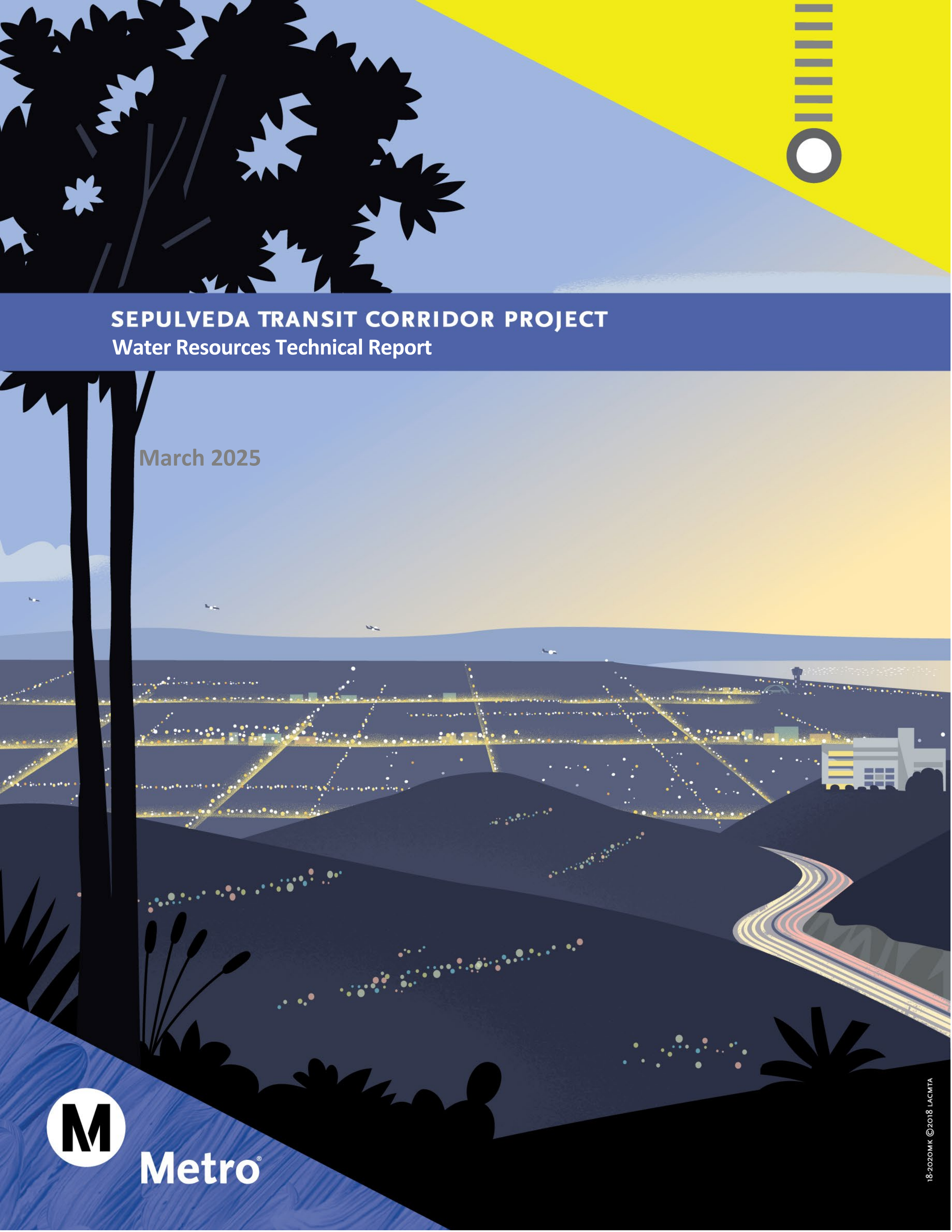
Appendix U. Water Resources Technical Report

SEPULVEDA TRANSIT CORRIDOR PROJECT

Water Resources Technical Report

March 2025



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SEPULVEDA TRANSIT CORRIDOR PROJECT

Contract No. AE67085000

Water Resources Technical Report

Task 5.24.11

Prepared for:

Los Angeles County
Metropolitan Transportation Authority

Prepared by:

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Abbreviations and Acronyms

ABC	Accelerated Bridge Construction
APM	automated people mover
bgs	below ground surface
BMP	best management practice
BRT	bus rapid transit
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CGP	Construction General Permit
CIDH	cast-in-drilled-hole
CWA	Clean Water Act
DCP	City of Los Angeles Department of City Planning
DDT	dichloro-diphenyl-trichloroethane
DWQ	Division of Water Quality
DWR	Department of Water Resources
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
EWMP	Enhanced Watershed Management Program
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FTIP	Federal Transportation Improvement Program
GSA	Groundwater Sustainability Agencies
HRT	heavy rail transit
HTA	HTA Partners
I-10	Interstate 10
I-405	Interstate 405
IGP	Industrial General Permit
LACFCD	Los Angeles County Flood Control District
LACPW	Los Angeles County Public Works
LADPW	Los Angeles County Department of Public Works
LADWP	City of Los Angeles Department of Water and Power
LARWQCB	Los Angeles Regional Water Quality Control Board
LASRE	LA SkyRail Express
LAX	Los Angeles International Airport
LID	low impact development

LOSSAN	Los Angeles-San Diego-San Luis Obispo
LRT	light rail transit
Metro	Los Angeles County Metropolitan Transportation Authority
mg/L	milligrams per liter
MOW	maintenance-of-way
MRDC	Metro Rail Design Criteria
MRT	monorail transit
MS4	Municipal Separate Storm Sewer Systems
MSF	maintenance storage facility
MWD	Metropolitan Water District of Southern California
NFIP	National Flood Insurance Program
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyl
PCE	perchloroethylene
Project	Sepulveda Transit Corridor Project
QSD	Qualified Stormwater Pollution Prevention Plan Developer
QSP	Qualified Stormwater Pollution Prevention Plan Practitioner
REC-1	water contact recreation
REC-2	non-contact water recreation
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
SCAG	Southern California Association of Governments
SCORE	Southern California Optimized Rail Expansion
SCR	Stone Canyon Reservoir
SCRRA	Southern California Regional Rail Authority
SEM	sequential excavation method
SGMA	Sustainable Groundwater Management Act
STCP	Sepulveda Transit Corridor Partners
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TBM	tunnel boring machine
TCE	trichloroethylene
TDS	total dissolved solids
TMDL	Total Maximum Daily Load
TPSS	traction power substation
UCLA	University of California, Los Angeles

US-101	U.S. Highway 101
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
VA	U.S. Department of Veterans Affairs
Valley	San Fernando Valley
WDR	Waste Discharge Requirement
Westside	Westside of Los Angeles
WMP	Watershed Management Program

1 INTRODUCTION

1.1 Project Background

The Sepulveda Transit Corridor Project (Project) is intended to provide a high-capacity rail transit alternative to serve the large and growing travel market and transit needs currently channeled through the Sepulveda Pass and nearby canyon roads between the San Fernando Valley (Valley) and the Westside of Los Angeles (Westside). The Project would have a northern terminus with a connection to the Van Nuys Metrolink/Amtrak Station and a southern terminus with a connection to the Los Angeles County Metropolitan Transportation Authority's (Metro) E Line. In addition to providing local and regional connections to the existing and future Metro rail and bus network, the Project is anticipated to improve access to major employment, educational, and cultural centers in the greater Los Angeles area.

In 2019, Metro completed the Sepulveda Transit Corridor Feasibility Study and released the Project's *Final Feasibility Report* (Metro, 2019), which documented the transportation conditions and travel patterns in the Sepulveda corridor; identified mobility problems affecting travel between the Valley and the Westside; and defined the Purpose and Need, goals, and objectives of the Project. Using an iterative evaluation process, the Feasibility Study identified feasible transit solutions that met the Purpose and Need, goals, and objectives of the Project. The Feasibility Study determined that a reliable, high-capacity, fixed guideway transit system connecting the Valley to the Westside could be constructed along several different alignments. Such a transit system, operated as either heavy rail transit (HRT) or monorail transit (MRT), would serve the major travel markets in the Sepulveda Transit corridor and would provide travel times competitive with the automobile.

1.2 Project Alternatives

In November 2021, Metro released a Notice of Preparation (NOP) of an Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act, for the Project that included six alternatives (Metro, 2021). Alternatives 1 through 5 included a southern terminus station at the Metro E Line Expo/Sepulveda Station, and Alternative 6 included a southern terminus station at the Metro E Line Expo/Bundy Station. The alternatives were described in the NOP as follows:

- Alternative 1: Monorail with aerial alignment in the Interstate 405 (I-405) corridor and an electric bus connection to the University of California, Los Angeles (UCLA)
- Alternative 2: Monorail with aerial alignment in the I-405 corridor and an aerial automated people mover connection to UCLA
- Alternative 3: Monorail with aerial alignment in the I-405 corridor and underground alignment between the Getty Center and Wilshire Boulevard
- Alternative 4: Heavy rail with underground alignment south of Ventura Boulevard and aerial alignment generally along Sepulveda Boulevard in the San Fernando Valley
- Alternative 5: Heavy rail with underground alignment including along Sepulveda Boulevard in the San Fernando Valley
- Alternative 6: Heavy rail with underground alignment including along Van Nuys Boulevard in the San Fernando Valley and a southern terminus station on Bundy Drive

The NOP also stated that Metro is considering a No Project Alternative that would not include constructing a fixed guideway line. Metro established a public comment period of 74 days, extending from November 30, 2021 through February 11, 2022. Following the public comment period, refinements to the alternatives were made to address comments received. Further refinements to optimize the designs and address technical challenges of the alternatives were made in 2023 following two rounds of community open houses.

In July 2024, following community meetings held in May 2024, Alternative 2 was removed from further consideration in the environmental process because it did not provide advantages over the other alternatives, and the remaining alternatives represent a sufficient range of alternatives for environmental review, inclusive of modes and routes (Metro, 2024). Detailed descriptions of the No Project Alternative and the five remaining "build" alternatives are presented in Sections 5 through 10.

1.3 Project Study Area

Figure 1-1 shows the Project Study Area. It generally includes Transportation Analysis Zones from Metro's travel demand model that are within 1 mile of the alignments of the four "Valley-Westside" alternatives from the *Sepulveda Transit Corridor Project Final Feasibility Report* (Metro, 2019). The Project Study Area represents the area in which the transit concepts and ancillary facilities are expected to be located. The analysis of potential impacts encompasses all areas that could potentially be affected by the Project, and the EIR will disclose all potential impacts related to the Project.

1.4 Purpose of this Report and Structure

This technical report examines the environmental impacts of the Project as it relates to water resources (water quality and supply, flooding, and hydrology). It describes existing water resources conditions in the Project Study Area, the regulatory setting, methodology for impact evaluation, and potential impacts from operation and construction of the project alternatives, including maintenance and storage facility site options.

The report is organized according to the following sections:

- Section 1 Introduction
- Section 2 Regulatory and Policy Framework
- Section 3 Methodology
- Section 4 Future Background Projects
- Section 5 No Project Alternative
- Section 6 Alternative 1
- Section 7 Alternative 3
- Section 8 Alternative 4
- Section 9 Alternative 5
- Section 10 Alternative 6
- Section 11 Preparers of the Technical Report
- Section 12 References

Figure 1-1. Sepulveda Transit Corridor Project Study Area

Source: HTA, 2024

2 REGULATORY AND POLICY FRAMEWORK

This section describes federal, state, regional, and local regulations and requirements related to potential water quality and supply, flooding, and hydrology impacts. Permits may be required during construction and operation of the Sepulveda Transit Corridor Project (Project) in order to comply with applicable regulations. Where possible, it is noted whether a specific permit would be required during construction phases of the Project, operation, or both; however, exact permit requirements will not be known until specific plans for construction are finalized. Specific permitting requirements would depend on the construction phasing of the selected alternative. Additionally, permit needs and requirements may be determined by the contractor(s) responsible for construction.

2.1 Federal

2.1.1 Clean Water Act

The Clean Water Act of 1972 (CWA) establishes the basic structure for regulating discharges of pollutants into waters of the United States (U.S.) and gives the U.S. Environmental Protection Agency (EPA) the authority to implement pollution control programs such as setting wastewater standards for industries. In most states, including California, the EPA has delegated this authority to state agencies.

2.1.1.1 Clean Water Act, Section 303(d)

Section 303(d) of the CWA requires states, territories, and authorized tribes to develop a list of water quality-impaired segments of waterways. The Section 303(d) list includes waterbodies that do not meet water quality standards for the specified beneficial uses of that waterway, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions establish priority rankings for waterbodies on their Section 303(d) lists and implement a process, called Total Maximum Daily Load (TMDL), to meet water quality standards.

The TMDL process is a tool for implementing water quality standards and is based on the relationship between pollution sources and in-stream water quality conditions. The TMDL establishes the maximum allowable loadings of a pollutant that can be assimilated by a waterbody while still meeting applicable water quality standards. The TMDL provides the basis for the establishment of water quality-based controls. These controls would be intended to provide the pollution reduction necessary for a waterbody to meet water quality standards. A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and non-point sources. The TMDL's allocation calculation for each waterbody must include a margin of safety to ensure that the water body can be utilized for its state-designated beneficial uses. Additionally, the calculation also must account for seasonal variation in water quality.

TMDLs are intended to address all significant stressors that cause or threaten to cause impairments to beneficial uses, including point sources (e.g., sewage treatment plant discharges), non-point sources (e.g., runoff from fields, streets, range, or forest land), and naturally occurring sources (e.g., runoff from undisturbed lands). TMDLs are developed to provide an analytical basis for planning and implementing pollution controls, land management practices, and restoration projects needed to protect water quality. States are required to include approved TMDLs and associated implementation measures in state water quality management plans. Within California, TMDL implementation is achieved through regional basin plans.

TMDL implementation plans provide a schedule for responsible jurisdictions to implement best management practices (BMP) to comply with pollutant reduction schedules. BMPs are defined as techniques, measures, or structural controls to manage the quantity and improve the quality of stormwater runoff in the most cost-effective manner.

2.1.1.2 Clean Water Act, Section 401

In the event that a proposed alternative requires permitting under the CWA Section 404 (as described in Section 2.1.1.4, Section 404 regulates the discharge of dredged or fill material into waters of the United States), a Water Quality Certification is required under CWA Section 401. These regulatory requirements may be applicable during construction of the Project in the vicinity of waterways in or near the Project Study Area, including the Los Angeles River.

In California, the State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCB) are responsible for reviewing proposed projects and issuing Water Quality Certifications. The Project falls within the Los Angeles Regional Water Quality Control Board (LARWQCB) jurisdiction.

2.1.1.3 Clean Water Act, Section 402: National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) permit process provides a regulatory mechanism for the control of point-source discharges — a municipal or industrial discharge at a specific location or pipe — to waters of the United States. Two exceptions that are also regulated under the NPDES program are 1) diffuse-source discharges caused by general construction activities of over one acre, and 2) stormwater discharges in municipal stormwater systems in which runoff is carried through a developed conveyance system to specific discharge locations.

2.1.1.4 Clean Water Act, Section 404

The CWA, Section 404, requires that a permit be obtained from the U.S. Army Corps of Engineers (USACE) when discharge of dredged or fill material into wetlands and waters of the United States is proposed (33 Code of Federal Regulations (CFR) 328.3(a)).

Construction that would take place in waters of the United States and which, therefore, would result in discharge of dredged or fill material into waters of the United States includes the potential crossing(s) of the Los Angeles River. Specific permitting requirements would be determined once specific construction plans and phasing are determined.

2.1.2 Executive Order 11988: Floodplain Management

Under Executive Order 11988, all federal agencies are directed to avoid to the extent possible long-and short-term adverse impacts associated with the occupancy and modification of floodplains. In addition, federal agencies should avoid direct or indirect support of floodplain development wherever there is a practicable alternative. The 100-year floodplain is defined as areas that will be inundated by the flood event having a 1 percent chance of being equaled or exceeded in any given year and corresponds to flood zones A, AE, AH, AO, and D on the figures (Figure 5-4, Figure 6-13, Figure 7-13, Figure 8-14, Figure 9-12, Figure 10-9).

The Federal Emergency Management Agency (FEMA) provides floodplain information to allow local jurisdictions to regulate development in and around floodplains through Flood Insurance Studies and their associated Flood Insurance Rate Maps (FIRM).

2.1.3 National Flood Insurance Program

In order to determine the necessity to comply with National Flood Insurance Program (NFIP) regulations, FEMA issues countrywide FIRMs delineating the limits of FEMA-defined flood zones throughout the county (FEMA, 2021). Flood zones are defined as follows:

- Undetermined Risk Areas: Zone D is defined as areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted.
- Moderate to Low-Risk Areas: Zones B, C, and X are defined as areas outside the floodplain with a 1 percent annual chance of flooding, and no Base Flood Elevations or depths are shown within this zone.
- High Risk Areas: Zone A is defined as areas with a 1 percent annual chance of flooding; however, detailed analyses are not performed for these areas and no depths or base flood elevations are shown on FIRMs.

2.2 State

The SWRCB and the nine RWQCBs are responsible for the protection of water quality in the state. The SWRCB establishes statewide policies and regulations mandated by federal and state water quality statutes and regulations. The RWQCBs are responsible for the development, implementation, and amendment of basin plans that address regional beneficial uses, water quality characteristics, and water quality problems. The RWQCB is responsible for implementing the Porter-Cologne Water Quality Control Act (California Water Code, 1969a) discussed in Section 2.2.1. The RWQCB is also responsible for issuing Water Quality Certifications pursuant to Section 401 of the CWA as previously described. The Project Study Area is within the LARWQCB jurisdiction.

All projects resulting in waste discharges, whether to land or water are subject to Section 13263 of the California Water Code (California Water Code, 1969b). Through the mandates of this section, dischargers are required to comply with waste discharge requirements (WDR) as developed by the RWQCB. WDRs for discharges to surface waters must meet requirements for related NPDES permits (further described in Section 2.2.4).

2.2.1 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1969 established the principal program for water quality control in California. The Act regulates discharges to surface and groundwater and directs the RWQCB to develop regional basin plans. Basin Plans: 1) designate beneficial uses for surface and ground waters; 2) set narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's Antidegradation Policy; and 3) describe implementation programs to protect all waters in the region (LARWQCB, 2014). Development of basin plans and the triennial review of these plans by the SWRCB are necessary for compliance with CWA Section 303 (40 CFR 131).

2.2.2 California Fish and Game Code Section 1602

Section 1602 of the California Fish and Game Code, as administered by the California Department of Fish and Wildlife (CDFW), mandates that "it is unlawful for any person to substantively divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the department, or use any material from the streambeds, without first notifying the department of such activity." Streambed alteration must be permitted by CDFW through a Lake or Streambed Alteration Agreement. CDFW defines streambeds as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life" and lakes as "natural lakes and manufactured reservoirs." CDFW jurisdiction includes ephemeral, intermittent, and perennial watercourses, and can extend to habitats adjacent to watercourses.

According to the Lake and Streambed Alteration Notification Instructions, the Fish and Game Code Section 1602 requires any entity (defined as a person, state or local governmental agency, or public utility) to notify CDFW before beginning any activity that would do one or more of the following:

- Divert or obstruct the natural flow of any river, stream, or lake
- Change the bed, channel, or bank of any river, stream, or lake
- Use material from any river, stream, or lake; or
- Deposit or dispose of material into any river, stream, or lake.

As previously described, waterways in the vicinity of the proposed alignments would include the Los Angeles River. Notification to CDFW would be required prior to the start of construction.

2.2.3 State Antidegradation Policy

In accordance with the federal Antidegradation Policy, the state policy was adopted by SWRCB to maintain high quality waters in California. This state policy restricts the degradation of surface and groundwaters. Implemented by the RWQCBs, the policy is necessary to achieve the federal CWA goals and objectives. In particular, the policy protects bodies of water where the existing water quality is higher than necessary for the protection of present and anticipated beneficial uses. Pollutants regulated under the policy can be attributed to, among other sources, industrial and municipal discharges. The policy requires that any activity that produces or may produce a waste or increased volume or concentration of waste and that discharges or proposes to discharge into high quality waters will be required to meet WDRs to control the discharge and assure that degradation of the existing water quality through pollution or nuisance will not occur (SWRCB, 1968).

2.2.4 State of California National Pollutant Discharge Elimination System

In accordance with CWA Section 402(p), which regulates municipal and industrial stormwater discharges under the NPDES program, SWRCB adopted an Industrial General Permit (IGP) and Construction General Permit (CGP), which are detailed in this section. The Los Angeles County Metropolitan Transportation Authority (Metro) would be responsible for compliance with both of these NPDES permits.

Amendments made to the CWA in 1987 require that stormwater associated with industrial activities that discharge either directly to surface waters or indirectly through municipal storm sewers must be regulated by an NPDES permit (Water Quality Order No. 2014-0057-DWQ, and amendments 2015-0122-DWQ and 2018-0028-DWQ [SWRCB Division of Water Quality]) (SWRCB, 2014). In order to obtain authorization for stormwater discharges associated with industrial activities under this permit, the facility operator must submit a Notice of Intent. The Project would be subject to the regulations of this NPDES permit under Category 8 of the categories that require coverage under the IGP. Category 8 includes "vehicle maintenance shops, equipment cleaning operations, or airport deicing operations." Only those portions of the facility involved in vehicle maintenance (including vehicle, rehabilitation, mechanical repairs, painting, fueling, and lubrication) would be covered under this permit. Attachment E of the IGP (SWRCB, 2014) incorporates TMDL requirements. The Project would be required to comply with applicable TMDLs and compliance schedules in IGP Attachment E.

As with the IGP, the SWRCB administers the CGP, which is applicable to all stormwater discharges associated with construction activity. In addition, the CGP includes requirements on dewatering discharge. The NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (the CGP) was adopted on September 8, 2022. The provisions of the new CGP (Order No. 2022-0057-DWQ, NPDES No. CAS000002 [SWRCB Division of Water Quality]) (SWRCB, 2022a) became effective September 1, 2023. Order No. 2022-0057-DWQ supersedes the previous CGP (Order No. 2009-0009-DWQ).

The main objectives of the CGP are as follows:

- Reduce erosion from construction projects or activities
- Minimize or eliminate sediment in stormwater discharges from construction projects
- Prevent materials used at a construction site from contacting stormwater
- Implement a sampling and analysis program to monitor construction site runoff
- Eliminate unauthorized non-stormwater discharges from the construction sites
- Implement appropriate measures to reduce potential impacts on waterways both during and after construction projects
- Establish maintenance commitments on post-construction pollution control measures

The CGP requirements apply to any construction project that either result in the disturbance of at least one acre of land or is part of a larger common development plan. Additionally, the CGP is required for related construction or demolition activities, including clearing, grading, grubbing, or excavation, or any other activity that results in greater than one acre of land disturbance (SWRCB, 2022a).

Minimum stormwater control requirements under the permit are determined by project risk categories. Risk categories include the sediment risk factor and the receiving water risk factor. The sediment risk factor and the receiving water risk factor are combined to determine a construction site's project risk level. The project risk level governs the applicable minimum BMPs, monitoring requirements, reporting requirements, and the effluent standards used to assess monitoring data and compliance.

