultants, Inc. (1989). "Site Assessment and Remediation Plan, 15624 Inglewood Avenue, Lawndale, CA."

Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges. In California Prehistory: Colonization, Culture, and Complexity," pp. 191–214. Terry L. Jones and Kathryn Klar, editors. AltaMira Press, Lanham, MD.

Green, N. (2015). *Torrance seeks grant to create preserve for rare plant on transit center site*. Daily Breeze. https://www.dailybreeze.com/2015/07/08/torrance-seeks-grant-to-create-preserve-for-rare-plant-on-transit-center-site/

Green, N. (2019). *Torrance fires contractor on $21-million transit center, delaying the project yet again*. Daily Breeze. https://www.dailybreeze.com/2019/11/08/torrance-fires-contractor-on-21-million-transit-center-delaying-the-project-yet-again/

Gnerre, Sam. (2017). *George Cate, Founder of Pacific Crest Cemetery in Redondo Beach: South Bay History.* Retrieved March 25, 2021. https://www.dailybreeze.com/2019/11/08/torrance-fires-contractor-on-21-million-transit-center-delaying-the-project-yet-again/

Golden State Water Company (GSWC). (2022). "Southwest." https://www.gswater.com/southwest

Google Earth. (2020). Google Earth Historical Aerial Imagery. Retrieved June 2020.

Google Earth Pro. (2021). Google Earth Historical Aerial Imagery. Retrieved June 2020.

Google Maps. (2020). Firmona Villas Homeowners Association. Retrieved June 30, 2020.

Gumprecht, Blake. (1999). *The Los Angeles River: Its Life, and Possible Rebirth*. The Johns Hopkins University Press, Baltimore.

H.T. Harvey & Associates. (2004, December 29). *California Bat Mitigation Techniques, Solutions, and Effectiveness.* Prepared for: California Department of Transportation (Caltrans).

Helix Environmental Planning (Helix). (2014). *Biological Resources Letter Report for the Torrance Transit Park and Ride Regional Terminal Project*. Report Prepared for: City of Torrance, Public Works Department. 2014, November 3 https://www.torranceca.gov/home/showdocument?id=2964

Hernandez, Kelly Lytle. 2017. *City of Inmates: Conquest, Rebellion, and the Rise of Human Caging in Los Angeles, 1771-1965.* UNC Press Books.

Intergovernmental Panel on Climate Change. (2007). *Climate Change 2007: The Physical Science Basis, Working Group I Contribution to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*.

Jackson, Mike. (2000). "Storefronts of Tomorrow": American Storefront Design from 1940 to 1970.

D. Slaton and W. G. Foulks (Eds.), *Preserving the Recent Past 2*. Historic Preservation Education Foundation, National Park Service, and Association for Preservation Technology International. Retrieved August 6, 2020.

Johnston, Bernice. (1962). *California's Gabrielino Indians.* Los Angeles: Southwest Museum.

Jennings, C.W. (2004). Fault Activity Map of California and adjacent areas, with locations of recent volcanic eruptions: California Division of Mines and Geology Geologic Data Map.

Kleinfelder. (2009). "Closure Request Report Former Mobil Service Station 18FC6, 3705 Inglewood Avenue, Redondo Beach." Los Angeles County, California 90278, LARWQCB File ID# I-09395.

Kirkman, George W. 1937. *The Kirkman-Harriman Pictorial and Historical Map of Los Angeles County: 1860 A.D. – 1937 A.D*. Accessed January 22, 2021. https://scvhistory.com/scvhistory/la3701.htm

Kroeber, Alfred L. 1925. Handbook of Indians of California. *Bureau of American Ethnology Bulletin 78*, Smithsonian Institution, Washington D.C.

Lawndale Elementary School District (LESD). (2021a). "School Directories." https://www.lawndalesd.net/directories

Lawndale Elementary School District (LESD). (2021b). "State Preschool Programs." http://carson.lawndalesd.net/prek

Los Angeles County. (2006). *Hydrology Manual, Appendix D*.

Los Angeles County. (2013). 2012-2013 Los Angeles County Civil Grand Jury Report, Los Angeles Fire Department Time Lag.

Los Angeles County. (2015a). Los Angeles *General Plan 2035 - Public Services and Facilities Element*.

Los Angeles County. (2015b). *Los Angeles General Plan 2035 - Safety Element*

Los Angeles County. (2019). *Los Angeles County EMS System Report.* Retrieved November 17, 2020. http://file.lacounty.gov/SDSInter/dhs/1052574_EMSAnnualDataReport2018-12-01.pdf

Los Angeles County. (2022). *Los Angeles General Plan 2035 - Safety Element*

Los Angeles County Bicycle Coalition. (2011). *South Bay Bicycle Master Plan*. https://bchd.org/docs/healthy-communities/South_Bay_BMP_Draft_Final_Plan.pdf

Los Angeles County Department of Public Works (LACDPW). (2014). *Low Impact Development Standards Manual.* https://pw.lacounty.gov/ldd/lddservices/docs/Los%20Angeles%20County%20Low%20Impact%20Development%20(LID)%20Manual.pdf

Los Angeles County Department of Public Works (LACDPW). (2022a). *Detailed Solid Waste Disposal Activity Report by Jurisdiction of Origin*. https://dpw.lacounty.gov/epd/swims/OnlineServices/reports.aspx

Los Angeles County Department of Public Works (LACDPW). (2022b). "Los Angeles County Storm Drain System." https://pw.lacounty.gov/fcd/StormDrain/index.cfm

Los Angeles County Fire Department (LACoFD). (2018). *Los Angeles County Fire Department Strategic Plan 2017-2021*. https://fire.lacounty.gov/wp-content/uploads/2019/09/LACoFD-Strategic-Plan-2017-2021.pdf

Los Angeles County Fire Department (LACoFD). (2020). *2019 Statistical Summary.* https://fire.lacounty.gov/wp-content/uploads/2020/06/2019-Statistical-Summary-May-2020.pdf

Los Angeles County Metropolitan Transportation Authority (Metro). (2003). *Grade Crossing Safety Policy for Light Rail Transit.*

Los Angeles County Metropolitan Transportation Authority (Metro). (2007a). *Energy and Sustainability Policy*.

Los Angeles County Metropolitan Transportation Authority (Metro). (2007b). *Sustainability Implementation Plan (MSIP).*

Los Angeles County Metropolitan Transportation Authority (Metro). (2009a). *2009 Long-Range Transportation Plan*.

Los Angeles County Metropolitan Transportation Authority (Metro). (2009b). *Exposition Corridor Transit Project Phase 2, Final Noise and Vibration Technical Report*. http://libraryarchives.metro.net/DPGTL/eirs/Expo/docsP2FinalEIR/TBR%20NoiseandVibration%20Final_Dec09.pdf

Los Angeles County Metropolitan Transportation Authority (Metro). (2009c). *Water Use and Conservation Policy*.

Los Angeles County Metropolitan Transportation Authority (Metro). (2010). *Water Action Plan*. http://libraryarchives.metro.net/DB_Attachments/120215_Water_Plan2010_0825.pdf

Los Angeles County Metropolitan Transportation Authority (Metro). (2011a). *Energy Conservation.*

Los Angeles County Metropolitan Transportation Authority (Metro). (2011b). *Energy Conservation and Management Plan*.

Los Angeles County Metropolitan Transportation Authority (Metro). (2011c). *Green Construction Policy*.

Los Angeles County Metropolitan Transportation Authority (Metro). (2012a). *Metro Rail Design Criteria (MRDC), Fire/Life Safety Criteria*.

Los Angeles County Metropolitan Transportation Authority (Metro). (2012b). *Metro Rail Design Criteria (MRDC), Safety and Security Systems*.

Los Angeles County Metropolitan Transportation Authority (Metro). (2013). *Sustainable Rail Plan*.

Los Angeles County Metropolitan Transportation Authority. (2014a). *2014 Short Range Transportation Plan*. https://www.metro.net/about/plans/short-range-transportation-plan/

Los Angeles County Metropolitan Transportation Authority (Metro). (2014b). *Metro Complete Streets Policy.*

Los Angeles County Metropolitan Transportation Authority (Metro). (2014c). *Metro First/Last Mile Strategic Plan.* http://libraryarchives.metro.net/DPGTL/scag/2014-first-last-mile-strategic-plan-final-march.pdf

Los Angeles County Metropolitan Transportation Authority (Metro). (2014d). *South Bay Metro Green Line Extension: Draft Environmental Impact Statement/Environmental Impact Report.*

Los Angeles County Metropolitan Transportation Authority (Metro). (2016a). *Active Transportation Strategic Plan*. https://www.metro.net/projects/active-transportation-strategic-plan-atsp/

Los Angeles County Metropolitan Transportation Authority (Metro). (2016b). *Measure M Expenditure Plan*. https://www.dropbox.com/s/vs6sse7hzyw8s0h/2017-MeasureM-ordinance-with-expenditure-plan.pdf?dl=0

Los Angeles County Metropolitan Transportation Authority (Metro). (2017). *Metro Rail Design Criteria Section 5, Structural/Geotechnical.*

Los Angeles County Metropolitan Transportation Authority (Metro). (2018a). *2019 Energy & Resource Report*.

Los Angeles County Metropolitan Transportation Authority (Metro). (2018b). *Metro Design Criteria and Standards, Adjacent Construction Design Manual*. Retrieved November 18, 2022.

Los Angeles County Metropolitan Transportation Authority (Metro). (2018c). *Metro System Security & Law Enforcement 2018 Report*.

Los Angeles County Metropolitan Transportation Authority (Metro). (2018d). *Systemwide Station Design Standards Policy.* Retrieved November 18, 2022. http://libraryarchives.metro.net/DPGTL/Policies/2018-systemwide-station-design-standards-policy.pdf

Los Angeles County Metropolitan Transportation Authority (Metro). (2019a). *2019 Energy and Resource Report*.

Los Angeles County Metropolitan Transportation Authority (Metro). (2019b). *Metro Climate Action and Adaptation Plan*.

Los Angeles County Metropolitan Transportation Authority (Metro). (2019c). *Metro Transit to Parks Strategic Plan.*

Los Angeles County Metropolitan Transportation Authority (Metro). (2020a). *2020 Long Range Transportation Plan (LRTP).*

Los Angeles County Metropolitan Transportation Authority (Metro). (2020b). *Bus Rapid Transit Vision & Principles Study*. https://www.dropbox.com/sh/wax1hmpl3sdx31z/AADhCEGBhvBjFYSCsi0zgZCAa?dl=0&preview=Nov_2020_BRTV%26P+Final+Report.pdf

Los Angeles County Metropolitan Transportation Authority (Metro). (2020c). *C Line (Green) Line Extension to Torrance*. https://www.metro.net/projects/green-line-extension/

Los Angeles County Metropolitan Transportation Authority (Metro). (2020d). *Energy and Resource Report 2020 Annual Reporting: Data Set (Technical Appendix)*.

Los Angeles County Metropolitan Transportation Authority (Metro). (2020e). *LACMTA Energy and Resource Report – Technical Appendix*.

Los Angeles County Metropolitan Transportation Authority (Metro). (2020f). *Moving Beyond Sustainability: Sustainability Strategic Plan 2020*. http://media.metro.net/2020/Moving-Beyond-Sustainability-Strategic-Plan-2020.pdf

Los Angeles County Metropolitan Transportation Authority (Metro). (2020g). *NextGen published information*. Retrieved January 28, 2022. https://www.metro.net/about/plans/nextgen-bus-plan/

Los Angeles County Metropolitan Transportation Authority (Metro). (2020h). Resiliency Indicator Framework, 2020 Addendum.

Los Angeles County Metropolitan Transportation Authority (Metro). (2020i). *Transit Oriented Communities Implementation Plan*.

Los Angeles County Metropolitan Transportation Authority (Metro). (2021a). *2021 LA County Goods Movement Strategic Plan*. https://www.scribd.com/document/500945351/Goods-Movement-Strategic-Plan

Los Angeles County Metropolitan Transportation Authority (Metro). (2021b). *Los Angeles County Metropolitan Transportation Authority Metro Art Program Policy.* https://www.dropbox.com/s/pmrhq56u8dsf3qg/MetroArtPolicy_FY2021.pdf?dl=0

Los Angeles County Metropolitan Transportation Authority (Metro). (2021c). "First/Last Mile Guidelines." https://www.metro.net/about/first-last/

Los Angeles County Metropolitan Transportation Authority (Metro). (2021d). *Metro Adjacent Development Handbook.* Retrieved November 18, 2022. https://www.dropbox.com/s/3cddvf2og5jo5v6/2021-Adjacent-Development-Review-Handbook.pdf?dl=0

Los Angeles County Metropolitan Transportation Authority (Metro). (2021e). Metro Art Program Policy. Retrieved December 20, 2022. https://www.dropbox.com/s/pmrhq56u8dsf3qg/MetroArtPolicy_FY2021.pdf?dl=0

Los Angeles County Metropolitan Transportation Authority (Metro). (2021f). Phase I Environmental Site Assessment: Alternative 1: Metro Railroad ROW.

Los Angeles County Metropolitan Transportation Authority (Metro). (2021g). Phase I Environmental Site Assessment: Alternative 2: Hawthorne Boulevard.

Los Angeles County Metropolitan Transportation Authority (Metro). (2021h). *Vision 2028 Plan*. https://www.metro.net/about/plans/metro-strategic-plan/

Los Angeles County Metropolitan Transportation Authority. (2022a). *2022 APTA Sustainability Performance Report*.