Once the project risk level is determined, minimum BMP requirements are specified in attachments to the CGP. BMPs are separated into five overall categories:

- Good Site Management "Housekeeping"
- Non-stormwater Management
- Erosion Control
- Sediment Controls
- Run-on and Runoff Controls

Monitoring and reporting requirements under the permit are also dependent on the project risk level. Visual monitoring of stormwater and non-stormwater discharges is required of all projects. Water quality sampling and analysis requirements increase with risk category. Monitoring is required during normal construction site hours. Rain events also trigger monitoring in the case that there is a forecast of a 50 percent or greater probability of precipitation and a quantitative precipitation forecast of 0.5 inch or more within a period of 24 hours.

The CGP requires that a registered Qualified Stormwater Pollution Prevention Plan (SWPPP) Developer (QSD) prepare an SWPPP, and a registered QSD, Qualified SWPPP Practitioner (QSP), and/or a properly trained and supervised QSP delegate perform inspections, sampling, and BMP implementation.

In order to obtain coverage under the CGP, the permit applicant must submit the following documents to the SWRCB:

- Notice of Intent
- Risk Assessment
- Site Map
- Stormwater Pollution Prevention Plan
- Annual Fee
- Signed Certification Statement

2.2.4.1 California Department of Transportation National Pollutant Discharge Elimination System Permit

The California Department of Transportation (Caltrans) is subject to the NPDES *Statewide Stormwater Permit and Waste Discharge Requirement*s (WDR) for the State of California, Department of Transportation (Order No. 2022-0033-DWQ, NPDES No. CAS000003) (SWRCB, 2022b) that regulates the discharge of construction and post-construction phase stormwater from Caltrans properties, facilities, and activities. The Caltrans NPDES permit applies to those portions of the Project Study Area that are under the jurisdiction of Caltrans.

Redevelopment projects within the Caltrans right-of-way (ROW) are subject to construction site BMPs and would be required to comply with the *Construction Site Best Management Practices (BMP) Manual* (Caltrans, 2017) to control and minimize the impacts of construction-related activities. The *Construction Site Best Management Practices (BMP) Manual* incorporates the requirements of the Caltrans NPDES Statewide Stormwater Permit and the CGP. Post-construction phase stormwater from the portions of the Project under the jurisdiction of Caltrans would also be required to comply with the *Project Planning and Design Guide* (Caltrans, 2023) and related requirements in accordance with the Caltrans NPDES Statewide Stormwater Permit for incorporating treatment BMPs. In addition, the Caltrans NPDES permit includes policies and requirements for maintaining drainage systems, including culverts, to protect roadways from flooding. This includes modifications and/or removal and replacement of these systems.

In compliance with the Caltrans Statewide Stormwater Permit, the Caltrans Statewide Stormwater Management Plan addresses stormwater pollution control related to Caltrans activities, including planning, design, construction, maintenance, and operation of roadways and facilities to reduce or eliminate the discharge of pollutants to storm drain systems and receiving waters. The Statewide Stormwater Management Plan addresses discharges resulting from stormwater, as well as non-stormwater discharges, including illicit discharges, authorized non-stormwater discharges, and initial emergency response activities. The Statewide Stormwater Management Plan requires implementation of stormwater management procedures and practices including training, public education, monitoring, program evaluation, and reporting activities, in addition to the implementation of construction BMPs to reduce or eliminate pollutants from construction sites.

The *I-405 Stormwater Quality Master Plan* (Caltrans, 2008) was prepared in response to a Stipulation and Order (Case No. 93-6073-ER [JRX]) signed by the U.S. District Court on January 17, 2008, which mandates stormwater management studies to be prepared on the Caltrans District 7 drainage systems for freeway corridors situated in Los Angeles and Ventura Counties. In order to meet the Stipulation and

Order, the I-405 Stormwater Quality Master Plan evaluates and identifies potential opportunities to include treatment BMPs (e.g., infiltration devices, media filters, detention devices, biofiltration strips, biofiltration swales) in the I-405 corridor.

2.2.5 Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA), adopted in 2014 (California Water Code, 2014), provides a framework for regulating groundwater in California. The intent of the law is to strengthen local groundwater management of basins most critical to the state's water needs. The SGMA requires basins to be sustainably managed by local public agencies (e.g., counties, cities, and water agencies) that become Groundwater Sustainability Agencies (GSA). The primary purpose of the GSAs is to develop and implement a groundwater sustainability plan for basins designated as high and medium priority to achieve long-term groundwater sustainability.

2.3 Regional

2.3.1 Los Angeles County Municipal Stormwater Permit

The LARWQCB is responsible for issuing the Los Angeles County Municipal Stormwater Permit (Order No. R4-2021-0105, NPDES No. CAS004004). The existing permit covers the Los Angeles County Flood Control District (LACFCD), the County of Los Angeles, and 85 incorporated cities within the coastal watersheds of Los Angeles County (including the cities and unincorporated county in the Project Study Area) (LARWQCB, 2021). The Los Angeles County Municipal Stormwater Permit covers the permittees for contributions to discharges of stormwater and urban runoff from Municipal Separate Storm Sewer Systems (MS4), also called storm drain systems. The discharges flow to water courses within the LACFCD and into receiving waters of the Los Angeles Region. This Order serves as WDRs pursuant to Article 4, Chapter 4, Division 7 of the California Water Code (commencing with Section 13260), in addition to Section 402 of the federal CWA and implementing regulations adopted by the EPA and Chapter 5.5, Division 7 of the Water Code (commencing with Section 13370).

The current MS4 permit imposes basic programs, or minimum control measures, which mitigate stormwater quality issues. These programs include public information and participation, industrial/commercial inspection, planning and land development, development construction, public agency activities, and illicit connection/discharge abatement (LARWQCB, 2021). For instance, the development construction program mandates the use of temporary construction BMPs. These include measures for controlling erosion, managing spills, and ensuring the safe storage of fluids. Post-construction stormwater BMPs are required for most public and private development under the planning and land development program of the Los Angeles Department of City Planning.

In addition, the current MS4 permit allows permittees to develop Watershed Management Programs (WMP) or Enhanced Watershed Management Programs (EWMP) to implement MS4 permit requirements, including the minimum control measures previously described, through BMPs, control measures, and customized strategies targeted at the watershed level.

2.3.1.1 Watershed Management and Enhanced Watershed Management Programs

According to the most current MS4 Order No. R4-2021-0105, the ultimate goal of the WMP and EWMP is to ensure that "discharges from the Los Angeles County MS4: (i) achieve applicable water quality-based effluent limitations that implement TMDLs, (ii) do not cause or contribute to exceedances of receiving water limitations, and (iii) for non-stormwater discharges from the MS4, are not sources of pollutants to receiving waters." The WMP allows permittees to develop and customize control measures to address water quality issues within their watershed management areas. Permittees who wish to develop a WMP or EWMP need to submit an integrated monitoring program plan or coordinated integrated monitoring program plan to the Regional Water Board with their draft WMP or EWMP. Plans relevant to the Project Study Area include the Upper Los Angeles River Watershed's EWMP, approved in 2016, and modified in 2017, and the Los Angeles River Upper Reach 5 Coordinated Integrated Monitoring Program, approved in 2016 (LARWQCB, 2019a). Construction and operation of the Project would be undertaken consistent with the provisions of the Upper Los Angeles River Watershed EWMP and the Los Angeles River Upper Reach 5 Coordinated Integrated Monitoring Program.

2.3.2 Basin Plan

The *Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan) applies to the Project Study Area (LARWQCB, 2014). The Basin Plan sets forth the regulatory water quality standards for surface waters and groundwater within the region. The water quality standards address both the designated beneficial uses for each water body and the water quality objectives to meet them. Where multiple designated beneficial uses exist, water quality standards are written to protect the most sensitive use. Also described are the implementation programs and actions necessary to meet the water quality objectives outlined in the Basin Plan.

2.3.2.1 Total Maximum Daily Loads

In accordance with the federal CWA and the state Porter-Cologne Water Quality Control Act, TMDLs have been developed and incorporated into the Basin Plan for some pollutants identified on the 303(d) list as causing contamination in the Los Angeles and Ballona Creek Watersheds. TMDLs govern the discharge of wastewater, urban runoff, and stormwater to meet federal and state water quality standards. A TMDL "is a number that represents the assimilative capacity of a receiving water to absorb a pollutant" (LARWQCB, 2019b).

2.3.3 Waste Discharge Requirements for Specified Discharges to Groundwater in the Santa Clara River and Los Angeles River Basins (Order No. 93-010)

SWRCB's WDR Program "regulates all point source discharges of waste to land that do not require full containment or are not subject to the NPDES program" (SWRCB, 2019). This WDR allows for the discharge of water resulting from construction dewatering and dust control application that may occur as part of a project.

The WDR (LARWQCB, 1993) requires that wastewater be analyzed prior to being discharged to determine if it contains pollutants in excess of the applicable basin plan water quality objectives. Additionally, any wastewater that might be encountered and subsequently discharged to groundwater would need to comply with applicable water quality standards.

Due to the potential for construction dewatering activities, this WDR applies to the Project.

2.3.4 Waste Discharge Requirements for Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties (Order No. R4-2018-0125, NPDES Permit No. CAG994004)

This WDR (LARWQCB, 2018) regulates the discharge of treated or untreated groundwater generated from permanent or temporary dewatering operations, as well as other applicable wastewater discharges not specifically covered by other general or individual NPDES permits. Due to the potential for groundwater extraction and dewatering activities in Los Angeles and Ventura Counties, this WDR is applicable to the Project.

2.3.5 Waste Discharge Requirements for Discharge of Non-Hazardous Contaminated Soils and Other Wastes in Los Angeles River and Santa Clara River Basins (Order No. 91-93)

The purpose of this WDR (LARWQCB, 1991) is to protect waters of the state from contamination due to disposal of soils that do not meet criteria for designation as hazardous waste, but contain moderate concentrations of petroleum hydrocarbons, heavy metals, and other contaminants. The permit allows the disposal of up to 100,000 cubic yards of non-hazardous contaminated soils and other wastes for a maximum period of 90 days. This WDR requires that waste used as soil backfill shall not contain any substance in concentrations toxic to human, animal, plant, or aquatic life. The CGP allows for temporary stockpiling of non-hazardous, contaminated soils until they can be appropriately disposed of or reused, per permit conditions.

2.4 Local

The following sections describe local policies (contained in general plans) and ordinances (contained in county and municipal codes) related to water resources, water quality, and floodplains for Los Angeles County and City of Los Angeles. Regulatory requirements for other cities within the Project Study Area are included in the Los Angeles County Municipal Stormwater Permit, Order No. R4-2021-0105 (LARWQCB, 2021).

2.4.1 County of Los Angeles

2.4.1.1 Los Angeles County Metropolitan Transportation Authority

Water Use and Conservation Policy

In addition to complying with local and regional water conservation regulations, Metro developed their own procedures dictating the use of potable water and conservation (Metro, 2009). Applicable procedures relating to water use and conservation required by Metro include:

- Procedure 2.1 – Using Potable Water for Pressure Washing Activities
  - 2.1.1, Prioritize facility locations that must be regularly cleaned using pressure washing equipment.
  - 2.1.2, If pressure washing is deemed essential, appropriate water conservation and efficiency measures must be applied.
  - 2.1.3, Conduct pressure washing activities using cost-effective water efficient equipment.
  - 2.1.4, Capture and dispose any generated wastewater to an appropriate facility.
- Procedure 2.2 – Using Potable Water for Construction
  - 2.2.1, Develop a plan for dust suppression purposes to comply with applicable environmental statutes, regulations, and guidelines.
  - 2.2.2, Use of potable water as a dust suppression agent should always be secondary and should only be used if all other dust suppression technologies are not feasible or cost-effective.

- Procedure 2.3 – New Construction Planning, Design and Construction; Existing Buildings Operations
  - 2.3.1, Use water conservation and efficiency guidelines outlined in applicable Leadership in Energy and Environmental Design reference books for all planning, procurement, design, construction, operation, and maintenance of Metro's linear and non-linear facilities.
  - 2.3.2, Prepare manuals of operation, as applicable, to ensure that water efficiency and conservation technologies are adopted and maintained.

Metro Rail Design Criteria

The *Metro Rail Design Criteria* (MRDC) identifies the methods to construct, maintain, and monitor the relative safety of fixed-rail facilities. Alternative 6 would utilize the MRDC as the basis of design. Although, the MRDC would not be a required design criteria for Alternatives 1, 3, 4, and 5 and equivalent that includes all relevant design criteria related to safety would be required. Criteria and requirements included in the following MRDC sections should serve as a guide and can help provide protection for water resources and quality:

- Section 2, Environmental Considerations:
  - 2.5, Land Acquisition and Relocation: "includes criteria for acquiring properties needed to construct, maintain, protect, and operate the transit system. Property should not have contaminated structures, soil, or groundwater."
  - 2.11, Hydrology, Water Quality, and Water Efficiency: "includes criteria for management of stormwater during construction and operation phases in compliance with state and local regulations."
    - 2.11.1, Project Planning and Design: "includes criteria for designing, constructing, operating, and maintaining an efficient and sustainable transportation system following an integrated systemwide design approach."
- Section 3, Civil: "includes criteria for the design of transit system alignments, trackway subgrade, drainage, determination of ROWs, control of access, service roads, and relocation of any utilities."
- Section 8, Mechanical/Plumbing: "describes criteria for the design of plumbing and drainage systems serving the Los Angeles area heavy and light rail transit system passenger stations and tunnels."
- Section 10, Operations: "describes the basin system wide operating and maintenance philosophies and methodologies set forth for Metro Rail Projects."
- Section 11, Yards and Maintenance, or Maintenance and Storage Facilities (MSF): "provides requirements for MSF design" for shop, waste disposal, and other MSF facilities.
- Fire and Life Safety Criteria: describes fire and life safety protection requirements for guideway transit systems and associated facilities, including the development of site emergency plans that provide responses to various typical emergencies and incidents that may occur, such as serious flooding.

The following sections, which are included in Metro's baseline specifications also offer general guidance for protection of water resources and quality:

- Section 01 35 35 – Water Pollution Control

- Section 01 57 13 – Temporary Erosion and Sedimentation Controls
- Section 01 57 19 – Temporary Environmental Control
- Section 02 71 00 – Dewatering Fluid Treatment
- Section 32 23 19 – Dewatering

2.4.1.2 Los Angeles County General Plan

The *Los Angeles County General Plan* documents specific goals and policies related to water resources, water quality, and flooding in the Conservation and Natural Resources Element, and the Safety Element (LA County Planning, 2015). The following information highlights some of the policies that are relevant to the Project in unincorporated county areas. Incorporated areas are regulated by applicable city policies.

Conservation and Natural Resources Element

- Policy C/NR 5.1: Support the low impact development (LID) philosophy, which seeks to plan and design public and private development with hydrologic sensitivity, including limits to straightening and channelizing natural flow paths, removal of vegetative cover, compaction of soils, and distribution of naturalistic BMPs at regional, neighborhood, and parcel-level scales.
- Policy C/NR 5.2: Require compliance by all County departments with adopted MS4, General Construction, and point source NPDES permits.
- Policy C/NR 5.6: Minimize point and non-point source water pollution.
- Policy C/NR 5.7: Actively support the design of new and retrofit of existing infrastructure to accommodate watershed protection goals, such as roadway, railway, bridge, and other — particularly — tributary street and greenway interface points with channelized waterways.
- Policy C/NR 6.1: Support the LID philosophy, which incorporates distributed, post-construction parcel-level stormwater infiltration as part of new development.
- Policy C/NR 6.2: Protect natural groundwater recharge areas and regional spreading grounds.

Safety Element

- Policy S 2.1: Discourage development in the County’s Flood Hazard Zones.
- Policy S 2.4: Ensure that developments located within the County’s Flood Hazard Zones are sited and designed to avoid isolation from essential services and facilities in the event of flooding.
- Policy S 2.6: Work cooperatively with public agencies with responsibility for flood protection, and with stakeholders in planning for flood and inundation hazards.

2.4.1.3 Los Angeles County Code

Los Angeles County’s Stormwater and Runoff Pollution Control Ordinance regulates discharges to the storm drain system, runoff management requirements including LID requirements, and specifies penalties for violations of the ordinance within any unincorporated area covered by the NPDES municipal stormwater permit (Chapter 12.80, Parts 3-5) (Los Angeles County, 2023).

Several sections of the Los Angeles County Code pertain to floodplain development, including the following:

- Title 11, Chapter 11.60, Floodways, Water Surface Elevations, and Areas of Special Flood Hazard: Defines the floodways and areas of special flood hazard in Los Angeles County that are subject to floodway development regulations defined in the code. The code adopts FEMA's special flood hazard areas shown in FEMA FIRMs covering Los Angeles County.

- Title 26, Chapter 1, Section 110.1, Flood Hazard: Establishes construction standards for development and establishes that development must not increase flood hazards in adjacent areas by any of the following mechanisms: increasing flood water surface elevations, deflecting flows, or increasing erosion.
- Title 22, Chapter 22.118 Flood Control: Defines permit requirements for any work that would create flood hazards. Includes regulations prohibiting the obstruction of stream or river flow during work along natural waterways, including the Los Angeles River.

2.4.1.4 County of Los Angeles Low Impact Development Ordinance and Manual

LID is a design strategy using naturalistic, on-site BMPs to lessen the impacts of development on stormwater quality and quantity. Los Angeles County's Low Impact Development Standards Ordinance provides LID standards for infrastructure projects to lessen adverse impacts of stormwater runoff, minimize pollutant loadings, minimize erosion and hydrologic impacts on natural drainage systems (Los Angeles County, 2023).

As of January 1, 2009, the County of Los Angeles instituted LID requirements for development occurring within unincorporated portions of the County. The County of Los Angeles prepared the 2014 *Low Impact Development Standards Manual* (LADPW, 2014) to comply with the requirements of the 2012 MS4 Permit. The LID Standards Manual provides guidance for the implementation of stormwater quality control measures in new development and redevelopment projects in unincorporated areas of the County with the intention of improving water quality and mitigating potential water quality impacts from stormwater and non-stormwater discharges.

2.4.1.5 Los Angeles County Department of Public Works

The Los Angeles County Department of Public Works (LADPW) is responsible for planning and implementation of watershed management within the county. Watershed management plans that pertain to the Project include the *Ballona Creek Watershed Management Plan* (LADPW, 2004) and the *Los Angeles River Master Plan* (Los Angeles County and Los Angeles County Public Works, 2022). The main goals of these watershed management plans are the protection and enhancement of the rivers for flood protection, recreation, and environmental services.

2.4.1.6 Los Angeles County Flood Control District – Master Drainage Plans

The LACFCD is a division of the LADPW that provides flood protection, water conservation, and recreation and aesthetic enhancement within its boundaries. The LACFCD encompasses more than 3,000 square miles and 85 cities and has jurisdiction over the vast majority of drainage infrastructure with the incorporated and unincorporated areas of the county. The LACFCD develops master drainage plans to address individual watersheds within the LADPW's jurisdiction. The plans include proposed drainage facilities to protect upstream and downstream properties from serious damage.

2.4.1.7 Los Angeles County Comprehensive Floodplain Management Plan

The *Los Angeles County Comprehensive Floodplain Management Plan* is an important part of the County's participation in the NFIP and Community Rating System. This plan was developed to comply with federal, state, and local requirements for floodplain management planning, coordinate existing programs and plans to prioritize initiatives, and create a linkage between the floodplain management plan and established plans of Los Angeles County (LADPW, 2021).

2.4.2 City of Los Angeles General Plan

The *City of Los Angeles General Plan* (DCP, 2001) provides a comprehensive strategy for managing water in a more integrated, collaborative, and sustainable way through new project, program, and policy opportunities. The Implementation Strategy provides a roadmap to make the *One Water LA 2040 Plan* vision a reality (City of Los Angeles Department of Sanitation, 2018). Additional water projects, programs, or policies that are the sole responsibility of one agency, including the Los Angeles Department of Water and Power's aqueduct or groundwater remediation project, are contained in each agency's appropriate plans.

The City of Los Angeles has completed the *One Water LA 2040 Plan* (City of Los Angeles Department of Sanitation, 2018). The *One Water LA 2040 Plan* is a roadmap, connecting plans, ideas, and people to arrive at better and fiscally responsible water planning solutions. Collaboration is the foundation of the *One Water LA 2040 Plan* planning process. The plan identifies projects, programs and policies that will yield sustainable, long-term water supplies for the City of Los Angeles and will provide greater resiliency to drought conditions and climate change.

The *One Water LA 2040 Plan* takes a holistic and collaborative approach to consider all of the City of Los Angeles' water resources from surface water, groundwater, potable water, wastewater, recycled water, dry weather runoff, and stormwater as "One Water." Also, the plan identifies multidepartment and multi-agency integration opportunities to manage water in a more efficient, cost-effective, and sustainable manner. The plan represents the City of Los Angeles' continued and improved commitment to proactively manage all its water resources and implement innovative solutions. The plan will help guide strategic decisions for integrated water projects, programs, and policies within the City of Los Angeles.

Guiding principles of the *One Water LA 2040 Plan* include the following:

- Balance environmental, economic, and societal goals by implementing affordable and equitable projects and programs that provide multiple benefits to all communities
- Improve health of local watersheds by reducing impervious cover, restoring ecosystems, decreasing pollutants in our waterways, and mitigating local flood impacts
- Improve local water supply reliability by increasing capture of stormwater, conserving potable water, and expanding water reuse
- Implement, monitor, and maintain a reliable wastewater system that safely conveys, treats, and reuses wastewater, while also reducing sewer overflows and odors

2.4.3 City of Los Angeles Low Impact Development Ordinance and Handbook

The City of Los Angeles Stormwater LID Ordinance (November 2011-Original Ordinance #181899, updated September 2015-Ordinance #183833, and updated April 2024-Ordinance #188125) provides LID standards for new development and redevelopment projects to help mitigate the impacts of runoff and stormwater pollution and maximize open, green, and pervious space. The purpose of the Stormwater LID Ordinance is to:

- Require the use of LID standards and practices in future developments and redevelopments to encourage the beneficial use of rainwater and urban runoff
- Reduce stormwater/urban runoff while improving water quality

- Promote rainwater harvesting
- Reduce off-site runoff and providing increased groundwater recharge
- Reduce erosion and hydrologic impacts downstream; and
- Enhance the recreational and aesthetic values in our communities.

The City of Los Angeles prepared the *Planning and Land Development Handbook for Low Impact Development* (LID Handbook) (City of Los Angeles, 2016) to comply with the requirements of the LID Ordinance. The LID Handbook identifies stormwater mitigation measures and source and treatment control BMPs for new development and redevelopment projects. The objectives of the LID Handbook are to:

- Reduce stormwater runoff and pollutant discharge
- Capture stormwater to increase groundwater recharge
- Reduce flood damage from heavy rainfall events; and
- Enhance safe and recreational environments.

2.5 Potential Permits

Table 2-1 summarizes the permits and approving agencies that may be involved in operation and construction of the Project. Final permitting requirements will be determined as the design of alternatives is completed.

Table 2-1. Summary of Potential Permits and Approval Agencies

Permit	Approving Agency	Necessary During Operation or Construction
Clean Water Act Section 401	State Water Resources Control Board/Regional Water Quality Control Board	Construction
Clean Water Act Section 404	U.S. Army Corps of Engineers	Construction
California Fish and Game Code Section 1602 – Lake or Streambed Alteration Agreement	California Department Fish and Wildlife	Construction
National Pollutant Discharge Elimination System General Construction	State Water Resources Control Board/Regional Water Quality Control Board	Construction
National Pollutant Discharge Elimination System General Industrial	State Water Resources Control Board/Regional Water Quality Control Board	Operation
National Pollutant Discharge Elimination System Municipal Separate Storm Sewer Systems	Los Angeles Regional Water Quality Control Board	Operation; some requirements for construction
Encroachment/Construction Permit	Los Angeles County Department of Public Works/Los Angeles County Flood Control District/City of Los Angeles	Construction; post-construction best management practices also apply to operation

Source: HTA, 2024

3 METHODOLOGY

3.1 Operation and Construction

The evaluation of impacts to water resources involves an analysis of existing data related to hydrology, flooding, drainage, and water quality and an assessment of whether the Sepulveda Transit Corridor Project (Project) alternatives would substantially degrade surface water or groundwater quality; alter drainage patterns in a manner that would cause flooding, erosion, or siltation; result in exposure of people and/or property to water-related hazards; or otherwise conflict with applicable laws related to hydrology and water quality.

Permanent impacts to water resources are evaluated by estimating the conversion of pervious to impervious surfaces and the reconstruction of impervious surfaces. Conversion of pervious to impervious areas decreases infiltration, which increases the concentration and total pollutant load in stormwater runoff by increasing runoff volume and peak flow rates for the more frequent, less intense storms. Impacts related to flood hazards are evaluated by determining if components of the project alternatives are located within designated flood hazard zones, including tsunami or seiche zones.

Construction impact analysis evaluates if construction for the project alternatives would result in significant impacts related to hydrology and surface water quality, floodplains, and groundwater. Construction activities would degrade water quality by exposing stormwater to construction-related contaminants and exposed soils, construction of the river crossings would affect existing floodplains, and construction dewatering would cause impacts to groundwater resources. Analysis will address these temporary impacts as they relate to each project alternative.

3.2 CEQA Thresholds of Significance

For the purposes of the Environmental Impact Report, impacts are considered significant if the Project would:

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.
- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
- 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
  - substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;
  - 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
  - impede or redirect flood flows.
- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

4 FUTURE BACKGROUND PROJECTS

This section describes planned improvements to highway, transit, and regional rail facilities within the Project Study Area and the region that would occur whether or not the Project is constructed. These improvements are relevant to the analysis of the No Project Alternative and the project alternatives because they are part of the future regional transportation network within which the Project would be incorporated. These improvements would not be considered reasonably foreseeable consequences of not approving the Project as they would occur whether or not the Project is constructed.

The future background projects include all existing and under-construction highway and transit services and facilities, as well as the transit and highway projects scheduled to be operational by 2045 according to the *Measure R Expenditure Plan* (Metro, 2008), the *Measure M Expenditure Plan* (Metro, 2016), the Southern California Association of Governments (SCAG) *Connect SoCal, 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy* (2020-2045 RTP/SCS) (SCAG, 2020a, 2020b), and the Federal Transportation Improvement Program (FTIP), with the exception of the Sepulveda Transit Corridor Project (Project). The year 2045 was selected as the analysis year for the Project because it was the horizon year of SCAG's adopted RTP/SCS at the time Metro released the NOP for the Project.

4.1 Highway Improvements

The only major highway improvement in the Project Study Area included in the future background projects is the Interstate 405 (I-405) Sepulveda Pass ExpressLanes project (ExpressLanes project). This would include the ExpressLanes project as defined in the *2021 FTIP Technical Appendix, Volume II of III* (SCAG, 2021a), which is expected to provide for the addition of one travel lane in each direction on I-405 between U.S. Highway 101 (US-101) and Interstate 10 (I-10). Metro is currently studying several operational and physical configurations of the ExpressLanes project, which may also be used by commuter or rapid bus services, as are other ExpressLanes in Los Angeles County.

4.2 Transit Improvements

Table 4-1 lists the transit improvements that would be included in the future background projects. This list includes projects scheduled to be operational by 2045 as listed in the *Measure R and Measure M Expenditure Plans* (with the exception of the Project) as well as the Inglewood Transit Connector and LAX APM. In consultation with the Federal Transit Administration, Metro selected 2045 as the analysis year to provide consistency across studies for Measure M transit corridor projects. The Inglewood Transit Connector, a planned automated people mover (APM), which was added to the FTIP with *Consistency Amendment #21-05* in 2021, would also be included in the future background projects (SCAG, 2021b). These projects would also include the Los Angeles International Airport (LAX) APM, currently under construction by Los Angeles World Airports. The APM will extend from a new Consolidated Rent-A-Car Center to the Central Terminal Area of LAX and will include four intermediate stations. In addition, the new Airport Metro Connector Transit Station at Aviation Boulevard and 96th Street will also serve as a direct connection from the Metro K Line and Metro C Line to LAX by connecting with one of the APM stations.

During peak hours, heavy rail transit (HRT) services would generally operate at 4-minute headways (i.e., the time interval between trains traveling in the same direction), and light rail transit (LRT) services would operate at 5- to 6-minute headways. During off-peak hours, HRT services would generally operate at 8-minute headways and LRT services at 10- to 12-minute headways. Bus rapid transit (BRT) services would generally operate at peak headways between 5 and 10 minutes and off-peak headways between

10 and 14 minutes. The Inglewood Transit Connector would operate at a headway of 6 minutes, with more frequent service during major events. The LAX APM would operate at 2-minute headways during peak and off-peak periods.

Table 4-1. Fixed Guideway Transit System in 2045

Transit Line	Mode	Alignment Description[a]
Metro A Line	LRT	Claremont to downtown Long Beach via downtown Los Angeles
Metro B Line	HRT	Union Station to North Hollywood Station
Metro C Line	LRT	Norwalk to Torrance
Metro D Line	HRT	Union Station to Westwood/VA Hospital Station
Metro E Line	LRT	Downtown Santa Monica Station to Lambert Station (Whittier) via downtown Los Angeles
Metro G Line	BRT	Pasadena to Chatsworth[b]
Metro K Line	LRT	Norwalk to Expo/Crenshaw Station
East San Fernando Valley Light Rail Transit Line	LRT	Metrolink Sylmar/San Fernando Station to Metro G Line Van Nuys Station
Southeast Gateway Line	LRT	Union Station to Artesia
North San Fernando Valley Bus Rapid Transit Network Improvements	BRT	North Hollywood to Chatsworth[c]
Vermont Transit Corridor	BRT	Hollywood Boulevard to 120th Street
Inglewood Transit Connector	APM	Market Street/Florence Avenue to Prairie Avenue/Hardy Street
Los Angeles International Airport APM	APM	Aviation Boulevard/96th Street to LAX Central Terminal Area

Source: HTA, 2024

[a]Alignment descriptions reflect the project definition as of the date of the Project's Notice of Preparation (Metro, 2021).

[b]As defined in Metro Board actions of July 2018 and May 2021, the Metro G Line will have an eastern terminus near Pasadena City College and will include aerial stations at Sepulveda Boulevard and Van Nuys Boulevard.

[c]The North San Fernando Valley network improvements are assumed to be as approved by the Metro Board in December 2022.

4.3 Regional Rail Projects

The future background projects would include the Southern California Optimized Rail Expansion (SCORE) program, which is Metrolink's Capital Improvement Program that will upgrade the regional rail system (including grade crossings, stations, and signals) and add tracks as necessary to be ready in time for the 2028 Olympic and Paralympic Games. The SCORE program will also help Metrolink to move toward a zero emissions future. The following SCORE projects planned at Chatsworth and Burbank Stations will upgrade station facilities and allow 30-minute all-day service in each direction by 2045 on the Metrolink Ventura County Line:

1. Chatsworth Station: This SCORE project will include replacing an at-grade crossing and adding a new pedestrian bridge and several track improvements to enable more frequent and reliable service.
2. Burbank Station: This SCORE project will include replacing tracks, adding a new pedestrian crossing, and realigning tracks to achieve more frequency, efficiency, and shorter headways.

In addition, the Link Union Station project will provide improvements to Los Angeles Union Station that will transform the operations of the station by allowing trains to arrive and depart in both directions, rather than having to reverse direction to depart the station. Link Union Station will also prepare Union Station for the arrival of California High-Speed Rail, which will connect Union Station to other regional multimodal transportation hubs such as Hollywood Burbank Airport and the Anaheim Regional Transportation Intermodal Center.

5 NO PROJECT ALTERNATIVE

The only reasonably foreseeable transportation project under the No Project Alternative would be improvements to Metro Line 761, which would continue to serve as the primary transit option through the Sepulveda Pass with peak-period headways of 10 minutes in the peak direction and 15 minutes in the other direction. Metro Line 761 would operate between the Metro E Line Expo/Sepulveda Station and the Metro G Line Van Nuys Station, in coordination with the opening of the East San Fernando Valley Light Rail Transit Line, rather than to its current northern terminus at the Sylmar Metrolink Station.

5.1 Existing Conditions

5.1.1 Water Resources Study Area

The water resources study area includes surface water and groundwater resources within the Project Study Area. A variety of creeks, rivers, human-made reservoirs, and canals exist within the Project Study Area (Figure 5-1). In the northern portion of the Project Study Area, the Pacoima Wash extends to Vanowen Street between Sepulveda Boulevard and Van Nuys Boulevard. North of the Santa Monica Mountains, the Los Angeles River crosses the Project Study Area north of US-101. Encino Creek is located southwest of the junction of I-405 and US-101. Located outside and south of the Project Study Area, Ballona Creek, the Centinela Creek Channel, and the Sepulveda Channel cross near State Route 90. South of the Project Study Area, the Sepulveda Channel runs along the westside of I-405 and collects water from various catch basins and transports the water to Ballona Creek. Water from Ballona Creek ultimately discharges at the Marina del Rey Harbor.

There are several reservoirs largely concentrated in the Santa Monica Mountains. The Stone Canyon Reservoir (SCR) is located to the east of I-405 in the Santa Monica Mountains, 13 miles northwest of downtown Los Angeles. This reservoir provides water to 400,000 people in Pacific Palisades, the Santa Monica Mountains, and West Los Angeles. The Encino Reservoir is located west of I-405 within the Santa Monica Mountains in the City of Los Angeles Community of Encino. The Sepulveda Dam Recreation Area is located north of the I-405/US-101 interchange in the Valley.

5.1.2 Watershed Setting and Local Surface Water Bodies

The Project Study Area is located within the Los Angeles Watershed (HUC8) in the Upper Los Angeles River Watershed (HUC10) and the Santa Monica Bay Watershed (HUC8) in the Ballona Creek Watershed (HUC10) and the Garapito Creek-Frontal Santa Monica Bay Watershed (HUC10) (Figure 5-1). The receiving waters within the Project Study Area include the Los Angeles River with its respective tributaries. The Los Angeles River crosses the Project Study Area roughly parallel to US-101.

Figure 5-1. Watersheds in the Project Study Area

Source: USGS, 2023

5.1.2.1 Los Angeles Watershed

The Los Angeles Watershed covers an area of over 824 square miles from the eastern portions of the Santa Monica Mountains, Simi Hills, and the Santa Susana Mountains in the west to the San Gabriel Mountains in the east (LARWQCB, 2014). The Los Angeles River originates at the western end of the Valley at the confluence of Arroyo Calabasas and Bell Creek. The six major tributaries along the river

include Tujunga Wash, Burbank Western Storm Drain, Verdugo Wash, Arroyo Seco, Rio Hondo, and Compton Creek.

The Project Study Area is located in Reach 5 of the Los Angeles River where the river flows east for approximately 16 miles along the base of the Santa Monica Mountains. In the Valley, the river runs through low density residential neighborhoods. It continues through Reseda Park and the Sepulveda Basin, a regional recreational facility with a lake, park, and wildlife area. Reach 5 of the Los Angeles River is mostly channelized with some soft-bottom stretches and acts as a transitional zone between the downstream concrete sections and the more natural and free-flowing upstream sections.

Topography throughout the coastal plain area is generally defined by gradually sloping land from the foothills of the San Gabriel Mountains to the Pacific Ocean. The coastal plain area of the Los Angeles Watershed extends from the foothills of the San Gabriel Mountains to the river mouth at the Port of Long Beach and includes communities within the Project Study Area, including Van Nuys, Encino, Bel-Air, Brentwood, and Westwood. Ground elevations range from 10,000 feet in the San Gabriel Mountains to mean sea level at the mouth of the Los Angeles River. The majority of the coastal plain is less than 1,000 feet in elevation, while the upper portion of the watershed is covered by forest and open space. Approximately 500 square miles of the watershed is highly developed with commercial, industrial, and residential uses (LARWQCB, 2014). The vast majority of land in the Los Angeles Watershed (approximately 80 percent) is developed with urban uses.

Despite extensive urbanization, the Los Angeles Watershed contains water features retaining varying degrees of natural characteristics, including Glendale Narrows, which features a rocky bottom with riprap sides, supporting riparian vegetation and recreational uses, and Compton Creek, which supports wetland habitat providing critical ecological value within the developed landscape. Both Glendale Narrows and Compton Creek are outside of the Project Study Area. In addition, the Sepulveda Flood Control Basin maintains semi-natural conditions supporting low-intensity habitat uses.

5.1.2.2 Santa Monica Bay Watershed

The Santa Monica Bay Watershed covers an area of over 414 square miles from the Santa Monica Mountains on the north from the Ventura-Los Angeles County line on the west and extending south across the Los Angeles plain to the Ballona Creek Watershed on the east (LARWQCB, 2014). South of Ballona Creek a narrow strip of wetlands between Playa del Rey and Palos Verdes drains to Santa Monica Bay. The Santa Monica Bay Watershed includes several smaller subwatershed areas, including Ballona Creek Watershed and Garapito Creek-Frontal Santa Monica Bay Watershed.

A majority of the northern portion of the Santa Monica Bay Watershed is rugged open space containing many canyons that carry runoff directly to Santa Monica Bay. Topanga and Malibu Creeks, the two largest watercourses in this area, are fed both by tributary creeks and by channelized storm drains in and near developed areas. Portions of Malibu, Agoura Hills, Westlake Village, and Los Angeles are located in the northern portion of the watershed. The mid- and southern portions of the Santa Monica Bay Watershed are more urban and contain portions of Los Angeles, Santa Monica, El Segundo, Manhattan Beach, Redondo Beach, the Palos Verdes Estates, and Rancho Palos Verdes. These areas are highly developed and contain a network of storm drains that carry runoff to the Santa Monica Bay.

Ballona Creek Watershed

The Ballona Creek Watershed is a subwatershed within the Santa Monica Bay Watershed that consists of Ballona Creek, a nine-mile-long flood protection channel that drains the Los Angeles Basin. The Ballona Creek Watershed covers approximately 130 square miles located in the western portion of the Los

Angeles Basin and is made up by the Culver City, Wilshire, and Hollywood sub watersheds. The headwaters of the watershed are located in the Santa Monica Mountains to the north and the Baldwin Hills to the south. Most of the Ballona Creek drainage network has been modified into storm drains, underground culverts, and open concrete channels. Ballona Creek flows in an open concrete channel for approximately 10 miles from mid-Los Angeles through Culver City, reaching the Pacific Ocean at Playa del Rey (Marina del Rey Harbor). The Estuary portion, from Centinela Avenue to its outlet, is soft-bottomed and includes the Ballona Wetlands. A few natural channels remain in the Santa Monica Mountains and Baldwin Hills. The Sepulveda Channel, which runs along I-405 outside of the Project Study Area, is a major concrete-lined tributary to the Ballona Creek Watershed.

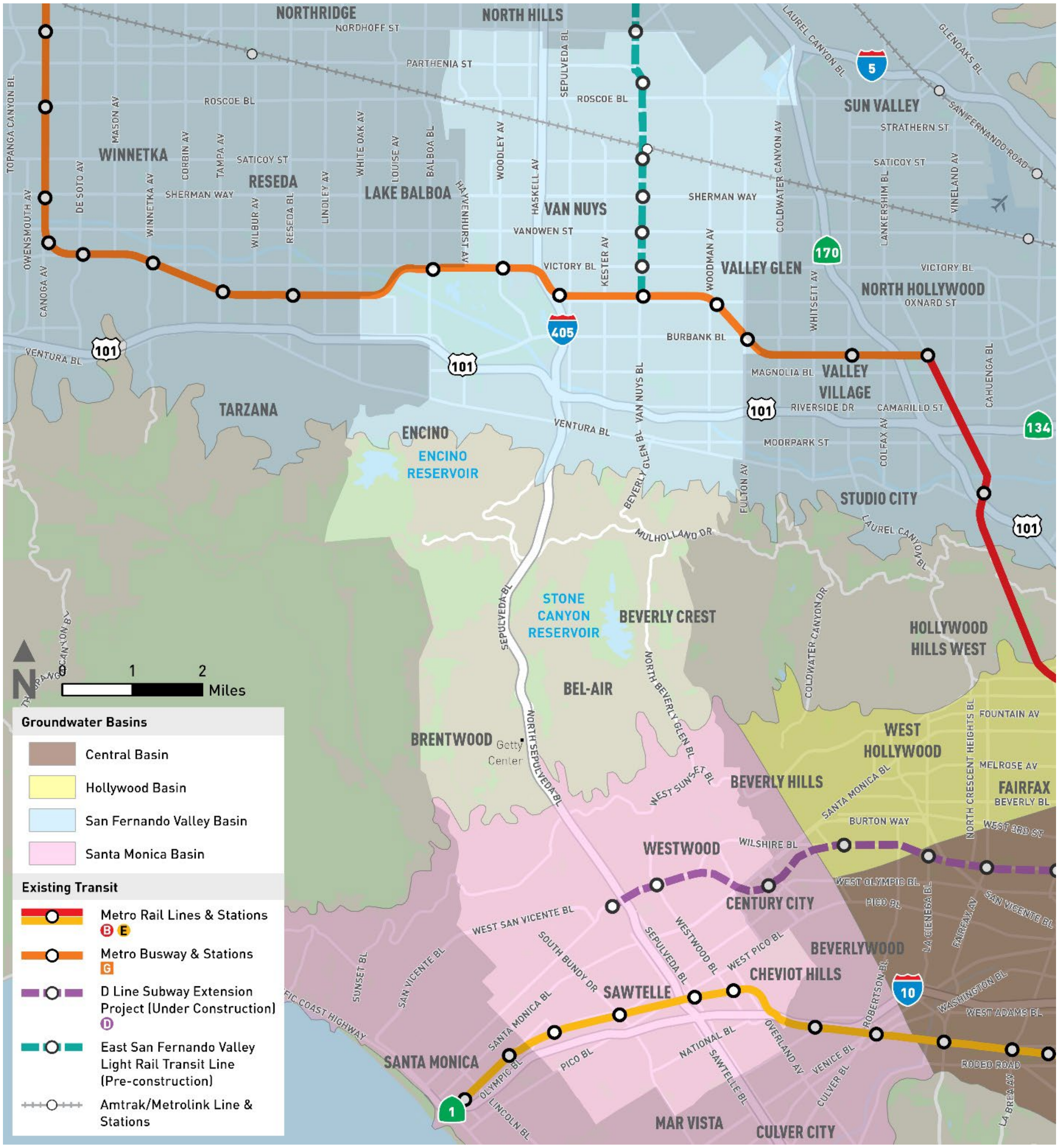
Garapito Creek-Frontal Santa Monica Bay Watershed

Garapito Creek-Frontal Santa Monica Bay Watershed is a subwatershed within the Santa Monica Bay Watershed and covers an area of approximately 130 square miles. The subwatershed is part of the Santa Monica Mountains and a majority of the subwatershed contains rugged mountainous terrain. This subwatershed includes Garapito Creek, which flows through Topanga State Park in the Santa Monica Mountains National Recreation Area. The Santa Monica Mountains are home to a diverse range of plant and animal species and provide critical habitats for wildlife, including several endangered species.

5.1.3 Groundwater

The Project Study Area is within the San Fernando Valley Groundwater Basin and Santa Monica Subbasin within the Coastal Plain of Los Angeles (Figure 5-2). The Sustainable Groundwater Management Act designated the Santa Monica Subbasin as medium priority, and the San Fernando Valley Groundwater Basin as very low priority based on the basin prioritization (DWR, 2021). Sources of water supply in Los Angeles County include groundwater.

Figure 5-2. Groundwater Basins Underlying the Project Study Area



Source: LA County Planning, 2020a

5.1.3.1 Coastal Plain of Los Angeles Groundwater Basin, Santa Monica Subbasin

The Santa Monica Subbasin underlies the northwestern part of the Coastal Plain of the Los Angeles Groundwater Basin. The Los Angeles Groundwater Basin spans 32,100 acres (50.2 square miles). It is bounded by impermeable rocks of the Santa Monica Mountains on the north and by the Ballona escarpment on the south. The Santa Monica Subbasin extends from the Pacific Ocean on the west to the Inglewood fault on the east. Ballona Creek is the dominant hydrologic feature and drains surface waters to the Pacific Ocean.

Replenishment of groundwater in the Santa Monica Subbasin is mainly by percolation of precipitation and surface runoff onto the subbasin from the Santa Monica Mountains. The Inglewood fault appears to inhibit replenishment by underflow from the Central Basin to the east, though some inflow may occur at its northern end. Total storage capacity of the Santa Monica Subbasin is estimated to be about 1,100,000 acre-feet (DWR, 2020a). The groundwater storage in the subbasin and groundwater budget is unknown.

5.1.3.2 San Fernando Valley Groundwater Basin

The San Fernando Valley Groundwater Basin surface area covers over 145,000 acres (226 square miles) and includes the water-bearing sediments beneath the San Fernando Valley, Tujunga Valley, Browns Canyon, and the alluvial areas surrounding the Verdugo Mountains near La Crescenta and Eagle Rock (DWR, 2020b). The basin is bounded on the north and northwest by the Santa Susana Mountains, on the north and northeast by the San Gabriel Mountains, on the east by the San Rafael Hills, on the south by the Santa Monica Mountains and Chalk Hills, and on the west by the Simi Hills. The Valley is drained by the Los Angeles River and its tributaries. Precipitation in the Valley ranges from 15 to 23 inches per year and averages about 17 inches.