Los Angeles County Metropolitan Transportation Authority (Metro). (2022b). *Energy Resource Management*. https://sustainabilityreporting.metro.net/energy-resource-management

Los Angeles County Metropolitan Transportation Authority (Metro). (2022e). *Project Labor Agreement & Construction Careers Policy*. https://www.metro.net/about/placcp/#pilot-local-hire-initiatives

Los Angeles County Metropolitan Transportation Authority (Metro). (2023). *Metro C Line Green Extension to Torrance Project Ridership Report*.

Los Angeles County Sewer Districts (LACSD). (2022). "Facilities – Joint Water Pollution Control Plant." https://www.lacsd.org/facilities/?tab=2&number=1

Los Angeles Public Library (LAPL). *1906-1951 Sanborn Fire Insurance Maps*. Retrieved 2020.

Los Angeles Regional Water Quality Control Board (LARWQCB). (2003). *Waste Discharge Requirements.* https://www.waterboards.ca.gov/losangeles/board_decisions/adopted_orders/general_orders/r4-2003-0108/r4-2003-0108.pdf

Los Angeles Regional Water Quality Control Board (LARWQCB). (2010). *Construction Site Best Management Practices (BMPs) Manual*. http://dpw.lacounty.gov/cons/specs/bmpmanual.pdf

Los Angeles Regional Water Quality Control Board (LARWQCB). (2014). *Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties.*

Los Angeles Regional Water Quality Control Board (LARWQCB). (2015). *Dominguez Channel EWMP.* https://www.waterboards.ca.gov/losangeles/water_issues/programs/stormwater/municipal/watershed_management/dominguez_channel/DCWMG_EWMP_2-25-15.pdf

Los Angeles Regional Water Quality Control Board (LARWQCB). (2018). *Updated Beach Cities Enhanced Watershed Management Program.* https://www.waterboards.ca.gov/rwqcb4/water_issues/programs/stormwater/municipal/watershed_management/beach_cities/BeachCities_EWMP_March%202018.pdf

Los Angeles Regional Water Quality Control Board (LARWQCB). (2021). Regional Phase I Ms4 NPDES Permit. Order No. R4-2021-0105. NPDES Permit No. CAS004004. https://www.waterboards.ca.gov/losangeles/water_issues/programs/stormwater/municipal/public_docs/2022/1_Order(ACC-RPSignature).pdf

Los Angeles Regional Water Quality Control Board (LARWQCB). (2022). *Waste Discharge Requirements for Wastewater, Waste Residuals, & Recycled Water.* https://www.waterboards.ca.gov/northcoast/water_issues/programs/wdr/

Los Angeles Sheriff Department (LASD). (2018). "South Los Angeles Station – City of Lawndale 2018 Incidents and Arrests Summary." http://shq.lasdnews.net/CrimeStats/yir9600/yir2018/sla/24.htm

Los Angeles Sheriff Department (LASD). (2020). "Sheriff's Department." https://lacounty.gov/residents/public-safety/sheriff/

Los Angeles Times (LAT). (1958, July 20). Advertisements from *Los Angeles Times (LAT).*

Los Angeles Times (LAT). (1970, December 7). Classifieds from *Los Angeles Times (LAT).*

Los Angeles Times (LAT). (1979. October 28). Huge Dining Set Selection at Bay Game and Dining from *Los Angeles Times (LAT).*

Los Angeles Times (LAT). (1985, December 22). Advertisements from *Los Angeles Times (LAT).*

Los Angeles Times (LAT). (1987, March 15). Advertisements from *Los Angeles Times (LAT).*

McAlester, V., McAlester, A. L. (2013). *A Field Guide to American Houses.* 1984 Reprint. New York: Alfred A, Knopf, Inc.

McCandless, Michael H. (n.d.). *Well at Least We Tried: The Seaport of Redondo Beach from 1888 to 1912*. Retrieved on May 27, 2020. http://oocities.com/portredondo/index.htm

McCawley, W. (1996). The First Angelinos: The Gabrielino Indians of Los Angeles. Malki Museum Press. Banning.

McKenna, Jeanette A. and Tamara Farris. (1996). *Archaeological Research and Site Identification for Resources Reported to be located within the City of Redondo Beach, Los Angeles County, California*. Prepared for the City of Redondo Beach.

McLeod, S. A. (2010). Natural History Museum of Los Angeles County. Unpublished collections data.

Miller, W. E. (1971). Pleistocene vertebrates of the Los Angeles basin and vicinity (exclusive of Rancho La Brea): Bulletin of the Los Angeles County Museum of Natural History, no. 10, 124 pp.

Metropolitan Water District of Southern California (MWD). (2007). MWD | Homepage https://www.mwdh2o.com

Metropolitan Water District of Southern California (MWD). (2022a). "Member Agencies Home." https://www.mwdh2o.com/member-agencies/

Metropolitan Water District of Southern California (MWD). (2022b). "Overview & Mission Home." https://www.mwdh2o.com/our-story/

Montgomery Watson. (2000, August). *Phase II Remedial Investigation Report for the Heil Separator Area, 19500 Mariner Ave, Torrance, CA.*

National Fire Protection Association (NFPA). (2018). *NFPA 1 Uniform Fire Code.*

National Fire Protection Association (NFPA). (2020). *NFPA 1720 Standard for The Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments, Table 4.3.2*.

National Register of Historic Places (NRHP). (2022). National Register of Historic Places (U.S. National Park Service). Retrieved October 2022.

NETROnline. (2020). Historic Aerials Aerial Photos at Crenshaw Boulevard between California Street and Maricopa Street, Torrance, California and Redondo Beach 1952–2005. Retrieved May 27, 2020. http://www.historicaerials.com/

Ninyo & Moore. (2019, August 7). Site Investigation Report, 4722 Manhattan Boulevard, Lawndale, CA.

Oskin, M., K. Sieh, T. Rockwell, G. Miller, P. Guptill, M. Curtis, S. McArdle, and P. Elliot. (2000, May). *Active parasitic folds on the Elysian Park anticline: Implications for seismic hazard in central Los Angeles, California*. GSA Bulletin. *112* (5), 693–707.

Racer, F. H. (1939). *Camp Sites in Harbor District.* Report No. LA-11482. Document on file, South Central Costal Information Center, California State University, Fullerton.

Redondo Beach Historical Society. (2020). Redondo Pier. Retrieved May 27, 2020. http://www.redondohistorical.org/?page_id=78

Redondo Beach Unified Child Development Center. (2021). "Child Development Centers." https://cdc.rbusd.org/

Redondo Beach Unified School District (RBUSD). (2021a). "Washington Elementary School." https://washington.rbusd.org/

Redondo Beach Unified School District (RBUSD). (2021b). "Adams Middle School." https://www.adamsmiddle.org/

Redondo Beach Police Department (PD). (2022). Retrieved January 29. "Response to Terry A. Hayes Associates, Inc." Sent by Jessica Antes, Redondo Beach Police Department.