Hydrographs show variations in water levels of 5 feet to 40 feet in the western part of the basin, a variation of about 40 feet in the southern and northern parts of the basin, and a variation of about 80 feet in the eastern part of the basin. The total storage capacity of the San Fernando Valley Groundwater Basin is 3,670,000 acres-feet. The groundwater in storage in 1998 is calculated at 3,049,000 acres-feet with an additional 621,000 acres-feet of storage space available. Though the San Fernando Valley Groundwater Basin is managed by adjudication, not enough data exists to compile a complete groundwater budget. A total of about 108,500 acres-feet of groundwater was extracted from the San Fernando Valley Groundwater Basin during the 1997-1998 water year. In addition, subsurface outflow of about 300 acres-feet to the Raymond Groundwater Basin and 404 acres-feet to the Central Subbasin of the Los Angeles Coastal Plain Groundwater Basin is estimated. To balance the extraction, a total of 61,119 acres-feet of native runoff water was diverted to spreading grounds for infiltration.

5.1.4 Water Quality

5.1.4.1 Los Angeles Watershed

Surface water beneficial uses for Reach 5 of the Los Angeles River include municipal and domestic supply, industrial service supply, groundwater recharge, recreation, and water that supports various habitats and ecosystems.

According to the California State Water Resources Control Board 2020-2022 303(d) list of impaired water bodies, Reach 5 of the Los Angeles River and its tributaries are listed as impaired for ammonia, benthic community effect, copper, lead, nutrients (algae), oil, toxicity, and trash (SWRCB, 2022c).

Elevated bacteria indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use at the 303(d) listed waterbodies within the Los Angeles Watershed. Recreating in waters with elevated bacteria indicator densities has been associated with adverse health effects. Specifically, local and national epidemiological studies demonstrate a causal relationship between adverse health effects and recreational water quality, as measured by bacteria indicator densities.

5.1.4.2 Ballona Creek Watershed

Surface water beneficial uses for Reach 1 of the Ballona Creek include municipal and domestic supply, industrial service supply, groundwater recharge, recreation, and water that supports various habitats and ecosystems.

Ballona Creek and Ballona Creek Estuary are on the CWA Section 303(d) list of impaired waterbodies for copper, lead, zinc, silver, cyanide, indicator bacteria, toxicity, trash, cadmium, chlordane, dichloro-diphenyl-trichloroethane (DDT), polychlorinated biphenyl (PCB), polycyclic aromatic hydrocarbons (PAH) and toxicity. Sepulveda Channel is included on the 303(d) list for copper, lead, zinc, selenium, and indicator bacteria (SWRCB, 2022c).

Elevated bacterial indicator densities are causing impairment of the REC-1 beneficial use designated for Ballona Estuary and Sepulveda Channel, limited water contact recreation designated for Ballona Creek Reach 2, and non-contact water recreation (REC-2) beneficial uses of Ballona Creek Reach 1. Recreating in waters with elevated bacterial indicator densities has long been associated with adverse human health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.

5.1.4.3 San Fernando Valley Groundwater Basin

Groundwater beneficial uses for the San Fernando Valley Groundwater Basin include water supply for municipal, domestic, industrial process, and agricultural uses. Nitrite pollution in the groundwater of the Sunland-Tujunga area within the San Fernando Valley Groundwater Basin currently precludes direct municipal uses. Since the groundwater in this area can be treated or blended (or both), it retains the municipal designation.

In the western part of the basin, calcium sulfate-bicarbonate character is dominant, and in the eastern part of the basin, calcium bicarbonate character dominates (DWR, 2020b). Total dissolved solids (TDS) range from 326 to 615 milligrams per liter (mg/L), and electrical conductivity ranges from 540 to 996 micromhos. Data from 125 public supply wells shows an average TDS content of 499 mg/L and a range from 176 to 1,160 mg/L.

A number of investigations have determined contamination of volatile organic compounds such as trichloroethylene (TCE), perchloroethylene (PCE), petroleum compounds, chloroform, nitrate, sulfate, and heavy metals. TCE, PCE, and nitrate contamination occurs in the eastern part of the basin and elevated sulfate concentration occurs in the western part of the basin.

5.1.4.4 Coastal Plain of Los Angeles Groundwater Basin, Santa Monica Subbasin

Beneficial uses for Santa Monica Subbasin within the Coastal Plain of Los Angeles include water supply for municipal, domestic, industrial process, and agricultural uses.

Impairments to the Santa Monica Subbasin is unknown to the California Department of Water Resources (DWR, 2020a). Analyses of water from seven public supply wells indicate an average TDS content of 916 mg/L and a range of 729 to 1,156 mg/L.

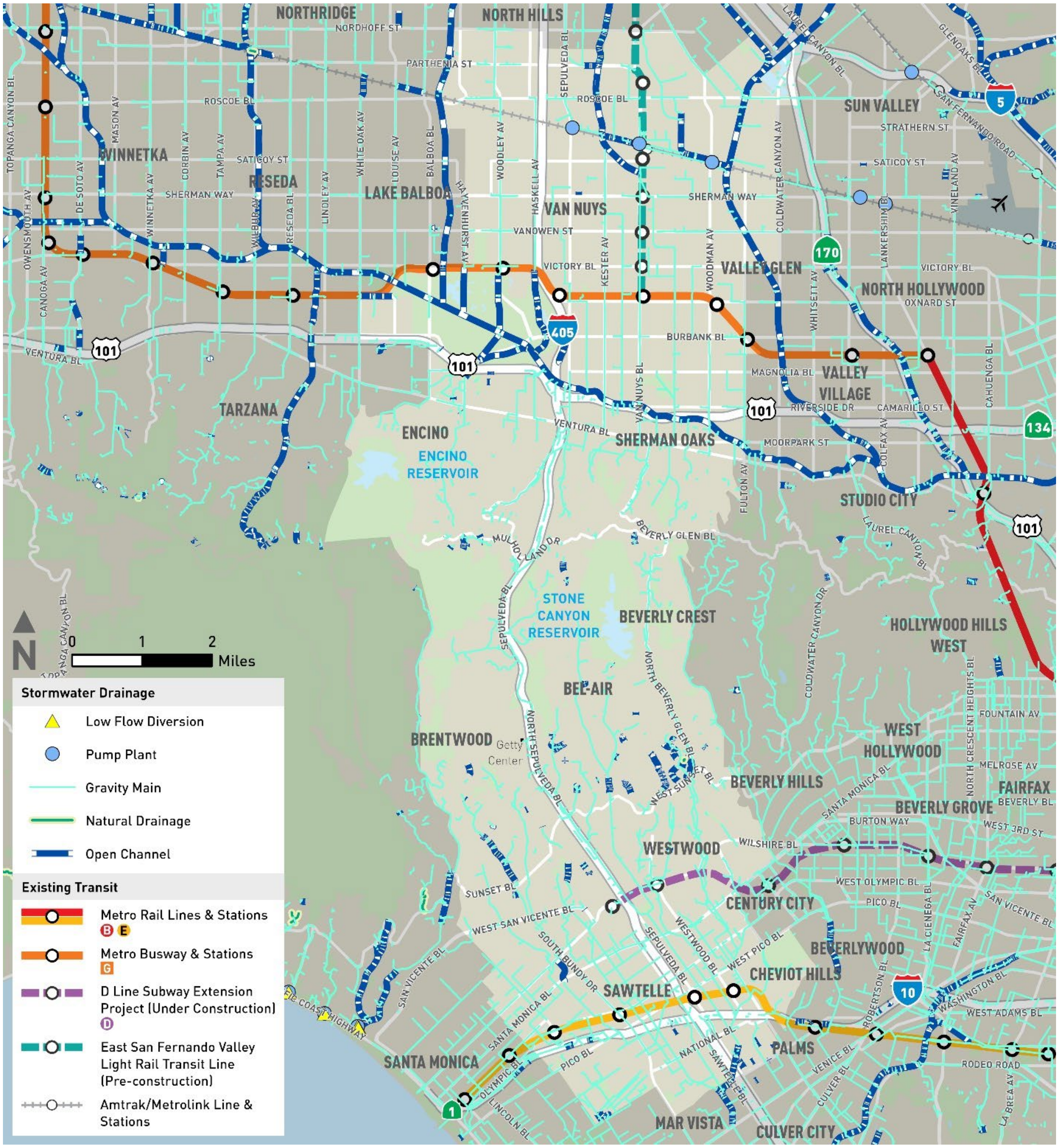
5.1.5 Drainage

Land in the county and cities within the Project Study Area is urbanized and largely covered with impervious surfaces associated with areas of asphalt, concrete, buildings, and other land uses that concentrate storm runoff. Stormwater and other surface water runoff are conveyed to municipal storm drains and culverts (Figure 5-3). Most local drainage networks are controlled by structural flood control measures. There is a large portion of the Project Study Area that is undeveloped, pervious lands in the open space area of the Santa Monica Mountains.

The general stormwater drainage pattern in the southern portion of the Project Study Area (from Metro E Line Expo/Sepulveda Station along I-405 to the upper reach of the Ballona Creek Watershed) is from north to south. The majority of stormwater runoff within the Project Study Area drains into the LACFCD Sepulveda Channel, which starts at the upper reach of the Ballona Creek Watershed as a large diameter storm drain pipe that crosses under I-405 several times. This storm drain then transitions into a large drainage box culvert; further south of the Project Study Area, it becomes an open channel before with Ballona Creek, an LACFCD flood control channel.

The general stormwater drainage pattern in the northern portion of the Project Study Area in the Upper Los Angeles River Watershed is from south to north in developed storm drain systems. From the ridge of the Sepulveda Pass going north, the majority of Project Study Area stormwater drains to a Caltrans storm drain main that connects to an LACFCD large drainage box culvert that discharges to the Los Angeles River, an LACFCD flood control channel.

Figure 5-3. Existing Stormwater Drainage Infrastructure



Source: LACPW, 2024

5.1.6 Flooding and Inundation

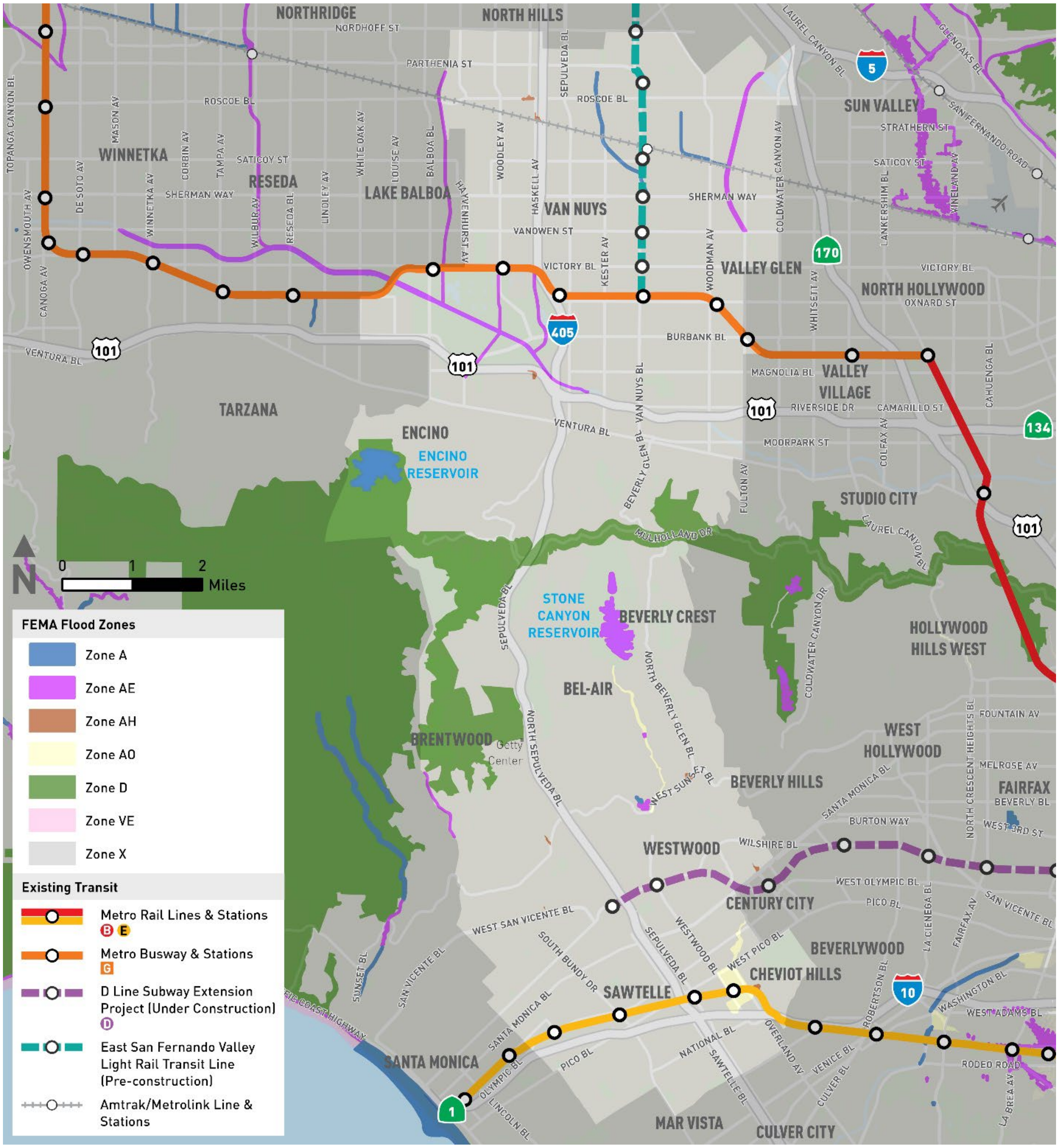
The Federal Emergency Management Agency's (FEMA) Flood Map Service Center (FEMA, 2023) was used to identify flood hazard zones within the Project Study Area. Figure 5-4 illustrates all flood hazard zones within the Project Study Area. Portions of the Project Study Area are subjected to a risk of flooding under FEMA's categorizations. The ridgetop of Santa Monica Mountains, located at Mulholland

Drive, and open space areas owned by Los Angeles County are located in Zone D. Zone D indicates that there is a risk of flooding, with unknown levels of risk. The Encino Reservoir and the SCR, located in the Santa Monica Mountains, are subject to Zones A and AE, respectively, and experience a risk of inundation with a 1 percent-annual-chance of flooding, alternatively known as a 100-year floodplain, since they each retain a significant amount of water. The channelized limits of the Los Angeles River, where it crosses I-405 and Sepulveda Boulevard, is also identified as Zone AE. Other small portions within the Project Study Area near Overland Avenue are within Zone AO and AH and are subject to inundation by 1 percent-annual-chance of shallow flooding. Approximately 1.61 percent of the Project Study Area is within the 100-year floodplain.

Seiches are a temporary disturbance or oscillation in the water level of an enclosed body of water, usually caused by changes in atmospheric pressure. The Encino Reservoir is located approximately 2.1 miles west of the median of I-405, and the SCR is located approximately 1.3 miles east of I-405.

Tsunamis are large ocean waves caused by major seismic events with the potential of causing flooding in low lying coastal areas.

Figure 5-4. FEMA Flood Zones



Source: LA County Planning, 2020b

5.1.7 Municipal Water Supply

Within Los Angeles County, the water supply comprises a complex system made up of state agencies and local water districts operating aqueducts, reservoirs, and groundwater basins. Approximately 33 percent of the water in the county comes from local supply sources, while the remaining supply is imported from outside of the county. Due to the county's dependence on imported water supply

sources and its vulnerability to drought, the county is constantly working to develop a diverse range of water resources (LA County Planning, 2015).

Local water supply sources include surface water from mountain runoff, groundwater, and recycled water. Imported sources of water supply include the Colorado River, the Bay-Delta in Northern California via the State Water Project, and the Owens Valley via the Los Angeles Aqueduct. Major water distributors of imported water used in the unincorporated county include the Metropolitan Water District of Southern California (MWD), Santa Clarita Valley Water Agency, Antelope Valley-East Kern Water Agency, Littlerock Creek Irrigation District, and the Palmdale Water District (LA County Planning, 2015).

The Los Angeles County Department of Public Works maintains a database of groundwater supply wells (LADPW, 2019). According to this database, the majority of groundwater wells are in the Valley with three active wells underlying Van Nuys Boulevard.

The City of Los Angeles Department of Water and Power (LADWP) is responsible for supplying, treating, and distributing water for domestic and industrial uses in a portion of the detailed Project Study Area. The LADWP serves an area of approximately 473 square miles with over 681,000 water service connections. LADWP draws its water from three main sources: the Los Angeles Aqueduct (from Eastern Sierra Nevada) (29 percent), the MWD (57 percent), groundwater (12 percent), and recycled water (2 percent) (LADWP, 2013).

5.2 Impacts Evaluation

5.2.1 Impact HWQ-1: Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

5.2.1.1 Operational Impacts

Under the No Project Alternative, the Project would not be developed and as a result any Project-related potential impacts would not occur.

The only transit improvement within the Project Study Area that is reasonably foreseeable in absence of the Project would be the rerouting of Metro Line 761. Operation of the rerouted Metro Line 761 would run along existing streets and may involve new bus shelters in sidewalks.

Potential pollutants (e.g., petroleum products/lubricants, paints, solvents) used during operations and maintenance of projects that are part of the No Project Alternative would contribute to water pollution if not properly dispensed, stored, or disposed. Uncontrolled discharge of runoff carrying these potential pollutants would result in significant impacts to water quality in receiving waters such as the Los Angeles River, which would violate water quality standards and WDRs if not appropriately managed. Since the Metro Line 761 is an existing bus route that would operate on existing streets and highways and operations and maintenance of Metro Line 761 would occur at one of Metro's existing bus maintenance facilities, it is anticipated that limited changes to runoff conditions or water quality would occur.

The rerouted Metro Line 761 would not require new IGP coverage as the bus route is an existing bus route with maintenance operations already covered by Metro's IGP coverage.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to the violation of any water quality standards or WDRs or substantial degradation of surface or groundwater quality during operation of the No Project Alternative would be less than significant.

5.2.1.2 Construction Impacts

In absence of the Project, the only reasonably foreseeable transit improvement in the Project Study Area would involve changes to Metro Line 761. Construction, including temporary laydown yards/staging areas, associated with the No Project Alternative would be required to comply with all applicable water quality protection laws and regulations at the federal, state, regional, and local levels, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Policies, NPDES CGP, the MS4 Permit, and the City of Los Angeles LID Ordinance. Rerouting Metro Line 761 would entail limited construction activities consisting of installation of bus stop infrastructure within the existing street right-of-way. Such construction would be required to comply with all applicable water quality protection laws and regulations.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to the violation of any water quality standards or WDRs or substantial degradation of surface or groundwater quality during construction of the No Project Alternative would be less than significant.

5.2.2 Impact HWQ-2: 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?

5.2.2.1 Operational Impacts

Under the No Project Alternative, the Project would not be developed and as a result any Project-related potential impacts would not occur. The only transit improvement within the Project Study Area that is reasonably foreseeable in absence of the Project would be the rerouting of Metro Line 761.

Operations and maintenance of Metro Line 761 would occur at one of Metro’s existing bus maintenance facilities and there would be no concern for groundwater extraction or uncontrolled discharge of pollutants into groundwater.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to groundwater supply and recharge during operations of the No Project Alternative would be less than significant.

5.2.2.2 Construction Impacts

In absence of the Project, the only reasonably foreseeable transit improvement in the Project Study Area would involve changes to Metro Line 761. If any bus shelters or minor construction is required, the Metro Line 761 rerouting would be required to comply with all applicable water quality protection laws and regulations at the federal, state, regional, and local levels, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Policies, NPDES Construction General Permit (CGP), the Municipal Separate Storm Sewer Systems (MS4) Permit, the Caltrans NPDES Statewide Stormwater Permit, and the City of Los Angeles and County of Los Angeles LID Ordinance.

With adherence to existing regulations and proper implementation of stormwater compliance requirements and because any construction impacts would be temporary, potential impacts to groundwater supply and recharge during construction of the No Project Alternative would be less than significant.

5.2.3 Impact HWQ-3: 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, in a manner which would:

i) result in substantial erosion or siltation on- or off-site;

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?

5.2.3.1 Operational Impacts

Under the No Project Alternative, the Project would not be developed and as a result any Project-related potential impacts would not occur. The only transit improvement within the Project Study Area that is reasonably foreseeable in absence of the Project would be the rerouting of Metro Line 761. Since Metro Line 761 is an existing bus route operating along existing streets and highways, there is limited potential for changes to drainage characteristics within the Project Study Area. Minor curb modifications may be required to install potential stations for the bus route; however, it is anticipated that such changes would result in less than significant impacts related to site drainage. It is unlikely that any improvements associated with the No Project Alternative would alter the course of a stream or river as these are heavily regulated by local, regional, or federal agencies.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff that would cause flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows during operation of the No Project Alternative would be less than significant.

5.2.3.2 Construction Impacts

During construction, improvements associated with Metro Line 761 would be required to comply with all applicable water quality protection laws and regulations at the federal, state, regional, and local levels, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Policies, NPDES CGP, the MS4 Permit, the Caltrans NPDES Statewide Stormwater Permit, and the City of Los Angeles and County of Los Angeles LID Ordinance.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, and because any construction impacts would be temporary, potential impacts related to substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff that would cause flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows during construction of the No Project Alternative would be less than significant.

5.2.4 Impact HWQ-4: Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

5.2.4.1 Operational Impacts

Under the No Project Alternative, the Project would not be developed and as a result any Project-related potential impacts would not occur. The only transit improvement within the Project Study Area that is reasonably foreseeable in absence of the Project would be the rerouting of Metro Line 761. Metro Line 761 is an existing bus route operating along existing streets and highways.

The majority of the Project Study Area is located outside of the FEMA-designated 100-year floodplain and would be in an inland area that is not in proximity to the ocean; therefore, the risk of inundation by a tsunami is considered low. A small segment of the Project Study Area, located at the ridgetop of the Santa Monica Mountains at Mulholland Drive, and open space areas, owned by Los Angeles County, are located in Zone D, which is an area of undetermined flood hazard. The channelized limits of the Los Angeles River, where it crosses I-405 and Sepulveda Boulevard, is identified as Zone AE, and other small portions within the Project Study Area east of Overland Avenue are within Zones AO and AH and are subject to inundation by a 1 percent annual chance of flooding. There are no 500-year flood plains within the Project Study Area.

The Encino Reservoir is located approximately 2.1 miles west of the median of I-405, and the SCR is located approximately 1.3 miles east of I-405. Both reservoirs are in the Santa Monica Mountains and are subject to Zones A and AE, respectively. These reservoirs have a risk of inundation with a 1 percent annual chance of flooding since they retain a significant amount of water. However, any oscillation and subsequent release of water in the reservoirs as part of a seiche would not likely cause inundation. Therefore, there would be no potential for risk of release of pollutants due to inundation by seiche.

The Los Angeles River and Ballona Creek are the major flood control measures for draining stormwater from the Project Study Area and directing it safely to the San Pedro Bay and Santa Monica Bay, respectively. The risk related to flooding would be considered low as the Project Study Area extends along well-developed areas that maintain storm drainage and water run-off control.

The No Project Alternative would have no impact related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during operations would be less than significant.

5.2.4.2 Construction Impacts

As described for operational impacts, the majority of the Project Study Area is located outside of the FEMA-designated 100-year floodplain and portions of the Project Study Area include Zones D, AE, AO and AH, particularly in the vicinity of the Los Angeles River.

Other water features in the Project Study Area include the Encino Reservoir and the Stone Canyon Reservoir which are subject to Zones A and AE, respectively. These reservoirs have a risk of inundation with a 1 percent annual chance of flooding since they retain a significant amount of water; however, any oscillation and subsequent release of water in the reservoirs as part of a seiche would not likely cause inundation due to the distance from the Project Study Area.

The Los Angeles River and Ballona Creek are the major flood control measures for draining stormwater from the Project Study Area and directing it safely to the San Pedro Bay and Santa Monica Bay, respectively. The risk related to flooding would be considered low.

The No Project Alternative would have no impact related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during construction would be less than significant.

5.2.5 Impact HWQ-5: Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

5.2.5.1 Operational Impacts

Under the No Project Alternative, the Project would not be developed and as a result any Project-related potential impacts would not occur. Section 5.2.1.1 provides the impact evaluation. With adherence to existing regulations and with proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during operations of the No Project Alternative would be less than significant.

5.2.5.2 Construction Impacts

Section 5.2.1.2 provides the impact evaluation. With adherence to existing regulations and with proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during construction of the No Project Alternative would be less than significant.

5.3 Mitigation Measures

5.3.1 Operational Impacts

No mitigation measures are required.

5.3.2 Construction Impacts

No mitigation measures are required.

5.3.3 Impacts After Mitigation

No mitigation measures are required; impacts are less than significant.

6 ALTERNATIVE 1

6.1 Alternative Description

Alternative 1 is an entirely aerial monorail alignment that would run along the Interstate 405 (I-405) corridor and would include eight aerial monorail transit (MRT) stations and a new electric bus route from the Los Angeles County Metropolitan Transportation Authority's (Metro) D Line Westwood/VA Hospital Station to the University of California, Los Angeles (UCLA) Gateway Plaza via Wilshire Boulevard and Westwood Boulevard. This alternative would provide transfers to five high-frequency fixed guideway transit and commuter rail lines, including the Metro E, Metro D, and Metro G Lines, the East San Fernando Valley Light Rail Transit Line, and the Metrolink Ventura County Line. The length of the alignment between the terminus stations would be approximately 15.1 miles. The length of the bus route would be 1.5 miles.

The eight aerial MRT stations and three bus stops would be as follows:

1. Metro E Line Expo/Sepulveda Station (aerial)
2. Santa Monica Boulevard Station (aerial)
3. Wilshire Boulevard/Metro D Line Station (aerial)
   a. Wilshire Boulevard/VA Medical Center bus stop
   b. Westwood Village bus stop
   c. UCLA Gateway Plaza bus stop
4. Getty Center Station (aerial)
5. Ventura Boulevard/Sepulveda Boulevard Station (aerial)
6. Metro G Line Sepulveda Station (aerial)
7. Sherman Way Station (aerial)
8. Van Nuys Metrolink Station (aerial)

6.1.1 Operating Characteristics

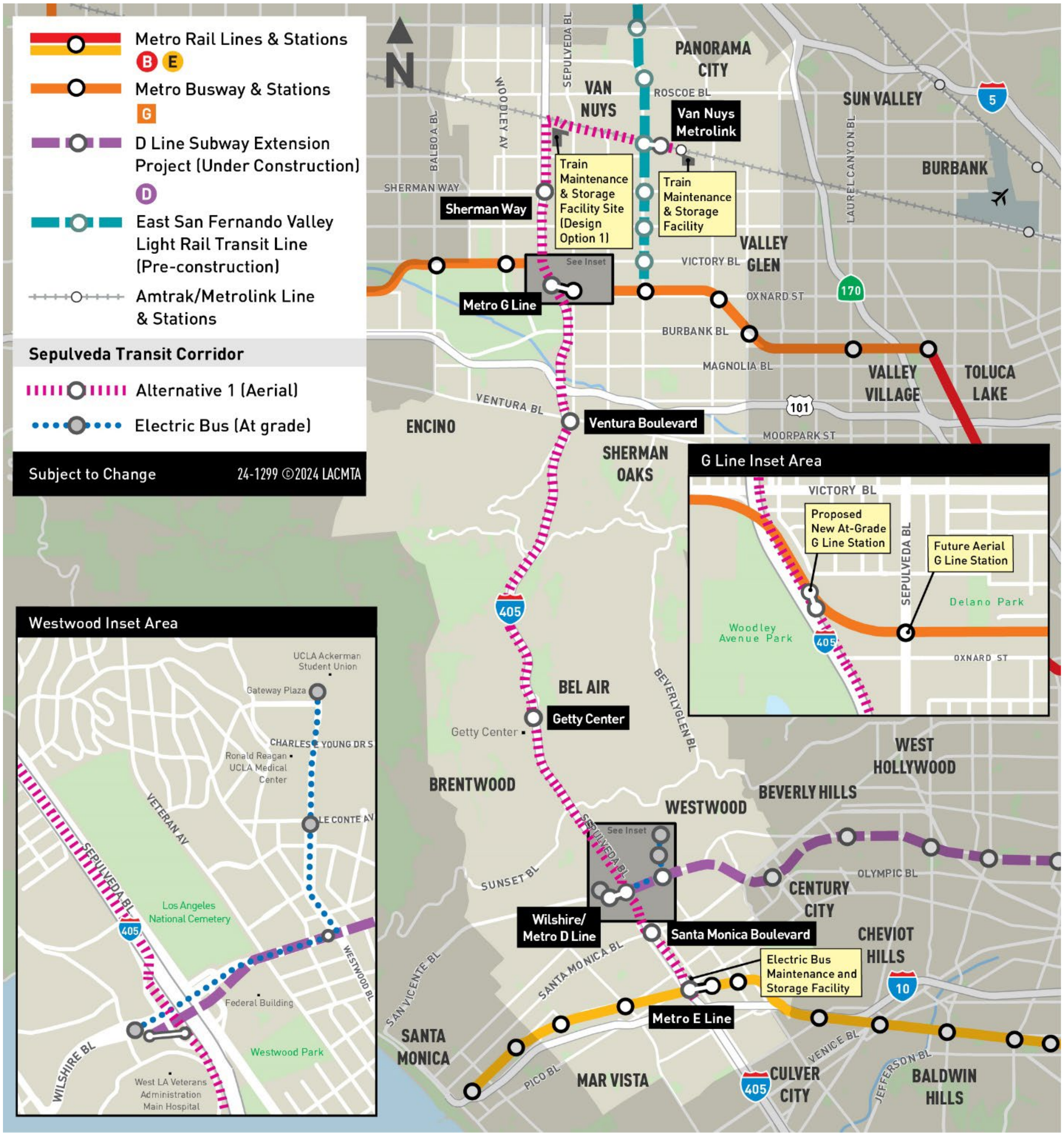
6.1.1.1 Alignment

As shown on Figure 6-1, from its southern terminus at the Metro E Line Expo/Sepulveda Station, the alignment of Alternative 1 would generally follow I-405 to the Los Angeles-San Diego-San Luis Obispo (LOSSAN) rail corridor near the alignment's northern terminus at the Van Nuys Metrolink Station. At several points, the alignment would transition from one side of the freeway to the other or to the median. North of U.S. Highway 101 (US-101), the alignment would be on the east side of the I-405 right-of-way and would then curve eastward along the south side of the LOSSAN rail corridor to Van Nuys Boulevard.

The proposed southern terminus station would be located west of the existing Metro E Line Expo/Sepulveda Station and east of I-405 between Pico Boulevard and Exposition Boulevard. Tail tracks would extend just south of the station adjacent to the eastbound Interstate 10 to northbound I-405 connector over Exposition Boulevard. North of the Metro E Line Expo/Sepulveda Station, a storage track would be located off the main alignment north of Pico Boulevard between I-405 and Cotner Avenue. The alignment would continue north along the east side of I-405 until just south of Santa Monica Boulevard, where a proposed station would be located between the I-405 northbound travel lanes and Cotner Avenue. The alignment would cross over the northbound and southbound freeway lanes north of Santa Monica Boulevard and travel along the west side of I-405, before reaching a proposed station within the

I-405 southbound-to-eastbound loop off-ramp to Wilshire Boulevard, near the Metro D Line Westwood/VA Hospital Station.

Figure 6-1. Alternative 1: Alignment



Source: LASRE, 2024; HTA, 2024

An electric bus would serve as a shuttle between the Wilshire Boulevard/Metro D Line Station and UCLA Gateway Plaza. From the Wilshire Boulevard/Metro D Line Station, the bus would travel east on Wilshire Boulevard and turn north on Westwood Boulevard to UCLA Gateway Plaza and make an intermediate stop in Westwood Village near the intersection of Le Conte Avenue and Westwood Boulevard.

North of Wilshire Boulevard, the monorail alignment would transition over the southbound I-405 freeway lanes to the freeway median, where it would continue north over the Sunset Boulevard overcrossing. The alignment would remain in the median to Getty Center Drive, where it would cross over the southbound freeway lanes to the west side of I-405, just north of the Getty Center Drive undercrossing, to the proposed Getty Center Station located north of the Getty Center tram station. The alignment would return to the median for a short distance before curving back to the west side of I-405, south of the Sepulveda Boulevard undercrossing north of the Getty Center Drive interchange. After crossing over Bel-Air Crest Road and Skirball Center Drive, the alignment would return to the median and run under the Mulholland Drive Bridge, then continue north within the I-405 median to descend into the San Fernando Valley (Valley).

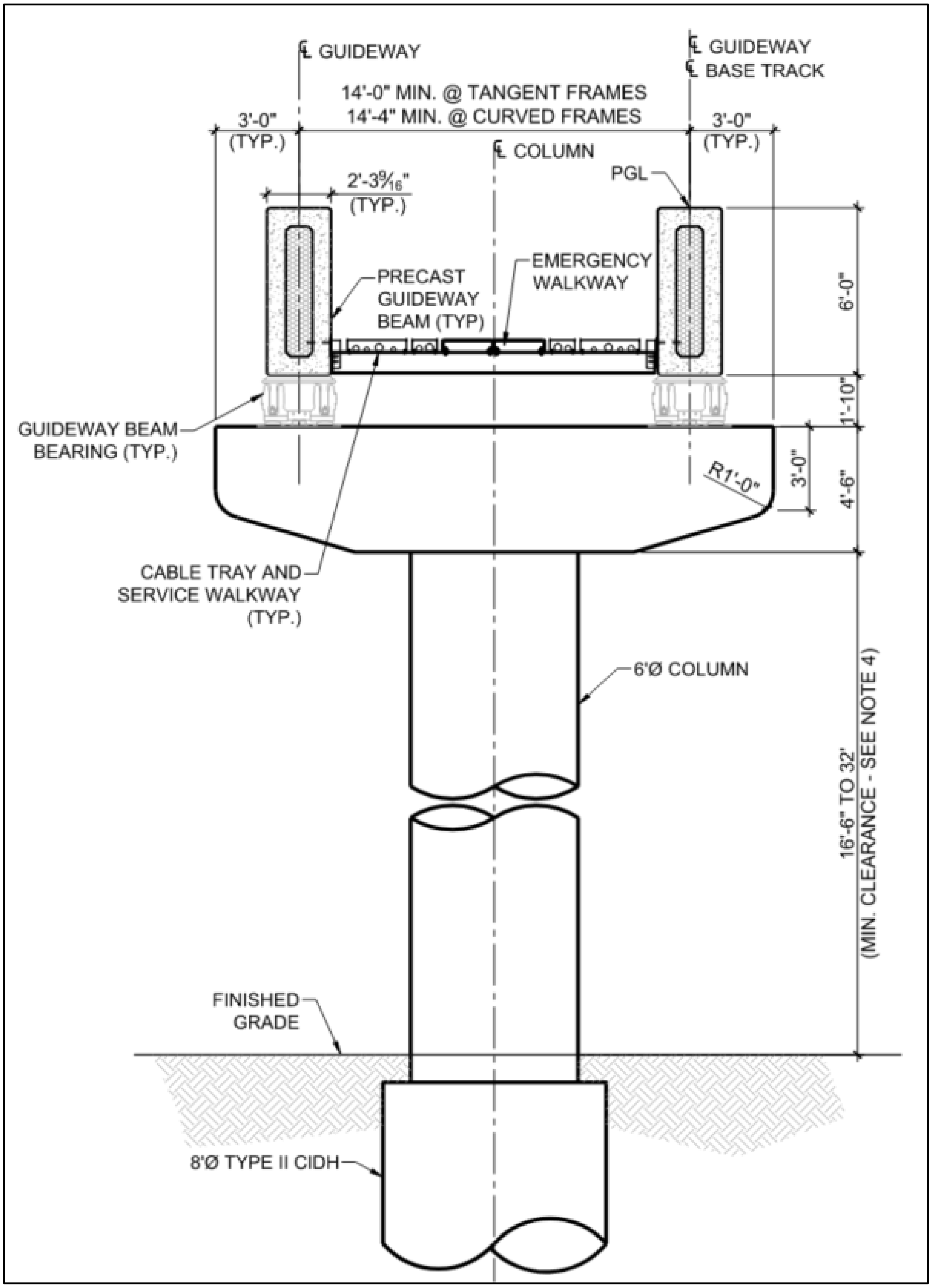
Near Greenleaf Street, the alignment would cross over the northbound freeway lanes and northbound on-ramps toward the proposed Ventura Boulevard Station on the east side of I-405. This station would be located above a transit plaza and would replace an existing segment of Dickens Street adjacent to I-405, just south of Ventura Boulevard. Immediately north of the Ventura Boulevard Station, the alignment would cross over northbound I-405 to the US-101 connector and continue north between the connector and the I-405 northbound travel lanes. The alignment would continue north along the east side of I-405 — crossing over US-101 and the Los Angeles River — to a proposed station on the east side of I-405 near the Metro G Line Busway. A new at-grade station on the Metro G Line would be constructed for Alternative 1 adjacent to the proposed monorail station. These proposed stations are shown on the Metro G Line inset area on Figure 6-1.

The alignment would then continue north along the east side of I-405 to the proposed Sherman Way Station. The station would be located inside the I-405 northbound loop off-ramp to Sherman Way. North of the station, the alignment would continue along the eastern edge of I-405, then curve to the southeast parallel to the LOSSAN rail corridor. The alignment would remain aerial along Raymer Street east of Sepulveda Boulevard and cross over Van Nuys Boulevard to the proposed terminus station adjacent to the Van Nuys Metrolink/Amtrak Station. Overhead utilities along Raymer Street would be undergrounded where they would conflict with the guideway or its supporting columns. Tail tracks would be located southeast of this terminus station.

6.1.1.2 Guideway Characteristics

The monorail alignment of Alternative 1 would be entirely aerial, utilizing straddle-beam monorail technology, which allows the monorail vehicle to straddle a guide beam that both supports and guides the vehicle. Northbound and southbound trains would travel on parallel beams supported by either a single-column or a straddle-bent structure. Figure 6-2 shows a typical cross-section of the aerial monorail guideway.

Figure 6-2. Typical Monorail Guideway Cross-Section

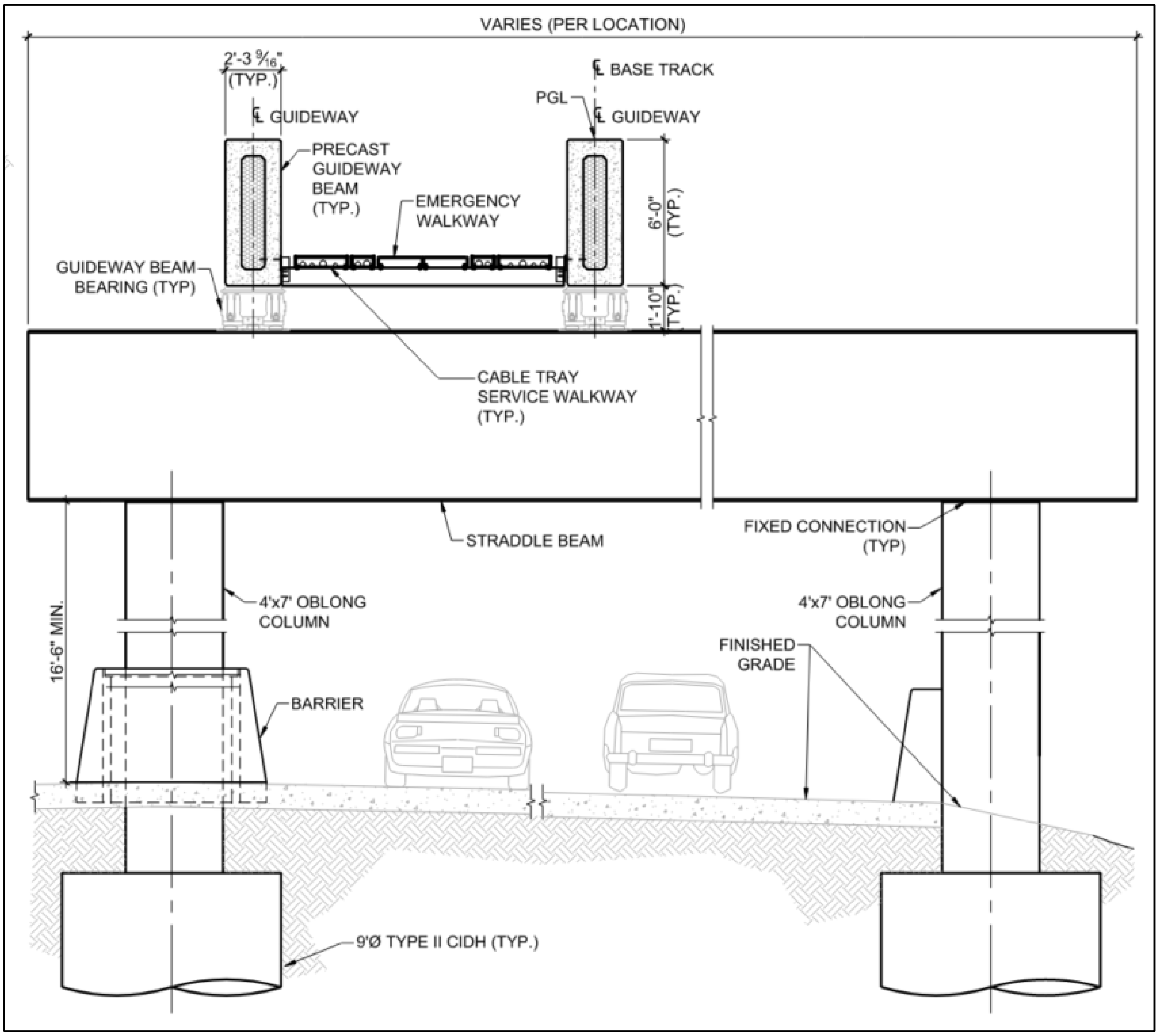


Source: LASRE, 2024

On a typical guideway section (i.e., not at a station), guide beams would rest on 20-foot-wide column caps (i.e., the structure connecting the columns and the guide beams), with typical spans (i.e., the distance between columns) ranging from 70 to 190 feet. The bottom of the column caps would typically be between 16.5 feet and 32 feet above ground level.

Over certain segments of roadway and freeway facilities, a straddle-bent configuration, as shown on Figure 6-3, consisting of two concrete columns constructed outside of the underlying roadway would be used to support the guide beams and column cap. Typical spans for these structures would range between 65 and 70 feet. A minimum 16.5-foot clearance would be maintained between the underlying roadway and the bottom of the column caps.

Figure 6-3. Typical Monorail Straddle-Bent Cross-Section



Source: LASRE, 2024

Structural support columns would vary in size and arrangement by alignment location. Columns would be 6 feet in diameter along main alignment segments adjacent to I-405 and be 4 feet wide by 6 feet long in the I-405 median. Straddle-bent columns would be 4 feet wide by 7 feet long. At stations, six rows of dual 5-foot by- 8-foot columns would support the aerial guideway. Beam switch locations and long-span structures would also utilize different sized columns, with dual 5-foot columns supporting switch locations and 9-foot- or 10-foot-diameter columns supporting long-span structures. Crash protection barriers would be used to protect the columns. Columns would have a cast-in-drilled-hole (CIDH) pile foundation extending 1 foot in diameter beyond the column width with varying depths for appropriate geotechnical considerations and structural support.

6.1.1.3 Vehicle Technology

Alternative 1 would utilize straddle-beam monorail technology, which allows the monorail vehicle to straddle a guide beam that both supports and guides the vehicle. Rubber tires would sit both atop and on each side of the guide beam to provide traction and guide the train. Trains would be automated and powered by power rails mounted to the guide beam, with planned peak-period headways of 166 seconds and off-peak-period headways of 5 minutes. Monorail trains could consist of up to eight cars. Alternative 1 would have a maximum operating speed of 56 miles per hour; actual operating speeds would depend on the design of the guideway and distance between stations.

Monorail train cars would be 10.5 feet wide, with two double doors on each side. End cars would be 46.1 feet long with a design capacity of 97 passengers, and intermediate cars would be 35.8 feet long and have a design capacity of 90 passengers.

The electric bus connecting the Wilshire Boulevard/Metro D Line Station, Westwood Village, and UCLA Gateway Plaza would be a battery electric, low-floor transit bus, either 40 or 60 feet in length. The buses would run with headways of 2 minutes during peak periods. The electric bus service would operate in existing mixed-flow travel lanes.

6.1.1.4 Stations

Alternative 1 would include eight aerial MRT stations with platforms approximately 320 feet long, elevated 50 feet to 75 feet above the existing ground level. The Metro E Line Expo/Sepulveda, Santa Monica Boulevard, Ventura Boulevard/Sepulveda Boulevard, Sherman Way, and Van Nuys Metrolink Stations would be center-platform stations where passengers would travel up to a shared platform that would serve both directions of travel. The Wilshire Boulevard/Metro D Line, Getty Center, and Metro G Line Sepulveda Stations would be side-platform stations where passengers would select and travel up to one of two station platforms, depending on their direction of travel. Each station, regardless of whether it has side or center platforms, would include a concourse level prior to reaching the train platforms. Each station would have a minimum of two elevators, two escalators, and one stairway from ground level to the concourse.

Station platforms would be approximately 320 feet long and would be supported by six rows of dual 5-foot by 8-foot columns. Station platforms would be covered, but not enclosed. Side-platform stations would be 61.5 feet wide to accommodate two 13-foot-wide station platforms with a 35.5-foot-wide intermediate gap for side-by-side trains. Center-platform stations would be 49 feet wide, with a 25-foot-wide center platform.

Monorail stations would include automatic, bi-parting fixed doors along the edges of station platforms. These doors would be integrated into the automatic train control system and would not open unless a train is stopped at the platform.

The following information describes each station, with relevant entrance, walkway, and transfer information. Bicycle parking would be provided at each station.

Metro E Line Expo/Sepulveda Station

- This aerial station would be located near the existing Metro E Line Expo/Sepulveda Station, just east of I-405 between Pico Boulevard and Exposition Boulevard.
- A transit plaza and station entrance would be located on the east side of the station.
- An off-street passenger pick-up/drop-off loop would be located south of Pico Boulevard west of Cotner Avenue.
- An elevated pedestrian walkway would connect the concourse level of the proposed station to the Metro E Line Expo/Sepulveda Station within the fare paid zone.
- Passengers would be able to park at the existing Metro E Line Expo/Sepulveda Station parking facility, which provides 260 parking spaces. No additional automobile parking would be provided at the proposed station.