Redondo Reflex. (1923). "Baby Glen Dies."

Regional Water Quality Control Board (RWQCB). (1996, September 26). "Request for Closure of Hydrocarbon-Impacted Soil Site Letter, 18900 Hawthorne Boulevard, Torrance (File No. 100.315)."

Regional Water Quality Control Board (RWQCB). (2008, November 18). "Underground Storage Tank - Case Closure, PPG Industries, Inc. (Priority A1 Site), 465 Crenshaw Boulevard, Torrance, CA (Case No. 905030170)."

Regional Water Quality Control Board (RWQCB). (2009). "Underground Storage Tank - Case Closure, Mobil #18-FC6 (Former #11-FC6), 3705 Inglewood Avenue, Redondo Beach. Case No. I-09395, Priority B-1, Global ID No. T0603703403."

Regional Water Quality Control Board (RWQCB). (2014). "Underground Storage Tank Low Risk Case Review Form, 16926 South Hawthorne Boulevards, Lawndale, CA 90260."

Regional Water Quality Control Board (RWQCB). (2018). "Underground Storage Tank Case Closure, PPG Industries, Inc., 465 Crenshaw Boulevard, Torrance, CA."

Regional Water Quality Control Board (RWQCB). (2021). "Underground Storage Tank Low Risk Case Review Form, Westwood Building Materials, 15708 Inglewood Avenue, Lawndale, CA, Case No. I-11593A, Global ID No. T0603782465, CUF ID No. 20323."

Regional Water Quality Control Board (RWQCB). (2022a). "Former Merrell Paint Company, No Further Requirements for Soil (Site Cleanup No. 0792), 15624 Inglewood Avenue, Lawndale, CA."

Regional Water Quality Control Board (RWQCB). (2022b). "Review of Third Quarter 2021 Groundwater Monitoring Report and Comments on Waterstone's February 20, 2019, Erd Pilot Test."

Regional Water Quality Control Board (RWQCB). (2022c). "Underground Storage Tank Program – Preclosure Notification, Westwood Building Materials, 15708 Inglewood Avenue, Lawndale, CA, Case No. I-11593A, Global ID No. T0603782465, CUF ID No. 20323."

Reid, Hugo. (1939. [1852]) Letters on the Los Angeles County Indians. *A Scotch Paisano in Old Los Angeles*, by Susanna Bryant Dakin, pp. 215–286. University of California Press.

Rice, Richard B., William A Bullough, and Richard J. Orsi. (2002). *The Elusive Eden: A New History of California*. McGraw-Hill.

Robinson, W. W. (1948). *Land in California*. University of California Press.

Roffers and Bedrossian. (2012). "Geologic Compilation of Quaternary Surficial Deposits in Southern California, Onshore Portion of the Long Beach 30' x 60' Quadrangle," July 2012

Paradigm Environmental. (2015). *Addendum to Enhanced Watershed Management Program for the Dominguez Channel Watershed Management Area Group: Incorporation of City of Lawndale*. https://www.waterboards.ca.gov/losangeles/water_issues/programs/stormwater/municipal/watershed_management/dominguez_channel/dc_lawndale_ewmp_addendum.pdf

SAIC Energy. (2012). "Environmental & Infrastructure, 2012, Arco Station #09651, 16515 Hawthorne Boulevard, Lawndale, CA."

Saucedo, G. J., Greene, H. Gary, Kennedy, P. Michael, Bezore, P. Stephen…Middendorf, Benjamin. (2016). *Preliminary Geologic Map of the Long Beach 30' x 60' Quadrangle, Southern California, Version 2.0*. California Geological Survey.

SCS Engineers. (2018). "Phase II Investigation Report, North Posse Site, 3041 Del Amo Boulevard, Torrance, CA 90503."

SCS Engineers (2022). "Technical Memorandum, Information related to potential data gaps and proposed additional soil sampling and analysis, North Posse Site, 3041 Del Amo Boulevard, Torrance, CA."

SGI. (2006). "The Source Group, Inc., Remediation Well Installation Report, United Station No. 04, 16926 S. Hawthorne Avenue, Lawndale, CA."

Serpico, Philip C. (1988). *Santa Fe Route to the Pacific*. Palmdale, C.A. Omni Publications.

Shanahan, Dennis F. and Charles Elliott, Jr. (1984). *Historic Torrance: A Pictorial History of Torrance*, *California*. Legends Press, Redondo Beach, California.

Shaw, J. H., and Suppe, J. (1996). "Earthquake Hazards of Active Blind-Thrust Faults under the Central Los Angeles Basin, California." *Journal of Geophysical Research, 101(B4),* 8623-8642.

Shaw, J. H., and P. Shearer. (1999). "An elusive blind-thrust fault beneath metropolitan Los Angeles." *Science, 283,* 1516-1518.

Society of Vertebrate Paleontology (SVP). (1995). "Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources: Standard Guidelines." Society of Vertebrate Paleontology News Bulletin. 163:22–27.

South Bay Cities Council of Governments. (2009). Sustainable South Bay – An Integrated Land Use and Transportation Strategy.

South Bay Cities Council of Governments. (2018). *Sub-Regional Climate Action Plan.*

South Bay Cities Council of Governments. (2019). *Sub-Regional Climate Adaptation Plan*.

South Coast Air Quality Management District (SCAQMD). (1993). *CEQA Air Quality Handbook*.

South Coast Air Quality Management District (SCAQMD). (2005). *Rule 403 Fugitive Dust.* https://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-403.pdf?sfvrsn=4

South Coast Air Quality Management District (SCAQMD). (2008). *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold*.

South Coast Air Quality Management District (SCAQMD). (2009). *2006-2008 Thresholds for Construction and Operation*.

South Coast Air Quality Management District (SCAQMD). (2017a). *Final 2016 Air Quality Management Plan*.

South Coast Air Quality Management District (SCAQMD). (2017b). *Final 2016 Air Quality Management Plan*, *Appendix II Current Air Quality*.

South Coast Air Quality Management District (SCAQMD). (2017c). *2016 Air Quality Management Plan Final EIR*.

South Coast Air Quality Management District (SCAQMD). (2018, 2019a, 2020). *Historical Air Quality Data*.

South Coast Air Quality Management District (SCAQMD). (2019b). *SCAQMD Air Quality Significance Thresholds*.