Santa Monica Boulevard Station

- This aerial station would be located just south of Santa Monica Boulevard, between the I-405 northbound travel lanes and Cotner Avenue.
- Station entrances would be located on the southeast and southwest corners of Santa Monica Boulevard and Cotner Avenue. The entrance on the southeast corner of the intersection would be connected to the station concourse level via an elevated pedestrian walkway spanning Cotner Avenue.
- No dedicated station parking would be provided at this station.

Wilshire Boulevard/Metro D Line Station

- This aerial station would be located west of I-405 and south of Wilshire Boulevard within the southbound I-405 loop off-ramp to eastbound Wilshire Boulevard.
- An elevated pedestrian walkway spanning the adjacent I-405 ramps would connect the concourse level of the proposed station to a station plaza adjacent to the Metro D Line Westwood/VA Hospital Station within the fare paid zone. The station plaza would be the only entrance to the proposed station.
- The station plaza would include an electric bus stop and provide access to the Metro D Line Station via a new station entrance and concourse constructed using a knock-out panel provided in the Metro D Line Station.
- The passenger pick-up/drop-off facility at the Metro D Line Station would be reconfigured, maintaining the original capacity.
- No dedicated station parking would be provided at this station.

Getty Center Station

- This aerial station would be located on the west side of I-405 near the Getty Center, approximately 1,000 feet north of the Getty Center tram station.
- An elevated pedestrian walkway would connect the concourse level of the proposed station to the Getty Center tram station. The proposed connection would occur outside the fare paid zone.
- The pedestrian walkway would provide the only entrance to the proposed station.

- No dedicated station parking would be provided at this station.

Ventura Boulevard/Sepulveda Boulevard Station

- This aerial station would be located east of I-405, just south of Ventura Boulevard.
- A transit plaza, including two station entrances, would be located on the east side of the station. The plaza would require the closure of a 0.1-mile segment of Dickens Street between Sepulveda Boulevard and Ventura Boulevard, with a passenger pick-up/drop-off loop and bus stops provided south of the station, off Sepulveda Boulevard.
- No dedicated station parking would be provided at this station.

Metro G Line Sepulveda Station

- This aerial station would be located near the Metro G Line Sepulveda Station, between I-405 and the Metro G Line Busway.
- Entrances to the MRT station would be located on both sides of a proposed new Metro G Line bus rapid transit (BRT) station.
- An elevated pedestrian walkway would connect the concourse level of the proposed station to the proposed new Metro G Line BRT station outside of the fare paid zone.
- Passengers would be able to park at the existing Metro G Line Sepulveda Station parking facility, which has a capacity of 1,205 parking spaces. Currently, only 260 parking spaces are used for transit parking. No additional automobile parking would be provided at the proposed station.

Sherman Way Station

- This aerial station would be located inside the I-405 northbound loop off-ramp to Sherman Way.
- A station entrance would be located on the north side of Sherman Way.
- An on-street passenger pick-up/drop-off area would be provided on the north side of Sherman Way west of Firmament Avenue.
- No dedicated station parking would be provided at this station.

Van Nuys Metrolink Station

- This aerial station would be located on the east side of Van Nuys Boulevard, just south of the LOSSAN rail corridor, incorporating the site of the current Amtrak ticket office.
- A station entrance would be located on the east side of Van Nuys Boulevard just south of the LOSSAN rail corridor. A second entrance would be located north of the LOSSAN rail corridor with an elevated pedestrian walkway connecting to both the concourse level of the proposed station and the platform of the Van Nuys Metrolink/Amtrak Station.
- Existing Metrolink station parking would be reconfigured, maintaining approximately the same number of spaces, but 180 parking spaces would be relocated north of the LOSSAN rail corridor. Metrolink parking would not be available to Metro transit riders.

6.1.1.5 Station-to-Station Travel Times

Table 6-1 presents the station-to-station distance and travel times for Alternative 1. The travel times include both run time and dwell time. Dwell time is 30 seconds per station. Northbound and southbound travel times vary slightly because of grade differentials and operational considerations at end-of-line stations.

Table 6-1. Alternative 1: Station-to-Station Travel Times and Station Dwell Times

From Station	To Station	Distance (miles)	Northbound Station-to-Station Travel Time (seconds)	Southbound Station-to-Station Travel Time (seconds)	Dwell Time (seconds)
Metro E Line Station					*30*
Metro E Line	Santa Monica Boulevard	0.9	122	98	—
Santa Monica Boulevard Station					*30*
Santa Monica Boulevard	Wilshire/Metro D Line	0.7	99	104	—
Wilshire/Metro D Line Station					*30*
Wilshire/Metro D Line	Getty Center	2.9	263	266	—
Getty Center Station					*30*
Getty Center	Ventura Boulevard	4.7	419	418	—
Ventura Boulevard Station					*30*
Ventura Boulevard	Metro G Line	2.0	177	184	—
Metro G Line Station					*30*
Metro G Line	Sherman Way	1.5	135	134	—
Sherman Way Station					*30*
Sherman Way	Van Nuys Metrolink	2.4	284	284	—
Van Nuys Metrolink Station					*30*

Source: LASRE, 2024

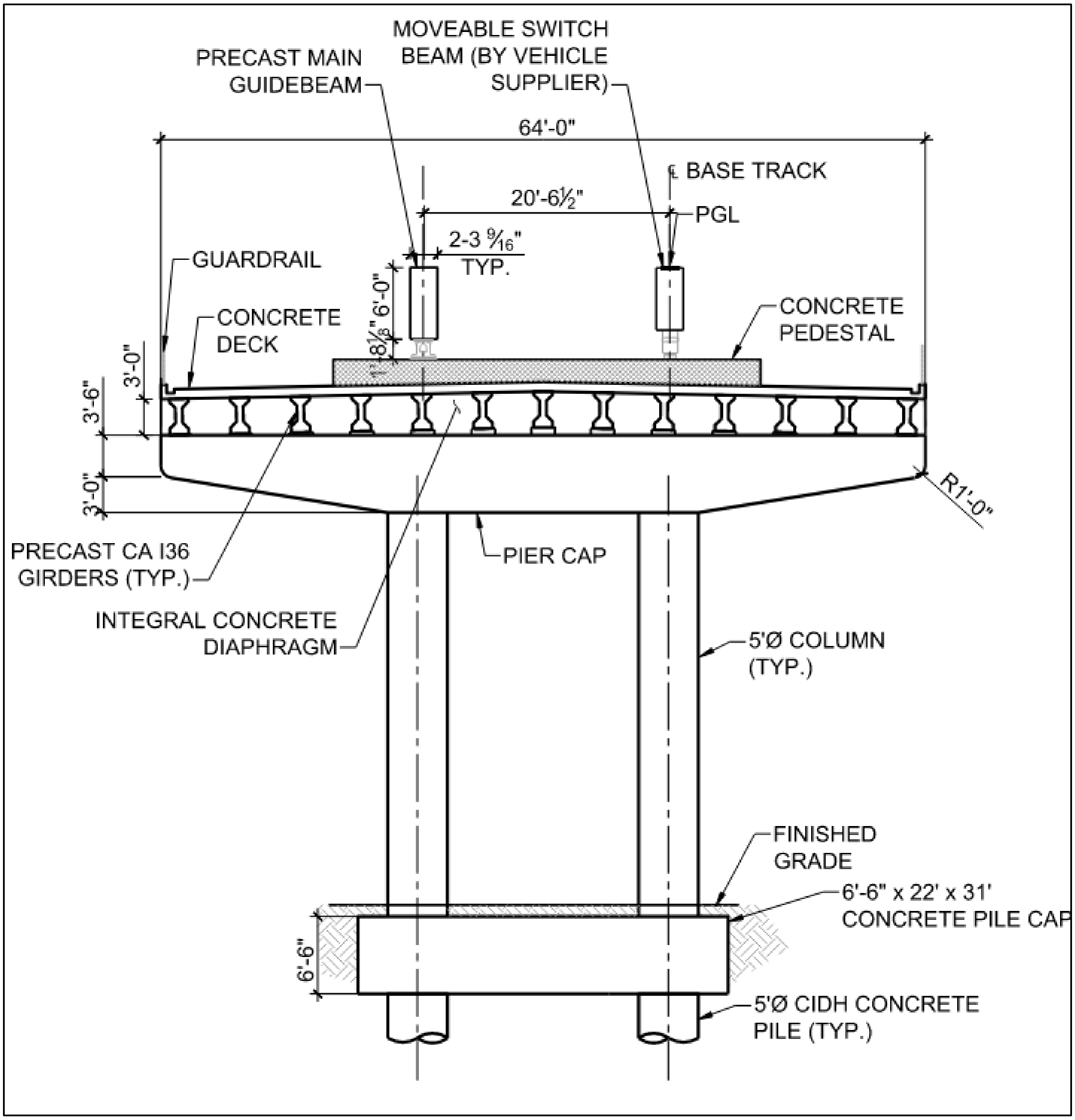
— = no data

6.1.1.6 Special Trackwork

Alternative 1 would include five pairs of beam switches to enable trains to cross over to the opposite beam. From south to north, the first pair of beam switches would be located just north of the Metro E Line Expo/Sepulveda Station. The second pair of beam switches would be located near the Wilshire Boulevard/Metro D Line Station on the north side of Wilshire Boulevard, within the Wilshire Boulevard westbound to I-405 southbound loop on-ramp. A third pair of beam switches would be located in the Sepulveda Pass just south of Mountaingate Drive and Sepulveda Boulevard. A fourth pair of beam switches would be located south of the Metro G Line Station between the I-405 northbound lanes and the Metro G Line Busway. The final pair would be located near the Van Nuys Metrolink Station.

At beam switch locations, the typical cross-section of the guideway would increase in column and column cap width. The column cap at these locations would be 64 feet wide, with dual 5-foot-diameter columns. Underground pile caps for additional structural support would also be required at beam switch locations. Figure 6-4 shows a typical cross-section of the monorail beam switch.

Figure 6-4. Typical Monorail Beam Switch Cross-Section



Source: LASRE, 2024

6.1.1.7 Monorail Maintenance and Storage Facility

MSF Base Design

In the maintenance and storage facility (MSF) Base Design for Alternative 1, the MSF would be located on City of Los Angeles Department of Water and Power (LADWP) property east of the Van Nuys Metrolink Station. The MSF Base Design site would be approximately 18 acres and would be designed to accommodate a fleet of 208 monorail vehicles. The site would be bounded by the LOSSAN rail corridor to the north, Saticoy Street to the south, and property lines extending north of Tyrone and Hazeltine Avenues to the east and west, respectively.

Monorail trains would access the site from the main alignment’s northern tail tracks at the northwest corner of the site. Trains would travel parallel to the LOSSAN rail corridor before curving southeast to maintenance facilities and storage tracks. The guideway would remain in an aerial configuration within the MSF Base Design, including within maintenance facilities.

The site would include the following facilities:

- Primary entrance with guard shack
- Primary maintenance building that would include administrative offices, an operations control center, and a maintenance shop and office
- Train car wash building
- Emergency generator
- Traction power substation (TPSS)
- Maintenance-of-way (MOW) building
- Parking area for employees

MSF Design Option 1

In the MSF Design Option 1, the MSF would be located on industrial property, abutting Orion Avenue, south of the LOSSAN rail corridor. The MSF Design Option 1 site would be approximately 26 acres and would be designed to accommodate a fleet of 224 monorail vehicles. The site would be bounded by I-405 to the west, Stagg Street to the south, the LOSSAN rail corridor to the north, and Orion Avenue and Raymer Street to the east. The monorail guideway would travel along the northern edge of the site.

Monorail trains would access the site from the monorail guideway east of Sepulveda Boulevard, requiring additional property east of Sepulveda Boulevard and north of Raymer Street. From the northeast corner of the site, trains would travel parallel to the LOSSAN rail corridor before turning south to maintenance facilities and storage tracks parallel to I-405. The guideway would remain in an aerial configuration within the MSF Design Option 1, including within maintenance facilities.

The site would include the following facilities:

- Primary entrance with guard shack
- Primary maintenance building that would include administrative offices, an operations control center, and a maintenance shop and office
- Train car wash building
- Emergency generator
- TPSS
- MOW building
- Parking area for employees

Figure 6-5 shows the locations of the MSF Base Design and MSF Design Option 1 for Alternative 1.

Figure 6-5. Alternative 1: Maintenance and Storage Facility Options

Source: LASRE, 2024; HTA, 2024

6.1.1.8 Electric Bus Maintenance and Storage Facility

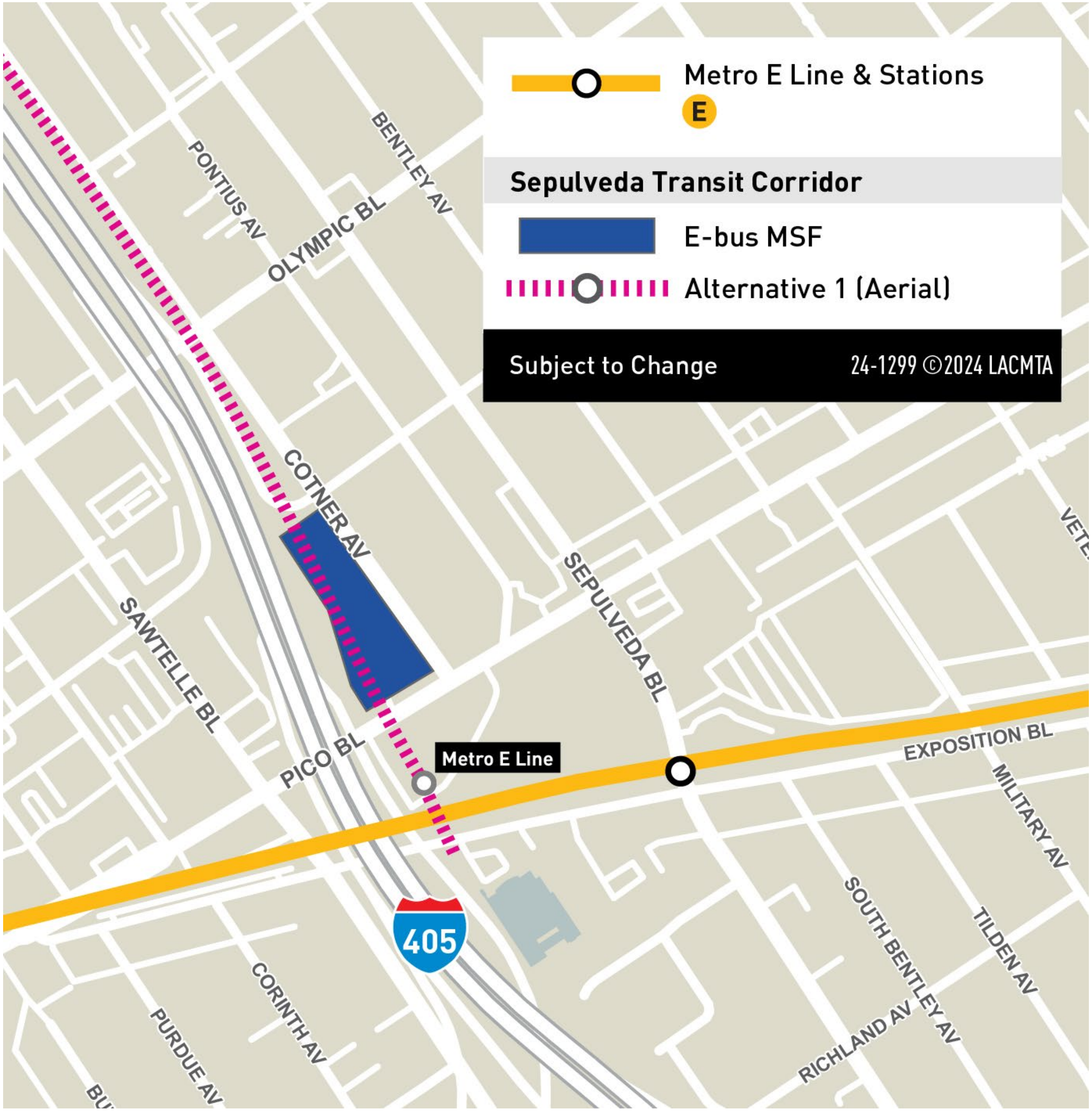
An electric bus MSF would be located on the northwest corner of Pico Boulevard and Cotner Avenue and would be designed to accommodate 14 electric buses. The site would be approximately 2 acres and would comprise six parcels bounded by Cotner Avenue to the east, I-405 to the west, Pico Boulevard to the south, and the I-405 northbound on-ramp to the north.

The site would include approximately 45,000 square feet of buildings and include the following facilities:

- Maintenance shop and bay
- Maintenance office
- Operations center
- Bus charging equipment
- Parts storeroom with service areas
- Parking area for employees

Figure 6-6 shows the location of the proposed electric bus MSF.

Figure 6-6. Alternative 1: Electric Bus Maintenance and Storage Facility



Source: LASRE, 2024; HTA, 2024

6.1.1.9 Traction Power Substations

TPSSs transform and convert high voltage alternating current supplied from power utility feeders into direct current suitable for transit operation. A TPSS on a site of approximately 8,000 square feet would be located approximately every 1 mile along the alignment. Table 6-2 lists the TPSS locations proposed for Alternative 1.

Figure 6-7 shows the TPSS locations along the Alternative 1 alignment.

Table 6-2. Alternative 1: Traction Power Substation Locations

TPSS No.	TPSS Location Description	Configuration
1	TPSS 1 would be located east of I-405, just south of Exposition Boulevard and the monorail guideway tail tracks.	At-grade
2	TPSS 2 would be located west of I-405, just north of Wilshire Boulevard, inside the Westbound Wilshire Boulevard to I-405 Southbound Loop On-Ramp.	At-grade
3	TPSS 3 would be located west of I-405, just north of Sunset Boulevard, inside the Church Lane to I-405 Southbound Loop On-Ramp.	At-grade
4	TPSS 4 would be located east of I-405 and Sepulveda Boulevard, just north of the Getty Center Station.	At-grade
5	TPSS 5 would be located west of I-405, just east of the intersection between Promontory Road and Sepulveda Boulevard.	At-grade
6	TPSS 6 would be located between I-405 and Sepulveda Boulevard, just north of the Skirball Center Drive Overpass.	At-grade
7	TPSS 7 would be located east of I-405, just south of Ventura Boulevard Station, between Sepulveda Boulevard and Dickens Street.	At-grade
8	TPSS 8 would be located east of I-405, just south of the Metro G Line Sepulveda Station.	At-grade
9	TPSS 9 would be located east of I-405, just east of the Sherman Way Station, inside the I-405 Northbound Loop Off-Ramp to Sherman Way westbound.	At-grade
10	TPSS 10 would be located east of I-405, at the southeast quadrant of the I-405 overcrossing with the LOSSAN rail corridor.	At-grade
11	TPSS 11 would be located east of I-405, at the southeast quadrant of the I-405 overcrossing with the LOSSAN rail corridor.	At-grade (within MSF Design Option)
12	TPSS 12 would be located between Van Nuys Boulevard and Raymer Street, south of the LOSSAN rail corridor.	At-grade
13	TPSS 13 would be located south of the LOSSAN rail corridor, between Tyrone Avenue and Hazeltine Avenue.	At-grade (within MSF Base Design)

Source: LASRE, 2024; HTA, 2024

Figure 6-7. Alternative 1: Traction Power Substation Locations

Source: LASRE, 2024; HTA, 2024

6.1.1.10 Roadway Configuration Changes

Table 6-3 lists the roadway changes necessary to accommodate the guideway of Alternative 1. Figure 6-8 shows the location of these roadway changes in the Sepulveda Transit Corridor Project (Project) Study Area, except for I-405 configuration changes, which would occur throughout the corridor.

Table 6-3. Alternative 1: Roadway Changes

Location	From	To	Description of Change
Cotner Avenue	Nebraska Avenue	Santa Monica Boulevard	Roadway realignment to accommodate aerial guideway columns and station access
Beloit Avenue	Massachusetts Avenue	Ohio Avenue	Roadway narrowing to accommodate aerial guideway columns
I-405 Southbound On-Ramp, Southbound Off-Ramp, and Northbound On-Ramp at Wilshire Boulevard	Wilshire Boulevard	I-405	Ramp realignment to accommodate aerial guideway columns and I-405 widening
Sunset Boulevard	Gunston Drive	I-405 Northbound Off-Ramp at Sunset Boulevard	Removal of direct eastbound to southbound on-ramp to accommodate aerial guideway columns and I-405 widening. Widening of Sunset Boulevard bridge with additional westbound lane
I-405 Southbound On-Ramp and Off-Ramp at Sunset Boulevard and North Church Lane	Sunset Boulevard	Not Applicable	Ramp realignment to accommodate aerial guideway columns and I-405 widening
I-405 Northbound On-Ramp and Off-Ramp at Sepulveda Boulevard near I-405 Exit 59	Sepulveda Boulevard near I-405 Northbound Exit 59	Sepulveda Boulevard / I-405 Undercrossing (near Getty Center)	Ramp realignment to accommodate aerial guideway columns and I-405 widening
Sepulveda Boulevard	I-405 Southbound Skirball Center Drive Ramps (north of Mountaingate Drive)	Skirball Center Drive	Roadway realignment into existing hillside to accommodate aerial guideway columns and I-405 widening
I-405 Northbound On-Ramp at Mulholland Drive	Mulholland Drive	Not Applicable	Roadway realignment into the existing hillside between the Mulholland Drive Bridge pier and abutment to accommodate aerial guideway columns and I-405 widening
Dickens Street	Sepulveda Boulevard	Ventura Boulevard	Vacation and permanent removal of street for Ventura Boulevard Station construction. Pick-up/drop-off area would be provided along Sepulveda Boulevard at the truncated Dickens Street
Sherman Way	Haskell Avenue	Firmament Avenue	Median improvements, passenger drop-off and pick-up areas, and bus pads within existing travel lanes
Raymer Street	Sepulveda Boulevard	Van Nuys Boulevard	Curb extensions and narrowing of roadway width to accommodate aerial guideway columns
I-405	Sunset Boulevard	Bel Terrace	I-405 widening to accommodate aerial guideway columns in the median

Location	From	To	Description of Change
I-405	Sepulveda Boulevard Northbound Off-Ramp (Getty Center Drive interchange)	Sepulveda Boulevard Northbound On-Ramp (Getty Center Drive interchange)	I-405 widening to accommodate aerial guideway columns in the median
I-405	Skirball Center Drive	I-405 Northbound On-Ramp at Mulholland Drive	I-405 widening to accommodate aerial guideway columns in the median

Source: LASRE, 2024; HTA, 2024

Figure 6-8. Alternative 1: Roadway Changes

Source: LASRE, 2024; HTA, 2024

In addition to the changes made to accommodate the guideway, as listed in Table 6-3, roadways and sidewalks near stations would be reconstructed, which would result in modifications to curb ramps and driveways.

6.1.1.11 Fire/Life Safety – Emergency Egress

Continuous emergency evacuation walkways would be provided along the guideway. The walkways would typically consist of structural steel frames anchored to the guideway beams to support non-slip walkway panels. The walkways would be located between the two guideway beams for most of the alignment; however, where the beams split apart, such as entering center-platform stations, short portions of the walkway would be located on the outside of the beams.

6.1.2 Construction Activities

Construction activities for Alternative 1 would include constructing the aerial guideway and stations, widening I-405, and constructing ancillary facilities. Construction of the transit through substantial completion is expected to have a duration of 6½ years. Early works, such as site preparation, demolition, and utility relocation, could start in advance of construction of the transit facilities.

Aerial guideway construction would begin at the southern and northern ends of the alignment and connect in the middle. Constructing the guideway would require a combination of freeway and local street lane closures throughout the work limits to provide sufficient work area. The first stage of I-405 widening would include a narrowing of adjacent freeway lanes to a minimum width of 11 feet (which would eliminate shoulders) and placing K-rail on the outside edge of the travel lanes to create outside work areas. Within these outside work zones, retaining walls, drainage infrastructure, and outer pavement widenings would be constructed to allow for I-405 widening. The reconstruction of on- and off-ramps would be the final stage of I-405 widening.

A median work zone along I-405 for the length of the alignment would be required for erection of the guideway structure. In the median work zone, demolition of the existing median and drainage infrastructure would be followed by the installation of new K-rail and installation of guideway structural components, which would include full directional freeway closures when guideway beams must be transported into the median work areas during late-night hours. Additional night and weekend directional closures would be required for installation of long-span structures over I-405 travel lanes where the guideway would transition from the median.

Aerial station construction is anticipated to last the duration of construction activities for Alternative 1 and would include the following general sequence of construction:

- Site clearing
- Utility relocation
- Construction fencing and rough grading
- CIDH pile drilling and installation
- Elevator pit excavation
- Soil and material removal
- Pile cap and pier column construction
- Concourse level and platform level falsework for cast-in-place structural concrete
- Guideway beam installation
- Elevator and escalator installation
- Completion of remaining concrete elements such as pedestrian bridges
- Architectural finishes and mechanical, electrical, and plumbing installation

Alternative 1 would require construction of a concrete casting facility for columns and beams associated with the elevated guideway. A specific site has not been identified; however, it is expected that the facility would be located on industrially zoned land adjacent to a truck route in either the Antelope Valley or Riverside County. When a site is identified, the contractor would obtain all permits and approvals necessary from the relevant jurisdiction, the appropriate air quality management entity, and other regulatory entities.

TPSS construction would require additional lane closures. Large equipment including transformers, rectifiers, and switchgears would be delivered and installed through prefabricated modules where possible in at-grade TPSSs. The installation of transformers would require temporary lane closures on Exposition Boulevard, Beloit Avenue, Sepulveda Boulevard just north of Cashmere Street, and the I-405 northbound on-ramp at Burbank Boulevard.

Table 6-4 and Figure 6-9 show the potential construction staging areas for Alternative 1. Staging areas would provide the necessary space for the following activities:

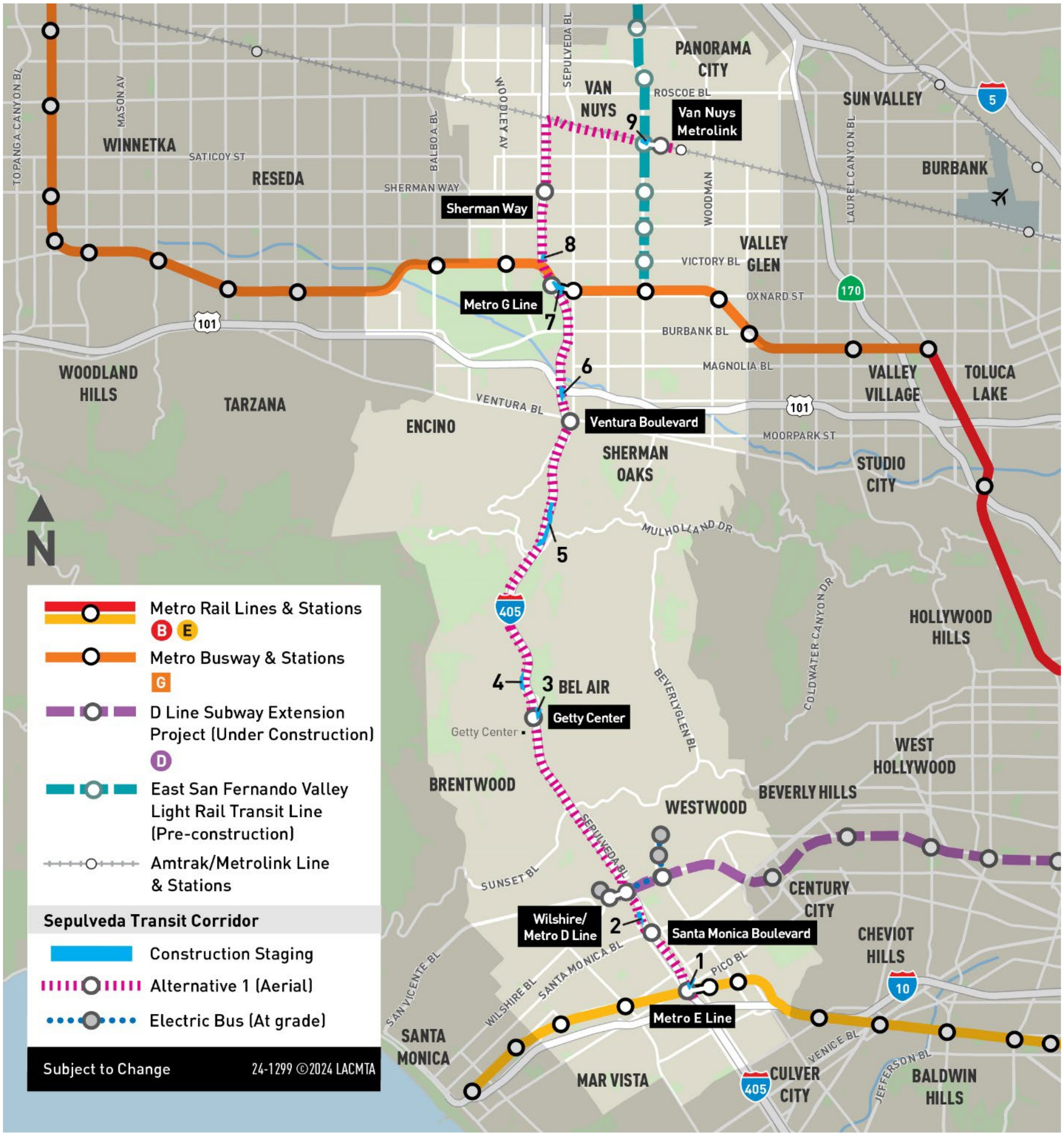
- Contractors' equipment
- Receiving deliveries
- Storing materials
- Site offices
- Work zone for excavation
- Other construction activities (including parking and change facilities for workers, location of construction office trailers, storage, staging and delivery of construction materials and permanent plant equipment, and maintenance of construction equipment)

Table 6-4. Alternative 1: Construction Staging Locations

No.	Location Description
1	Public Storage between Pico Boulevard and Exposition Boulevard, east of I-405
2	South of Dowlen Drive and east of Greater LA Fisher House
3	At 1400 N Sepulveda Boulevard
4	At 1760 N Sepulveda Boulevard
5	East of I-405 and north of Mulholland Drive Bridge
6	Inside of I-405 Northbound to US-101 Northbound Loop Connector, south of US-101
7	ElectroRent Building south of Metro G Line Busway, east of I-405
8	Inside the I-405 Northbound Loop Off-Ramp at Victory Boulevard
9	Along Cabrito Road east of Van Nuys Boulevard

Source: LASRE, 2024; HTA, 2024

Figure 6-9. Alternative 1: Construction Staging Locations



Source: LASRE, 2024; HTA, 2024

6.2 Existing Conditions

6.2.1 Water Resources Study Area

The water resources study area includes surface water and groundwater resources within the Project Study Area. A variety of creeks, rivers, human-made reservoirs, and canals exist within the Project Study Area (Figure 6-10). In the northern portion of the Project Study Area, the Pacoima Wash extends to Vanowen Street between Sepulveda Boulevard and Van Nuys Boulevard. North of the Santa Monica Mountains, the Los Angeles River crosses the Project Study Area north of US-101. Encino Creek is located southwest of the junction of I-405 and US-101. Located outside and south of the Project Study Area, Ballona Creek, the Centinela Creek Channel, and the Sepulveda Channel cross near State Route 90. South of the Project Study Area, the Sepulveda Channel runs along the westside of I-405 and collects water from various catch basins and transports the water to Ballona Creek. Water from Ballona Creek ultimately discharges at the Marina del Rey Harbor.

There are several reservoirs largely concentrated in the Santa Monica Mountains. The Stone Canyon Reservoir (SCR) is located to the east of I-405 in the Santa Monica Mountains, 13 miles northwest of downtown Los Angeles. This reservoir provides water to 400,000 people in Pacific Palisades, the Santa Monica Mountains, and West Los Angeles. The Encino Reservoir is located west of I-405 within the Santa Monica Mountains in the City of Los Angeles Community of Encino. The Sepulveda Dam Recreation Area is located north of the I-405/US-101 interchange in the Valley.

6.2.2 Watershed Setting and Local Surface Water Bodies

The Project Study Area is located within the Los Angeles Watershed (HUC8) in the Upper Los Angeles River Watershed (HUC10) and the Santa Monica Bay Watershed (HUC8) in the Ballona Creek Watershed (HUC10) and the Garapito Creek-Frontal Santa Monica Bay Watershed (HUC10) (Figure 6-10). The receiving waters within the Project Study Area include the Los Angeles River with its respective tributaries. The Los Angeles River crosses the Project Study Area roughly parallel to US-101.

Figure 6-10. Alternative 1: Watersheds in the Project Study Area

Source: USGS, 2023

6.2.2.1 Los Angeles Watershed

The Los Angeles Watershed covers an area of over 824 square miles from the eastern portions of the Santa Monica Mountains, Simi Hills, and the Santa Susana Mountains in the west to the San Gabriel Mountains in the east (LARWQCB, 2014). The Los Angeles River originates at the western end of the Valley at the confluence of Arroyo Calabasas and Bell Creek. The six major tributaries along the river

include Tujunga Wash, Burbank Western Storm Drain, Verdugo Wash, Arroyo Seco, Rio Hondo, and Compton Creek.

The Project Study Area is located in Reach 5 of the Los Angeles River where the river flows east for approximately 16 miles along the base of the Santa Monica Mountains. In the Valley, the river runs through low density residential neighborhoods. It continues through Reseda Park and Sepulveda Basin-a regional recreational facility with a lake, park, and wildlife area. Reach 5 of the Los Angeles River is mostly channelized with some soft-bottom stretches and acts as a transitional zone between the downstream concrete sections and the more natural and free-flowing upstream sections.

Topography throughout the coastal plain area is generally defined by gradually sloping land from the foothills of the San Gabriel Mountains to the Pacific Ocean. The coastal plain area of the Los Angeles Watershed extends from the foothills of the San Gabriel Mountains to the river mouth at the Port of Long Beach and includes communities within the Project Study Area, including Van Nuys, Encino, Bel-Air, Brentwood, and Westwood. Ground elevations range from 10,000 feet in the San Gabriel Mountains to mean sea level at the mouth of the Los Angeles River. The majority of the coastal plain is less than 1,000 feet in elevation, while the upper portion of the watershed is covered by forest and open space. Approximately 500 square miles of the watershed is highly developed with commercial, industrial, and residential uses (LARWQCB, 2014). The vast majority of land in the Los Angeles Watershed (approximately 80 percent) is developed with urban uses.

Despite extensive urbanization, the Los Angeles Watershed contains water features retaining varying degrees of natural characteristics, including Glendale Narrows, which features a rocky bottom with riprap sides, supporting riparian vegetation and recreational uses, and Compton Creek, which supports wetland habitat providing critical ecological value within the developed landscape. Both Glendale Narrows and Compton Creek are outside of the Project Study Area. In addition, the Sepulveda Flood Control Basin maintains semi-natural conditions supporting low-intensity habitat uses.

6.2.2.2 Santa Monica Bay Watershed

The Santa Monica Bay Watershed covers an area of over 414 square miles from the Santa Monica Mountains on the north from the Ventura-Los Angeles County line on the west and extending south across the Los Angeles plain to the Ballona Creek Watershed on the east (LARWQCB, 2014). South of Ballona Creek a narrow strip of wetlands between Playa del Rey and Palos Verdes drains to Santa Monica Bay. The Santa Monica Bay Watershed includes several smaller subwatershed areas, including Ballona Creek Watershed and Garapito Creek-Frontal Santa Monica Bay Watershed.

A majority of the northern portion of the Santa Monica Bay Watershed is rugged open space containing many canyons that carry runoff directly to Santa Monica Bay. Topanga and Malibu Creeks, the two largest watercourses in this area, are fed both by tributary creeks and by channelized storm drains in and near developed areas. Portions of Malibu, Agoura Hills, Westlake Village, and Los Angeles are located in the northern portion of the watershed. The mid- and southern portions of the Santa Monica Bay Watershed are more urban and contain portions of Los Angeles, Santa Monica, El Segundo, Manhattan Beach, Redondo Beach, the Palos Verdes Estates, and Rancho Palos Verdes. These areas are highly developed and contain a network of storm drains that carry runoff to the Santa Monica Bay.

Ballona Creek Watershed

The Ballona Creek Watershed is a subwatershed within the Santa Monica Bay Watershed that consists of Ballona Creek, a nine-mile-long flood protection channel that drains the Los Angeles Basin. The Ballona Creek Watershed covers approximately 130 square miles located in the western portion of the Los

Angeles Basin and is made up by the Culver City, Wilshire, and Hollywood sub watersheds. The headwaters of the watershed are located in the Santa Monica Mountains to the north and the Baldwin Hills to the south. Most of the Ballona Creek drainage network has been modified into storm drains, underground culverts, and open concrete channels. Ballona Creek flows in an open concrete channel for approximately 10 miles from mid-Los Angeles through Culver City, reaching the Pacific Ocean at Playa del Rey (Marina del Rey Harbor). The Estuary portion, from Centinela Avenue to its outlet, is soft-bottomed and includes the Ballona Wetlands. A few natural channels remain in the Santa Monica Mountains and Baldwin Hills. The Sepulveda Channel, which runs along I-405 outside of the Project Study Area, is a major concrete-lined tributary to the Ballona Creek Watershed.

Garapito Creek-Frontal Santa Monica Bay Watershed

Garapito Creek-Frontal Santa Monica Bay Watershed is a subwatershed within the Santa Monica Bay Watershed and covers an area of approximately 130 square miles. The subwatershed is part of the Santa Monica Mountains and a majority of the subwatershed contains rugged mountainous terrain. This subwatershed includes Garapito Creek, which flows through Topanga State Park in the Santa Monica Mountains National Recreation Area. The Santa Monica Mountains are home to a diverse range of plant and animal species and provide critical habitats for wildlife, including several endangered species.

6.2.3 Groundwater

The Project Study Area is within the San Fernando Valley Groundwater Basin and Santa Monica Subbasin within the Coastal Plain of Los Angeles (Figure 6-11). The Sustainable Groundwater Management Act designated the Santa Monica Subbasin as medium priority, and the San Fernando Valley Groundwater Basin as very low priority based on the basin prioritization (DWR, 2021). Sources of water supply in Los Angeles County include groundwater.

Groundwater levels are highly variable along the extent of the Project Study Area. Groundwater in the southerly portion of the Alternative 1 alignment is at approximately 40 feet below grade extending between the southern terminus and approximately halfway between Wilshire and Sunset Boulevards. From this point north, the groundwater becomes shallower at around 30 feet below grade extending to approximately just north of Wilshire Boulevard and then deepens to 40 feet at the base of the Santa Monica Mountains. Groundwater measures between 40 and 70 feet below grade within the areas south of the Santa Monica Mountains. From US-101 north along the corridor, the groundwater increases in depth progressively northward along alignment up to approximately 90 feet below grade, where the alignment shifts from I-405 to the Southern California Regional Rail Authority (SCRRA) right-of-way (ROW) that extends east to the Van Nuys Station (Metro, 2023).

Figure 6-11. Alternative 1: Groundwater Basins Underlying the Project Study Area

Source: LA County Planning, 2020a

6.2.3.1 Coastal Plain of Los Angeles Groundwater Basin, Santa Monica Subbasin

The Santa Monica Subbasin underlies the northwestern part of the Coastal Plain of Los Angeles Groundwater Basin. The Los Angeles Groundwater Basin spans 32,100 acres (50.2 square miles). It is bounded by impermeable rocks of the Santa Monica Mountains on the north and by the Ballona escarpment on the south. The Santa Monica Subbasin extends from the Pacific Ocean on the west to the Inglewood fault on the east. Ballona Creek is the dominant hydrologic feature and drains surface waters to the Pacific Ocean.

Replenishment of groundwater in the Santa Monica Subbasin is mainly by percolation of precipitation and surface runoff onto the subbasin from the Santa Monica Mountains. The Inglewood fault appears to inhibit replenishment by underflow from the Central Basin to the east, though some inflow may occur at its northern end. Total storage capacity of the Santa Monica Subbasin is estimated to be about 1,100,000 acres-feet (DWR, 2020a). The groundwater storage in the subbasin and groundwater budget is unknown.

6.2.3.2 San Fernando Valley Groundwater Basin

The San Fernando Valley Groundwater Basin surface area covers over 145,000 acres (226 square miles) and includes the water-bearing sediments beneath the San Fernando Valley, Tujunga Valley, Browns Canyon, and the alluvial areas surrounding the Verdugo Mountains near La Crescenta and Eagle Rock (DWR, 2020b). The basin is bounded on the north and northwest by the Santa Susana Mountains, on the north and northeast by the San Gabriel Mountains, on the east by the San Rafael Hills, on the south by the Santa Monica Mountains and Chalk Hills, and on the west by the Simi Hills. The Valley is drained by the Los Angeles River and its tributaries. Precipitation in the Valley ranges from 15 to 23 inches per year and averages about 17 inches.

Hydrographs show variations in water levels of 5 feet to 40 feet in the western part of the basin, a variation of about 40 feet in the southern and northern parts of the basin, and a variation of about 80 feet in the eastern part of the basin. The total storage capacity of the San Fernando Valley Groundwater Basin is 3,670,000 acres-feet. The groundwater in storage in 1998 is calculated at 3,049,000 acres-feet with an additional 621,000 acres-feet of storage space available. Though the San Fernando Valley Groundwater Basin is managed by adjudication, not enough data exists to compile a complete groundwater budget. A total of about 108,500 acres-feet of groundwater was extracted from the San Fernando Valley Groundwater Basin during the 1997-1998 water year. In addition, subsurface outflow of about 300 acres-feet to the Raymond Groundwater Basin and 404 acres-feet to the Central Subbasin of the Los Angeles Coastal Plain Groundwater Basin is estimated. To balance the extraction, a total of 61,119 acres-feet of native runoff water was diverted to spreading grounds for infiltration.

6.2.4 Water Quality

6.2.4.1 Los Angeles Watershed

Surface water beneficial uses for Reach 5 of the Los Angeles River include municipal and domestic supply, industrial service supply, groundwater recharge, recreation, and water that supports various habitats and ecosystems.

According to the California State Water Resources Control Board (SWRCB) 2020-2022 303(d) list of impaired water bodies, Reach 5 of the Los Angeles River and its tributaries are listed as impaired for ammonia, benthic community effect, copper, lead, nutrients (algae), oil, toxicity, and trash (SWRCB, 2022c).

Elevated bacteria indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use at the 303(d) listed waterbodies within the Los Angeles Watershed. Recreating in waters with elevated bacteria indicator densities has been associated with adverse health effects. Specifically, local and national epidemiological studies demonstrate a causal relationship between adverse health effects and recreational water quality, as measured by bacteria indicator densities.

6.2.4.2 Ballona Creek Watershed

Surface water beneficial uses for Reach 1 of the Ballona Creek include municipal and domestic supply, industrial service supply, groundwater recharge, recreation, and water that supports various habitats and ecosystems.

Ballona Creek and Ballona Creek Estuary are on the CWA Section 303(d) list of impaired waterbodies for copper, lead, zinc, silver, cyanide, indicator bacteria, toxicity, trash, cadmium, chlordane, dichloro-diphenyl-trichloroethane (DDT), polychlorinated biphenyl (PCB), polycyclic aromatic hydrocarbons (PAH) and toxicity. Sepulveda Channel is included on the 303(d) list for copper, lead, zinc, selenium, and indicator bacteria (SWRCB, 2022c).

Elevated bacterial indicator densities are causing impairment of the REC-1 beneficial use designated for Ballona Estuary and Sepulveda Channel, limited water contact recreation designated for Ballona Creek Reach 2, and non-contact water recreation (REC-2) beneficial uses of Ballona Creek Reach 1. Recreating in waters with elevated bacterial indicator densities has long been associated with adverse human health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.

6.2.4.3 San Fernando Valley Groundwater Basin

Groundwater beneficial uses for the San Fernando Valley Groundwater Basin include water supply for municipal, domestic, industrial process, and agricultural uses. Nitrite pollution in the groundwater of the Sunland-Tujunga area within the San Fernando Valley Groundwater Basin currently precludes direct municipal uses. Since the groundwater in this area can be treated or blended (or both), it retains the municipal designation.

In the western part of the basin, calcium sulfate-bicarbonate character is dominant, and in the eastern part of the basin, calcium bicarbonate character dominates (DWR, 2020b). Total dissolved solids (TDS) range from 326 to 615 milligrams per liter (mg/L), and electrical conductivity ranges from 540 to 996 micromhos. Data from 125 public supply wells shows an average TDS content of 499 mg/L and a range from 176 to 1,160 mg/L.

A number of investigations have determined contamination of volatile organic compounds such as trichloroethylene (TCE), perchloroethylene (PCE), petroleum compounds, chloroform, nitrate, sulfate, and heavy metals. TCE, PCE, and nitrate contamination occurs in the eastern part of the basin and elevated sulfate concentration occurs in the western part of the basin.

6.2.4.4 Coastal Plain of Los Angeles Groundwater Basin, Santa Monica Subbasin

Beneficial uses for Santa Monica Subbasin within the Coastal Plain of Los Angeles include water supply for municipal, domestic, industrial process, and agricultural uses.

Impairments to the Santa Monica Subbasin is unknown to the California Department of Water Resources (DWR, 2020a). Analyses of water from seven public supply wells indicate an average TDS content of 916 mg/L and a range of 729 to 1,156 mg/L.