South Coast Air Quality Management District (SCAQMD). (2022). 2022 Air Quality Management Plan http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/final-2022-aqmp.pdf?sfvrsn=10

Southern California Association of Governments (SCAG). (2019a). *Land Use Combined Los Angeles, SCAG GIS Open Data Portal*. Retrieved June 30, 2020. http://gisdata-scag.opendata.arcgis.com/datasets/389cd8eadde94fe9b1cc20bb8f3a6d1a_0

Southern California Association of Governments (SCAG). (2019b). *Profile of the City of Lawndale*. Retrieved October 2020. https://scag.ca.gov/sites/main/files/file-attachments/lawndale_localprofile.pdf?1606011238

Southern California Association of Governments (SCAG). (2019c). *Profile of the City of Redondo Beach.* Retrieved October 2020. https://scag.ca.gov/sites/main/files/fileattachments/torrance_localprofile.pdf?1606011156

Southern California Association of Governments (SCAG). (2019d). *Profile of the City of Torrance*. Retrieved October 2020. https://scag.ca.gov/sites/main/files/file-attachments/redondobeach_localprofile.pdf?1606011195

Southern California Association of Governments (SCAG). (2020a). *Certified Final Program Environmental Impact Report*.

Southern California Association of Governments (SCAG). (2020b). *Connect SoCal: The 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy*.

Southern California Association of Governments (SCAG). (2020c). *Connect SoCal: 2020–2045 Regional Transportation Plan/Sustainable Communities Strategy Demographics and Growth Forecast Technical Report*. https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_demographics-and-growth-forecast.pdf?1606001579

Southern California Association of Governments (SCAG). (2020d). *Connect SoCal: 2020–2045 Regional Transportation Plan/Sustainable Communities Strategy Performance Measures Technical Report*.

Southern California Association of Governments (SCAG). (2020e). *Connect SoCal: 2020-2045 Regional Transportation Plan / Sustainable Communities Strategy, Project List.*

Southern California Association of Governments (SCAG). (2021a). *Final 2021 Federal Transportation Improvement Program*.

South Coast Air Quality Management District (SCAQMD). (2021b). *Multiple Air Toxics Exposure Study in the South Coast AQMP: MATES V Final Report*.

Southern California Edison (SCE). (2018). *Annual System Reliability Report.* https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/infrastructure/electric-reliability-reports/2018_sce.pdf

Southern California Edison (SCE). (2022a). *2021 Power Content Label*.

Southern California Edison (SCE). (2022b). *Who We Are*. https://www.sce.com/about-us/who-we-are

Southern California Gas Company (SoCalGas). (2022). Company Profile. Retrieved March 7. https://www.socalgas.com/about-us/company-profileh

State of California. (1971). *California Public Park Preservation Act*, *Public Resources Code*, *§ 5400-5409*. 1971.

State of California. (2012). *The Emergency Management Mutual Aid Plan.*

State of California. (2020a). *California Code of Regulations, Title 24, Part 9, § 7703.2; 909.5.2; 1022.2*.

State of California. (2020b). *California Health and Safety Code*, *§ 1300*.

State of California. (2020c). California Penal Code.

State Water Resources Control Board (SWRCB). (2002). *Water Quality Enforcement Policy.* https://www.waterboards.ca.gov/plans_policies/docs/wqep.doc

Strauss, Monica. (2003). “Site Records (a) 19-186930 and (b) 19-186931.” On file at South Central Coastal Information Center, California State University, Fullerton.

The Governor's Office of Emergency Preparedness. (2021). *About Cal OES*. https://www.caloes.ca.gov/cal-oes-divisions/about-cal-oes

Todd Groundwater. (2015). *Salt and Nutrient Management Plan: Central Basin and West CoastBasin.*

Tokimatsu and Seed. (1987). *Evaluation of Settlements in Sands Due to Earthquake.*

Torrance Fire Department (FD). (2017). *Emergency Medical Services Annual Report 2017*.

Torrance Fire Department (FD). (2018). *Community Risk Assessment and Standards of Cover.*

Torrance Fire Department (FD). (2021). "Torrance Fire Department – About Us." https://www.torranceca.gov/government/fire/about-us.

Torrance Fire Department (FD). (2022, January). "Public Record Request W008801-010622." Sent by the Torrance Fire Department.

Torrance Herald. (1957). Advertisements. December 19, 1957.

Torrance Police Department (PD). (2022). "Reference: Response to PRA request W008800-010622." Sent by Jeremiah J. Hart, Chief of Police. 2022, January 18.

Torrance Unified School District (TUSD). (2021). "About Us." https://www.tusd.org/district

Transportation Electrification Partnership. (2018). *Zero Emissions 2028 Roadmap*. https://roadmap.laci.org/wp-content/uploads/2019/02/LACI-ROADMAP-V7-FINAL-HI-FI-1-020819.T6J-2.pdf

United States, Congress. *Code of Federal Regulations, Title 40, Chapter 1, Subsection D Part 122*.

United States, Congress. *United States Code (USC), Title 16, Chapter 12.*

United States, Congress. *United States Code (USC), Title 33, Chapter 23.*

United States, Congress. *United States Code (USC), Title 47, Chapter 5.*

United States Department of Agriculture and State Water Resources Control Board. (2016). "RULSE k Values map. "

United States Department of Justice. (1990). *Americans with Disabilities Act*. https://www.ada.gov/

United States Energy Information Administration (EIA). (2019). "State Energy Data System, California Energy Consumption by Sector." https://www.eia.gov/state/?sid=CA

United States Energy Information Administration (EIA). (2022a). "California State Energy Profile." https://www.eia.gov/beta/states/states/ca/overview.

United States Energy Information Administration (EIA). (2022b). *Units and Calculations Explained British Thermal Units (BTUs).* https://www.eia.gov/energyexplained/units-and-calculators/british-thermal-units.php

United States Environmental Protection Agency (USEPA). (1990). *1990 Clean Air Act Amendments, Title 42, Chapter 85*. November 1990.

United States Environmental Protection Agency (USEPA). (2009). *Final Rule – Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act (Federal Register Vol 74 No 239, 40 CFR Chapter I, Docket ID EPA-HQ-OAR-2009-0171)*.

United States Environmental Protection Agency (USEPA). (2013). *Learn about Polychlorinated Biphenyls (PCBs): Health Effects of PCBs.* https://www.epa.gov/pcbs/learn-about-polychlorinated-biphenyls-pcbs#healtheffects

United States Environmental Protection Agency (USEPA). (2020). *Clean Water Act Section 401 Certification Rule*. https://www.federalregister.gov/documents/2020/07/13/2020-12081/clean-water-act-section-401-certification-rule

United States Environmental Protection Agency (USEPA). (2022a). *The Safer Affordable Fuel Efficient (SAFE) Vehicles Proposed Rule for Model Years 2021-2026*. https://www.epa.gov/regulations-emissions-vehicles-and-engines/safer-affordable-fuel-efficient-safe-vehicles-proposed

United States Environmental Protection Agency (USEPA). (2022b,). "UST Finder." May 18. https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=b03763d3f2754461adf86f121345d7bc

United States Environmental Protection Agency (USEPA). (2022c). *Emission Standards Reference Guide for On-road and Nonroad Vehicles and Engines.* https://www.epa.gov/emission-standards-reference-guide

United States Geological Survey (USGS). (2008). National Seismic Hazards Maps – Source Parameters. Retrieved August 2020. https://earthquake.usgs.gov/cfusion/hazfaults_2008_search/query_main.cfm

United States Geological Survey (USGS). (2010). Glossary of Terms on Earthquake Maps.

United States Geological Survey (USGS). (2020). United States Geological Survey Unified Hazard Tool. Retrieved September 2020. https://earthquake.usgs.gov/hazards/interactive/

University of California, Berkeley (UCB). (2022). "Transportation Injury Mapping System (TIMS) California Safety PM Target Setting Support Tool." Accessed February 2022. https://tims.berkeley.edu/

University of California, Santa Barbara (UCSB). (1928). Aerial Photograph c-300 m-34. https://mil.library.ucsb.edu/ap_indexes/FrameFinder/.

University of California, Davis. (2022, September 21). *Temporary and Longer-term Impacts of the COVID-19 Pandemic on Mobility in the SCAG Region* [PowerPoint slides].

URS. (2010, May). "Phase I Environmental Site Assessment, Union Carbide Corporation Torrance Distribution Facility, Parcels B & C, 19500 Mariner Avenue, Torrance, CA."

U.S. Census Bureau. (2020a). *City/County Population and Housing Estimates*. Retrieved October 2020.

U.S. Census Bureau. (2020b). *Cumulative Estimates of Resident Population Change and Rankings for Counties in California*. Retrieved October 2020.

U.S. Census Bureau. (2022a). *Hawthorne City, California.* https://data.census.gov/cedsci/profile?g=1600000US0632548*h*

U.S. Census Bureau. (2022b). *Redondo Beach City, California.* https://data.census.gov/cedsci/profile?g=1600000US0660018

U.S. Census Bureau. (2022c). *Torrance City, California*. https://data.census.gov/cedsci/profile?g=1600000US0680000

U.S. Department of Transportation. (2021). *Climate Action Plan*. https://www.transportation.gov/sites/dot.gov/files/2022-04/Climate_Action_Plan.pdf

U.S. Fish and Wildlife Service (USFWS). (2020). "NWI Mapper." https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper

Vargas, Benjamin Raul. 2003. "Life at the Edge of Time: Contact Period Archaeology in Southern California, A View for La Ballona." Unpublished M.A. thesis, California State University, Long Beach

Wallace, William J. (1955). "A Suggested Chronology for Southern California Coastal Archaeology. *Southwestern Journal of Anthropology* 11(3):214–230.

Warren, Claude N. (1968). Cultural Traditions and Ecological Adaptation on the Southern California Coast." *Archaic Prehistory in the Western United States*, edited by Cynthia Irwin-Williams. Eastern New Mexico University Contributions in Anthropology 1(3):1–14.

Water Replenishment District of Southern California. (2008). Water Replenishment District Homepage. https://www.wrd.org/

Water Replenishment District (WRD). (2016). *Groundwater Basins Master Plan*.

Water Replenishment District (WRD). (2020). *Groundwater Basin Update for November 2020.* https://www.wrd.org/files/7f9e4838f/Groundwater+Basin+Update%2C+November+2020.pdf

Waterstone Environmental, Inc. (2018). "Results of Additional Site Investigation, 4001 Inglewood Ave., Redondo Beach, CA." 2018, July 31.

Waterstone Environmental, Inc. (2019). "Results of Additional Site Investigation, 4001 Inglewood Ave., Redondo Beach, CA." 2019, August 20.

Waterstone Environmental, Inc. (2022). "Access Status Report for Installation of Offsite Groundwater Monitoring Wells at Former Voi-Shan Facility, 4001 Inglewood Ave., Redondo Beach, CA." 2022, April 30.

Weil, E., R. Brown, and J. Weisbord. (1984). "State of California Department of Parks and Recreation Site Forms for P 19 001144." Document on file, South Central.

West Basin Municipal Water District (West Basin). (2020). *Urban Water Management Plan.*

West Basin Municipal Water District (West Basin). (2021). *Water Use Report 2020-2021.*

West Basin Municipal Water District (West Basin). (2022). *West Coast Groundwater Basin West Basin Municipal Water District*. https://www.westbasin.org/water-supplies/groundwater/west-coast-groundwater-basin/

Wiseburn Unified School District (WUSD). (2021). "Our Schools." https://www.wiseburn.org/our-schools/our-schools

Working Group on California Earthquake Probabilities. (1995). Seismic Hazards in Southern California: Probable Earthquakes, 1994 to 2024. *Bulletin of the Seismological Society of America*, 85(2), 379-439.

Working Group on California Earthquake Probabilities. (2008). The Uniform California Earthquake Rupture Forecast, Version 2 (UCERF 2): *U.S. Geological Survey Open-File Report 2007-1437 and California Geological Survey Special Report 203*.

Yerkes, R. F., T. H. McCulloh, J. E. Schoellhamer, and J. G. Vedder. (1965). "Geology of the Los Angeles Basin California—An Introduction." *Geological Survey Professional Paper* 420-A, 57 pp.

Yerkes, R.F., and R.H. Campbell. (2005). "Preliminary Geologic Map of the Los Angeles 30' x 60' Quadrangle, Southern California." *U.S. Geological Survey Open-File Report 2005-2019*.

6. ACRONYMS AND ABBREVIATIONS

2020 COR ACTION .....2020 Corrective Action Program List
µg/m3.....Micrograms per Cubic Meter
µm .....Micrometer
AA.....Alternatives Analysis
AASHTO .....American Association of State Highway and Transportation Officials
AAQS.....Ambient Air Quality Standards
AB .....Assembly Bill
ACE .....Advanced Conceptual Engineering
ACM.....Asbestos Containing Materials
ADA .....Americans with Disabilities Act
ADL.....Aerially Deposited Lead
AFY .....Acre-Feet per Year
AHJ..... Authority Housing Jurisdiction
AMC.....Airport Metro Connector
AOC .....Area of Concern
AP .....Alquist-Priolo
APE .....Area of Potential Effect
APEFZ .....Alquist-Priolo Earthquake Fault Zone
APM.....Automated People Mover
APTA.....American Public Transportation Association
AQMP .....Air Quality Management Plan
ARS .....Acceleration Response Spectrum
AST .....Aboveground Storage Tanks
AT&SF.....Atchison, Topeka and Santa Fe
ATCM.....Airborne Toxic Control Measure
ATSP .....Active Transportation Strategic Plan
BACT.....Best Available Control Technology
BERD.....Built Environment Resources Directory
bgs.....Below Ground Surface
BMP.....Best Management Practice
BNSF .....Burlington Northern Santa Fe, LLC.
B.P. .....Before Present
BRT .....Bus Rapid Transit
CAA.....Clean Air Act
CAAP.....Climate Action and Adaptation Plan
CAAQS .....California Ambient Air Quality Standards
CAFE .....Corporate Average Fuel Economy
CalEEMod .....California Emissions Estimator Model
Cal-EMA..... California Emergency Management Agency
CalEPA .....California Environmental Protection Agency
CALGreen .....California Green Building Standards
Caltrans .....California Department of Transportation
Cal OES.....California Office of Emergency Services

CalRecycle .....Department of Resources Recycling and Recovery
CAMUTCD .....California Manual on Uniform Traffic Control Devices
CAP .....Climate Action Plan
CAPCOA .....California Air Pollution Control Officers Association
CARB.....California Air Resources Board
CBC .....California Building Code
CCAA.....California Clean Air Act
CCR.....California Code of Regulations
CCTV..... Closed Circuit Television
CDFW .....California Department of Fish and Wildlife
CEC .....California Energy Commission
CEQA .....California Environmental Quality Act
CERCLA .....Comprehensive Environmental Response, Compensation, and Liability Act
CERS TANKS.....California Environmental Reporting System Tanks
CERS .....California Environmental Reporting System
CFGC.....California Fish and Game Code
CFR .....Code of Federal Regulations
CGS .....California Geological Survey
CH_4.....Methane
CHMIRS .....California Hazardous Material Incident Reporting
CMB18.....Corridor Based Model 2018
CNDDB.....California Natural Diversity Database
CNG .....Compressed Natural Gas
CO.....Carbon Monoxide
CO_2 .....Carbon Dioxide
CO_2e .....Carbon Dioxide Equivalent
CON-HAZ .....Construction Hazard
CORRACTS .....RCRA Corrective Action Sites
Cortese .....Cortese Hazardous Waste and Substances List
CPTED.....Crime Prevention through Environmental Design
CPS-SLIC.....Spills, Leaks, Investigation, and Cleanup
CPUC.....California Public Utilities Commission
CRHR .....California Register of Historical Resources
CRMMP .....Cultural Resources Monitoring and Mitigation Plan
CRP .....Carbon Reduction Program
CTC .....California Transportation Commission
CTMP .....Construction Traffic Management Plan
CUPA .....Certified Unified Program Agencies
CVUHSD.....Centinela Valley Unified High School District
CWA .....Clean Water Act
CWSC.....California Water Service Company
CY.....Cubic Yards
dB .....Decibel
dBA.....A-Weighted Decibel
DCE.....1,2-Dichloroethane
DEED.....Deed Restriction Listing
DOGGR .....Division of Oil, Gas, and Geothermal Resources

DPR.....Department of Parks and Recreation
DRA.....Drought Risk Assessment
DTSC.....Department of Toxic Substances Control
DWR .....California Department of Water Resources
DYA.....Diaz Yourman & Associates
ECMP .....Energy Conservation and Management Plan
EDR.....Environmental Data Resources
EFC.....Equity Focus Community
EIR .....Environmental Impact Report
EIS.....Environmental Impact Statement
EMFAC.....CARB EMission FACtor
EMMA.....Emergency Management Mutual Aid
EMS .....Emergency Medical Service
EO.....Executive Order
ERNS.....Emergency Response and Notification Systems
ESA .....Environmental Site Assessment
EWMP .....Enhanced Watershed Management Programs
FCC .....Federal Communications Commission
FD .....Fire Department
FEMA.....Federal Emergency Management Agency
FERC .....Federal Energy Regulatory Commission
FID .....The Facility Inventory Database
FHWA .....Federal Highway Administration
FLM.....First/Last Mile
FRA .....Federal Railroad Administration
FTA .....Federal Transit Administration
FTIP.....Federal Transportation Improvements Program
FIRM .....Flood Insurance Rate Map
FTTS.....Federal Insecticide, Fungicide, and Rodenticide Act/Toxic Substances Control Act Tracking System
FY.....Fiscal Year
g/bhp-hr .....Gram per Brake-Horsepower-Hour
GBN .....Groundborne Noise
GEM.....Geologic Energy Management Division
GEN 51 .....Construction and Demolition debris Recycling and Reuse Policy
GHG .....Greenhouse Gas
GIS .....Geographic Information System
GMP .....Growth Management Plan
GSWC .....Golden State Water Company
GTrans .....Gardena Transit
GWP .....Global Warming Potential
HAZNET .....Facility and Manifest Data
HAZ WASTE .....Hazardous Waste
HCP.....Habitat Conservation Plan
HDM .....Highway Design Manual
HFB.....High Frequency Bus
Hist Auto .....EDR Historic Auto Stations

HIST Cortese.....Historic Cortese
HIST UST.....Historic Underground Storage Tank
HLRC.....Historical Landmarks and Records Commission
HM.....Hazardous Material
HOA.....Homeowners Association
HQTA.....High Quality Transit Areas
HRI.....Historic Resources Inventory
HSIP.....Highway Safety Improvement Program
HWTS.....Hazardous Waste Transporters
HZ.....Hertz
I-.....Interstate
ICIS.....Integrated Compliance Information System
In/Sec.....Inches per Second
JWPCP.....Joint Water Pollution Control Plant
KOP.....Key Observation Points
kWh.....Kilowatt hours
kWh/mile.....Kilowatt per Vehicle Mile
LA&R.....Los Angeles & Redondo Railway
LACBC.....Los Angeles County Bicycle Coalition
LACDPW.....Los Angeles County Department of Public Works
LACFCD.....Los Angeles County Flood Control District
LACM.....Los Angeles County Museum
LACoFD..... Los Angeles County Fire Department
LACSD.....Los Angeles County Sanitation Districts
LACDWP.....Los Angeles Department of Water and Power
LASD..... Los Angeles Sheriff's Department
LAPL.....Los Angeles Public Library
LAT.....Los Angeles Times
LAX.....Los Angeles International Airport
Lb.....Pound
LBP.....Lead-Based Paint
Ldn.....Day-Night Noise Level
LEED.....Leadership in Energy & Environmental Design
Leq.....Hourly Noise Level
LESD..... Lawndale Elementary School District
LID.....Low Impact Development
LOS.....Level of Service
LADOT.....Los Angeles Department of Transportation
LRFD.....Load and Resistance Factor Design
LRSP.....Local Road Safety Plan
LRT.....Light Rail Transit
LRTP.....Long Range Transportation Plan
LST.....Localized Significance Threshold
LUST.....Leaking Underground Storage Tanks
MATES.....Multiple Air Toxics Exposure Studies
MBSSP.....Moving Beyond Sustainability Strategic Plan
MBTA.....Migratory Bird Treaty Act

Metro .....Los Angeles County Metropolitan Transportation Authority
MDE .....Maximum Design Earthquake
$MMTCO_2e$.....Million Metric Tons of Carbon Dioxide Equivalent
MPO .....Metropolitan Planning Organization
MPH .....Miles per Hour
MRDC..... Metro Rail Design Criteria
MSE .....Mechanically Stabilized Earth
MSF .....Maintenance and Storage Facility
MT .....Metric Tons
$MTCO_2e$ .....Metric Tons of Carbon Dioxide Equivalent
MWD .....Metropolitan Water District of Southern California
MWh .....Megawatt Hour
NAAQS.....National Ambient Air Quality Standards
NAHC .....Native American Heritage Commission
NCCP.....Natural Community Conservation Plan
NFIP .....National Flood Insurance Program
NFPA..... National Fire Protection Association
NHMLA .....Natural History Museum of Los Angeles County
NHPA .....National Historic Preservation Act
NHTSA .....National Highway Traffic Safety Administration
NM .....Nanometers
NMA .....Neighborhood Mobility Areas
N_2O .....Nitrous Oxide
NO .....Nitric Oxide
NO_2 .....Nitrogen Dioxide
NO_x .....Nitrous Oxides
NOP .....Notice of Preparation
NPDES.....National Pollutant Discharge Elimination System
NRHP .....National Register of Historic Places
NTP.....Notice to Proceed
NZE .....Near-Zero Emission
O_3.....Ozone
OCS.....Overhead Contact System
ODE .....Operating Design Earthquake
OHP .....Office of Historic Preservation
OPR.....Office of Planning and Research
OSHA .....Occupational Safety and Health Act
Pb .....Lead
PCB .....Polychlorinated Biphenyls
PCE .....Tetrachloroethylene
PD..... Police Department
PM.....Particulate Matter
PM_{10} .....Respirable Particulate Matter of Diameter Less Than 10 Microns
$PM_{2.5}$.....Fine Particulate Matter of Diameter Less Than 2.5 Microns
PPM.....Parts Per Million
PPV .....Peak Particle Velocity
PRC .....Public Resources Code

PSDC.....Project-Specific Seismic Design Criteria
Proposed Project.....C Line (Green) Extension to Torrance Project
Qoa.....Quaternary alluvium geologic unit
RAATS.....RCRA Administrative Action Tracking System
RBFD.....Redondo Beach Fire Department
RBMC.....Redondo Beach Municipal Code
RBUSD.....Redondo Beach Unified School District
RCNM .....Roadway Construction Noise Model
RCP .....Regional Comprehensive Plan
RCRA.....Resource Conservation and Recovery Act
RCRA-LQG.....RCRA-Large Quantity Generator
REC .....Recognized Environmental Conditions
REL.....Reference-Exposure Level
RMP.....Regional Mobility Plan
RMS .....Root Mean Square
ROG .....Reactive Organic Compounds
ROW .....Right-of-Way
RSA .....Resource Study Area
RTA.....Rail Transit Agency
RTP/SCS.....Regional Transportation Plan/ Sustainable Communities Strategy
RTSB..... .....Rail Transit Safety Branch
RWQCB.....Regional Water Quality Control Board
SAA .....Supplemental Alternatives Analysis
SAFE.....Safer Affordable Fuel Efficient
SB.....Senate Bill
SBBC .....South Bay Bicycle Coalition
SBBMP.....South Bay Bicycle Master Plan
SBCCOG .....South Bay Cities Council of Governments
SBSS.....Sustainable South Bay Strategy
SCAB .....South Coast Air Basin
SCAG.....Southern California Association of Governments
SCAQMD.....South Coast Air Quality Management District
SCCIC .....South Central Coastal Information Center
SCE.....Southern California Edison
SDC .....Seismic Design Criteria
SDWA .....Safe Drinking Water Act
SEA .....Significant Ecological Area
SEMS.....Standard Emergency Management System
SF&LAH.....Santa Fe and Los Angeles Harbor
SGMA .....Sustainable Groundwater Management Act
SHSP .....Strategic Highway Safety Plan
SIP.....State Implementation Plan
SLF .....Sacred Lands File
SMU.....Solid Waste Management Unit
SO_2.....Sulfur Dioxide
SO_X.....Sulfur Oxides
SoCal Gas.....Southern California Gas Company

SPA .....Service Planning Area
SRA .....Source Receptor Area
SRTP .....Short Range Transportation Plan
SSAR .....Systemic Safety Analysis Report
SSDC .....Supplemental Seismic Design Criteria
SSO..... State Safety Oversight
STIP.....Statewide Transportation Improvement Program
SUSMP.....Standard Urban Stormwater Mitigation Plan
SVE .....Soil Vapor Extraction
SVP .....Society of Vertebrate Paleontology
SVOC.....Semi-Volatile Organic Compound
SWEEPS UST .....Statewide Evaluation and Environmental Planning System Underground Storage Tank
SWPPP.....Stormwater Pollution Prevention Plan
SWQDv .....Stormwater Quality Design Volume
SWRCB.....State Water Resources Control Board
T2P Strategic Plan .....Transit to Parks Strategic Plan
TAC.....Toxic Air Contaminant
TC .....Transit Center
TCA 1,1,1-trichloroethane
TCE .....Trichloroethene
TMC.....Torrance Municipal Code
TMDL.....Total Maximum Daily Loads
TOC.....Transit Oriented Communities
TPA .....Transit Priority Area
TPD.....Transit Policing Division
TPH.....Total Petroleum Hydrocarbons
TPSS.....Traction Power Substation
TSDF .....Treatment, Storage, and Disposal Facilities
TUSD.....Torrance Unified School District
TWW .....Treated Wood Waste
UCC.....Union Carbide Corporation
U.S. .....United States
USACE.....United States Army Corps of Engineers
USAIRS.....United States Aerometric Information Retrieval System Facility Subsystem
USC.....United States Code
USDOT .....United States Department of Transportation
USEPA.....United States Environmental Protection Agency
USFIN ASSUR .....United States Financial Assurance Information
USFWS.....United States Fish and Wildlife Service
USGS.....United States Geological Survey
UST .....Underground Storage Tanks
UWMP.....Urban Water Management Plan
VCP .....DTSC Voluntary Cleanup Program
VdB.....Vibration Level
Lv, VdB.....Velocity Level Decibels
VMT.....Vehicle Miles Traveled

VOC .....Volatile Organic Compounds
VRM.....Vehicle Revenue Miles
WCBG .....West Coast Groundwater Basin
WDR .....Water Discharge Requirements
West Basin .....West Basin Municipal Water District
WMAs.....Watershed Management Areas
WMMP .....Watershed Management Master Plan
WRD .....Water Replenishment District
WSAP.....Water Supply Allocation Plan
WSD..... Wiseburn School District
WWII .....World War II
ZE.....Zero Emission
ZEV .....Zero Emission Vehicle

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