6.2.5 Drainage

Land in the county and cities within the Project Study Area is urbanized and largely covered with impervious surfaces associated with areas of asphalt, concrete, buildings, and other land uses that concentrate storm runoff. Stormwater and other surface water runoff are conveyed to municipal storm drains and culverts (Figure 6-12). Most local drainage networks are controlled by structural flood control measures. There is a large portion of the Project Study Area that is undeveloped, with pervious lands in the open space area of the Santa Monica Mountains.

The general stormwater drainage pattern in the southern portion of the Project Study Area (from Metro E Line Expo/Sepulveda Station along I-405 to the upper reach of the Ballona Creek Watershed) is from north to south. The majority of stormwater runoff within the Project Study Area drains into the Los Angeles County Flood Control District (LACFCD) Sepulveda Channel, which starts at the upper reach of the Ballona Creek Watershed as a large diameter storm drain pipe that crosses under I-405 several times. This storm drain then transitions into a large drainage box culvert; further south of the Project Study Area, it becomes an open channel before confluencing with Ballona Creek, an LACFCD flood control channel.

The general stormwater drainage pattern in the northern portion of the Project Study Area in the Upper Los Angeles River Watershed is from south to north in developed storm drain systems. From the ridge of the Sepulveda Pass going north, the majority of Project Study Area stormwater drains to a California Department of Transportation (Caltrans) storm drain main that connects to an LACFCD large drainage box culvert that discharges to the Los Angeles River, an LACFCD flood control channel.

Figure 6-12. Alternative 1: Existing Stormwater Drainage Infrastructure

Source: LACPW, 2024

6.2.6 Flooding and Inundation

The Federal Emergency Management Agency's (FEMA) Flood Map Service Center (FEMA, 2023) was used to identify flood hazard zones within the Project Study Area. Figure 6-13 illustrates all flood hazard zones within the Project Study Area. Portions of the Project Study Area are subjected to a risk of flooding under FEMA's categorizations. The ridgetop of Santa Monica Mountains at Mulholland Drive, and open space areas owned by Los Angeles County are located in Zone D. Zone D indicates that there is a risk of flooding, with unknown levels of risk. The Encino Reservoir and the SCR, located in the Santa Monica Mountains, are subject to Zones A and AE, respectively, and experience a risk of inundation with a 1 percent annual chance of flooding, alternatively known as a 100-year floodplain, since they each retain a significant amount of water. The channelized limits of the Los Angeles River, where it crosses I-405 and Sepulveda Boulevard, is also identified as Zone AE. Other small portions within the Project Study Area near Overland Avenue are within Zone AO and AH and are subject to inundation by a 1 percent annual chance of shallow flooding. Approximately 0.05 percent of the Project Study Area is within the 100-year floodplain.

Seiches are a temporary disturbance or oscillation in the water level of an enclosed body of water, usually caused by changes in atmospheric pressure. The Encino Reservoir is located approximately 2.1 miles west of the proposed alignment and median of I-405, and the SCR is located approximately 1.3 miles east of the proposed alignment and I-405.

Tsunamis are large ocean waves caused by major seismic events with the potential of causing flooding in low lying coastal areas.

Figure 6-13. Alternative 1: FEMA Flood Zones

Source: LA County Planning, 2020b

6.2.7 Municipal Water Supply

Within Los Angeles County, the water supply comprises a complex system made up of state agencies and local water districts operating aqueducts, reservoirs, and groundwater basins. Approximately 33 percent of the water in the county comes from local supply sources, while the remaining supply is imported from outside of the county. Due to the county's dependence on imported water supply

sources and its vulnerability to drought, the county is constantly working to develop a diverse range of water resources (LA County Planning, 2015).

Local water supply sources include surface water from mountain runoff, groundwater, and recycled water. Imported sources of water supply include the Colorado River, the Bay-Delta in Northern California via the State Water Project, and the Owens Valley via the Los Angeles Aqueduct. Major water distributors of imported water used in the unincorporated county include the Metropolitan Water District of Southern California (MWD), Santa Clarita Valley Water Agency, Antelope Valley-East Kern Water Agency, Littlerock Creek Irrigation District, and the Palmdale Water District (LA County Planning, 2015).

The Los Angeles County Department of Public Works maintains a database of groundwater supply wells (LADPW, 2019). According to this database, the majority of groundwater wells are in the Valley with three active wells underlying Van Nuys Boulevard.

The LADWP is responsible for supplying, treating, and distributing water for domestic and industrial uses in a portion of the detailed Project Study Area. The LADWP serves an area of approximately 473 square miles with over 681,000 water service connections. LADWP draws its water from three main sources: the Los Angeles Aqueduct (from Eastern Sierra Nevada) (29 percent), the MWD (57 percent), groundwater (12 percent), and recycled water (2 percent) (LADWP, 2013).

6.3 Impacts Evaluation

6.3.1 Impact HWQ-1: Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

6.3.1.1 Operational Impacts

The following components would increase the existing impervious surface area: Metro E Line Station, Santa Monica Boulevard Station, Wilshire Boulevard/Metro D Line Station, Getty Center Station, Sherman Way Station, TPSS, and proposed MSF. Additionally, freeway modifications including realignment of existing lanes, columns in the medians, new median barriers, or shoulders required to operate Alternative 1 would also increase the existing impervious areas.

All of the stations would be in an aerial configuration, so the ground level area that would be impervious would be limited to the column footings, as well as vertical circulation elements such as elevators and stairs. However, because there are so many columns in proximity, as a conservative approach the analysis includes aboveground elements of these components, including the station canopies and platforms and monorail segments between columns to calculate the total impervious area created by the Alternative 1 components.

The proposed stations would not result in a significant increase in impervious surfaces because most of the land surfaces in the Project Study Area are currently developed and covered by existing impervious surfaces. The footprints of the Alternative 1 stations would be nominal when compared to the area of the watershed and groundwater basin. The Alternative 1 alignment stations would generally be in the public ROW and on impervious/paved surfaces, with the exception of the Wilshire Boulevard/Metro D Line Station, Getty Center Station, and the Sherman Way Station, which would be constructed on landscaped areas and an undeveloped hillside, respectively. Additionally, the Santa Monica Boulevard Station and the Ventura Boulevard Station would be constructed on parcels containing some existing pervious surfaces, which would be maintained. However, the TPSSs and I-405 freeway modifications that would include new or relocated ramps, expanded shoulders, column locations, and retaining walls, would result in a greater increase in impervious surface areas. Table 6-5 lists the existing impervious surface area, estimated amount of new/reconstructed impervious surfaces added by the Alternative 1 components, and the estimated net impervious surface area created.

Table 6-5. Alternative 1: New Impervious Surface Area

Component	Existing Impervious Surface Area at Component Site (square feet)	Amount of New and Reconstructed Impervious Surface Area at Component Site (square feet)	Net Impervious Area Created by Component (square feet)
Metro E Line Station	46,023	49,037	3,014
Santa Monica Boulevard Station	13,966	39,300	25,334
Wilshire/Metro D Line Station	10,696	96,859	86,163
Getty Center Station	3,110	42,234	39,124
Ventura Boulevard Station	105,947	87,207	-18,740
Metro G Line Station	121,677	67,364	-54,313
Sherman Way Station	7,273	52,544	45,271
Van Nuys Metrolink Station	149,161	147,871	-1,290
Traction Power Substations	–	127,440	127,440
Totals	**457,853**	**709,856**	**252,003**
I-405 Modifications	–	1,459,260	1,459,260

Source: LASRE, 2024b

— = no data

As a result of the TPSSs and freeway modifications, pollutant runoff/loading would be expected to increase due to the increase in impervious surface area.

Operation of Alternative 1 would require routine maintenance that would be performed by the system operator. Maintenance activities associated with the transit system operation, such as train car maintenance and lubrication, would occur at each of the proposed MSF and TPSS locations for the alignment. Rail maintenance would occur along the corridor alignment. Potential pollutants (e.g., petroleum products/lubricants, metals, paints, solvents, and other Alternative 1-related products) used or generated during Alternative 1 operations and maintenance would contribute to water pollution if not properly dispensed, stored, or disposed. If not appropriately managed, uncontrolled discharge of runoff carrying these potential pollutants would result in significant impacts to water quality in receiving waterways, including the Pacoima Wash, Encino Creek, and the Los Angeles River, which would violate water quality standards and Waste Discharge Requirements (WDR).

Storage and disposal of hazardous materials and waste would be conducted in accordance with all applicable federal and state regulatory requirements. As described in the *Sepulveda Transit Corridor Project Hazards and Hazardous Materials Technical Report* (Metro, 2025), Alternative 1 would be required to reduce the potential effects of the use and storage of hazardous materials at MSF and TPSSs through the implementation of hazardous materials monitoring plans, including a hazardous materials business plan developed in accordance with California Health and Safety Code requirements.

Alternative 1 would be designed to incorporate several sustainability features, such as native landscaping, rainwater cisterns for capture and reuse, permeable surfaces, soil improvements, increased vegetation, and on-site retention, in compliance with the *Low Impact Development Standards Manual* (LADPW, 2014) and the City of Los Angeles *Planning and Land Development Handbook for Low Impact*

Development (City of Los Angeles, 2016), which would serve to reduce impervious area and promote infiltration, thereby improving water quality. Alternative 1 would also comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the *Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan) (LARWQCB, 2014), as well as commonly used industry standards. Alternative 1 would comply with the Caltrans National Pollutant Discharge Elimination System (NPDES) Statewide Stormwater Permit, the City of Los Angeles Municipal Code, the City of Los Angeles and County of Los Angeles LID Ordinance, and all other applicable regulations for all operational activities, including adherence to an approved Alternative 1-specific Low Impact Development (LID) Plan, which would identify the best management practices (BMP) for Alternative 1 operations. The types of LID/treatment BMP designs to be incorporated would be determined during the design phase. Although final design would dictate actual stormwater management aspects of Alternative 1, potential BMPs would include depressed landscape gardens for runoff retention and infiltration, permeable surfaces to reduce runoff volume, hardscape replacement with pervious or planted substitutions, bioswales or artistic water features that creatively convey runoff into planted or pervious areas, roof downspout discharges to vegetated areas, and rainwater cisterns and other on-site stormwater retention methods. These measures and practices would be incorporated at applicable component sites and would serve to promote infiltration.

The Alternative 1-specific LID Plan would identify the BMPs for the Alternative 1 post-construction design (i.e., operational characteristics to control/treat runoff for the range of potential pollutants). Alternative 1 would include design elements that would serve to infiltrate, capture, and re-use stormwater in accordance with current LID requirements — thereby minimizing the potential for increased runoff rates and pollutant discharge. LID design features would slow (detain or retain) stormwater, which would reduce the runoff volume discharged from Alternative 1 and would decrease the peak runoff discharge velocity for design storms. Implementation of LID BMPs would offset any increases in runoff rates due to the creation of new impervious surface areas. As a result, less flow with fewer pollutants would be transported through the conveyance systems, and ultimately into surface waters, including ancillary exfiltration to the groundwater table. Additionally, natural treatment of infiltrated runoff would occur, thereby improving exfiltrated water from LID and water quality additions to the groundwater table, including treatment for potential pollutants (e.g., petroleum products/lubricants, metals, paints, solvents, and other Alternative 1-related products) used or generated during Alternative 1 operations.

Alternative 1 is anticipated to require Industrial General Permit (IGP) coverage for maintenance facilities, fueling operations, equipment cleaning/washing operations, and TPSSs. As such, an IGP Stormwater Pollution Prevention Plan (SWPPP) would be prepared and submitted to the SWRCB prior to operations. The IGP includes discharge prohibitions, effluent limitations, and receiving water limitations that must be adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases. Other BMPs may also be employed, as appropriate, such as indoor/covered areas for maintenance, approved flammable/hazmat storage lockers for lubricants and other industrial liquids, drip/spill protection in maintenance areas and similar BMPs when conducting maintenance, dry clean-up practices, and dedicated enclosed areas for metal working, painting, and welding.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to the violation of any water quality standards or WDRs or substantial degradation of surface or groundwater quality during operation of Alternative 1 would be less than significant.

6.3.1.2 Construction Impacts

Construction of the Alternative 1 components would include site clearing and excavation, utility relocation, foundation construction, installation of support columns and beams, erection of stations, towers, and junctions, as well as construction of MSFs, TPSSs, roadway modifications, replacement or restoration of paving, sidewalks, parking, and landscaping, and the installation of rails and vehicles. The construction activities for the modifications of the freeway would include the demolition of existing pavement and structures, excavation and grading of the site, construction of the base layer, installation of retaining walls, and paving of roadways along I-405. In addition, temporary staging areas would provide necessary space for construction activities including material storage and construction equipment.

Construction activities such as demolition, excavation, and grading would temporarily expose bare soil, increasing the risk of erosion. Uncontrolled erosion and discharge of sediments and other potential pollutants, including the discharge of fill material, would affect water quality in Alternative 1 receiving waters (e.g., the Pacoima Wash, Tujunga Wash, and Los Angeles River) if not appropriately managed by proper implementation of the construction SWPPP.

In addition to sediments, other pollutants including trash, concrete waste, and petroleum products, such as fuels, solvents, and lubricants, would degrade water quality and contribute to water pollution if not appropriately managed. The use of construction equipment and vehicles during Alternative 1 would result in spills of vehicle-related fluids that would contribute to water pollution. Improper handling, storage, or disposal of these materials or improper cleaning and maintenance of equipment would result in accidental spills and discharges that would contribute to water pollution.

Construction activities associated with guideway column foundations would involve general earthwork and concrete work. Excavations for foundations would be performed up to 6 and 8 feet below ground surface (bgs), and piles would be installed at approximately 80 feet bgs. Groundwater levels in the Project Study Area generally range from depths of approximately 16 to 115 feet bgs (Metro, 2023), with deeper groundwater at the base of the Santa Monica Mountains and shallower groundwater south of Victory Boulevard.

Shallower groundwater occurs in the vicinity of the Santa Monica Boulevard Station, Wilshire/Metro D Line Station, Ventura Boulevard Station, and the Metro G Line Station. Therefore, because the proposed piles at these stations would be drilled to approximately 80 feet bgs, removal of nuisance groundwater that seeps into boreholes during construction may be required for pile installations. If dewatering is required, dewatering activities would be conducted in compliance with the Los Angeles Regional Water Quality Control Board's NPDES dewatering permits, *Waste Discharge Requirements for Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties* (Order R4-2018-0125) and *Waste Discharge Requirements for Specified Discharges to Groundwater in the Santa Clara River and Los Angeles River Basins* (Order No. 93-010), as applicable. In such cases, temporary pumps and filtration systems would be used in compliance with the applicable NPDES permits. The temporary system would be required to comply with all relevant NPDES requirements related to construction and discharges from dewatering operations. Water removed from the boreholes would be containerized and analyzed to determine the proper disposal method or possible treatment and re-use on-site. The treatment and disposal of the dewatered water would occur in accordance with the requirements of NPDES Order R4-2018-0125 and Order No. 93-010, as applicable. The WDRs require that waste be analyzed prior to being discharged in order to determine if it contains pollutants in excess of the applicable Basin Plan water quality objectives. Or if possible, the dewatered water would potentially be treated and reused on-site (e.g., for dust control or cleaning equipment) rather than being disposed.

Volatile organic compounds such as TCE, PCE, petroleum compounds, chloroform, nitrate, sulfate, and heavy metals have been detected in groundwater of the San Fernando Valley Groundwater Basin. Although the groundwater quality in the remainder of the Project Study Area is not specifically known, it may contain elevated levels of constituents such as petroleum hydrocarbons and solvents resulting from commercial and industrial discharges, in addition to potentially elevated TDS and metals related to natural conditions. Uncontrolled discharge of groundwater carrying these potential pollutants would result in degradation of groundwater and surface water if it is not properly managed during construction activities. If groundwater containing contaminants such as VOCs, heavy metals, or petroleum hydrocarbons is encountered during dewatering activities, additional treatment or special disposal methods would be required to comply with applicable regulatory requirements and prevent contamination of receiving waters.

Alternative 1 would be required to comply with all applicable water quality protection laws and regulations at the federal, state, regional, and local levels, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Policies, NPDES Construction General Permit (CGP), the Municipal Separate Storm Sewer Systems (MS4) Permit, the Caltrans NPDES Statewide Stormwater Permit and the *Construction Site Best Management Practices (BMP) Manual*, and the City of Los Angeles and County of Los Angeles LID Ordinance.

Alternative 1 would be required to comply with the CGP in effect at the time of construction. In accordance with the CGP, Alternative 1 would be required to prepare and submit a construction SWPPP, which must be submitted to the SWRCB prior to construction, and adhered to during construction. Proper implementation of the construction SWPPP would avoid potential impacts to water quality. The construction SWPPP would identify the BMPs that would be in place to protect water quality prior to the start of construction activities and during construction. BMP categories would include erosion control, sediment control, tracking control, wind erosion, stormwater and non-stormwater management, and materials management with regular monitoring. Although specific temporary construction-related BMPs would be selected at the time of SWPPP preparation, potential BMPs would likely include fiber rolls, bonded-fiber matrix hydroseeding, soil furrowing, water bars, and check dams for erosion control, inlet protection (sand/gravel bags and geotextiles), silt fencing, sediment traps/basins for sediment controls, soil berming around disturbed areas, and phasing of soil disturbance during the wet season (i.e., limiting widespread grading) for effectively managing erosion and pollutant discharge during significant rainfall events. In addition, as described in the *Sepulveda Transit Corridor Project Biological Resources Environmental Impact Report Chapter*, Section 3.3.3, the SWPPP would include measures listed in PM BIO-1.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to the violation of any water quality standards or WDRs or substantial degradation of surface or groundwater quality during construction of Alternative 1 would be less than significant.

6.3.1.3 Maintenance and Storage Facilities

MSF Base Design

Maintenance of monorail vehicles and equipment would occur at the MSF Base Design. Multiple buildings would be constructed, including a multi-level maintenance-of-way building, track storage area, wash bays, ancillary storage buildings, and TPSS structure. The MSF would be constructed on parcels containing existing impervious surfaces. Additionally, the MSF Base Design compound would be in an aerial configuration, limiting the ground-level area that would be impervious to column footings and vertical circulation elements such as elevators and stairs. Therefore, the MSF Base Design would not substantially increase the existing impervious surface area at the MSF Base Design site.

Improper handling, storage, or disposal of fuels, chemical, soaps and vehicle-related fluids or improper cleaning and maintenance of equipment within the maintenance shop and train car wash building of the MSF Base Design would result in accidental spills and discharges that would contribute to water pollution.

During operations, the MSF Base Design would be required to obtain IGP coverage**.** An IGP SWPPP would be prepared and submitted to the SWRCB prior to operations. The IGP SWPPP would include discharge prohibitions, effluent limitations, and receiving water limitations that must be adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases. Other BMPs would also be employed, as appropriate, such as indoor/covered areas for maintenance, approved flammable/hazmat storage lockers for lubricants and other industrial liquids, drip/spill protection in maintenance areas and similar BMPs when conducting maintenance, dry clean-up practices, and dedicated enclosed areas for metal working, painting, and welding.

Construction activities such as demolition, excavation, and grading would temporarily expose bare soil, increasing the risk of erosion. Sediments (and their associated pollutants) from erosion if not properly managed would accumulate and block storm drain inlets in the vicinity of the MSF Base Design or indirectly be carried into the closest receiving water body (e.g., Pacoima Wash).

In addition to sediments, other pollutants including trash, concrete waste, and petroleum products, such as fuels, solvents, and lubricants, would degrade water quality and contribute to water pollution if not appropriately managed. The use of construction equipment and vehicles during construction of the MSF Base Design would result in spills of vehicle-related fluids that would contribute to water pollution. Improper handling, storage, or disposal of these materials or improper cleaning and maintenance of equipment would result in accidental spills and discharges that would contribute to water pollution.

Construction activities associated with foundations would involve general earthwork and concrete work to prepare the foundations. Excavations for foundations would be between 6 and 8 feet bgs, and piles would be installed up to approximately 80 feet bgs. The groundwater depth increases progressively northward along the Project Study Area up to approximately 90 feet below grade (Metro, 2023), where the alignment shifts from being adjacent to I-405 to being adjacent to the SCRRA Metrolink ROW where the MSF Base Design would be located. As a result, the seepage of groundwater into boreholes would be expected to be minimal. However, in the unlikely event of seepage, water removed from the boreholes would be containerized and analyzed to determine the proper disposal method.

The MSF Base Design would be required to comply with the CGP in effect at the time of construction. In accordance with the CGP, the MSF Base Design would be required to prepare and submit a construction

SWPPP, which must be submitted to the SWRCB prior to construction, and adhered to during construction of the MSF Base Design. Proper implementation of the construction SWPPP would avoid potential impacts to water quality. The construction SWPPP would identify the BMPs that would be in place to protect water quality prior to the start of construction activities and during construction of the MSF Base Design. BMP categories would include erosion control, sediment control, tracking control, wind erosion, stormwater and non-stormwater management, and materials management. Although specific temporary construction-related BMPs would be selected at the time of SWPPP preparation, potential BMPs would likely include fiber rolls, bonded-fiber matrix hydroseeding, soil furrowing, water bars, and check dams for erosion control, inlet protection (sand/gravel bags and geotextiles), silt fencing, sediment traps/basins for sediment controls, soil berming around disturbed areas, and phasing of soil disturbance during the wet season (i.e., limiting widespread grading) for effectively managing erosion and pollutant discharge during significant rainfall events.

The operation and construction of the MSF Base Design would be required to comply with all applicable water quality protection laws and regulations at the federal, state, regional, and local levels, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Policies, NPDES CGP, the MS4 Permit, and the City of Los Angeles and County of Los Angeles LID Ordinance.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to the violation of any water quality standards or WDRs or substantial degradation of surface or groundwater quality during construction and operation of the MSF Base Design would be less than significant.

MSF Design Option 1

The previous impact evaluation provided in Section 6.3.1.3 MSF Base Design is applicable to the MSF Design Option 1. With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to the violation of any water quality standards or WDRs or substantial degradation of surface or groundwater quality during construction and operation of the MSF Design Option 1 would be less than significant.

Electric Bus MSF

Light maintenance of electronic buses and equipment would be performed at an electric bus MSF. Multiple buildings would be acquired, modified, or reconstructed. The site would include approximately 45,000 square feet of buildings and include a maintenance shop and bay, a maintenance office, an operations center, a parts storeroom, and service areas. The electric bus MSF would not result in a significant increase in impervious surfaces, compared to the area of the watersheds and groundwater basins, or result in activities that could significantly impact water quality because the electric bus MSF would operate on existing impervious surfaces and roadways.

The previous impact evaluation provided in Section 6.3.1.3 MSF Base Design is applicable to the Electric Bus MSF. With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to the violation of any water quality standards or WDRs or substantial degradation of surface or groundwater quality during construction and operation of the electric bus MSF would be less than significant.

6.3.2 Impact HWQ-2: 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?

6.3.2.1 Operational Impacts

Components that would increase the existing impervious surface area include the Metro E Line Station, Santa Monica Boulevard Station, Wilshire Boulevard/Metro D Line Station, Getty Center Station, Sherman Way Station, TPSS, and proposed MSF. Additionally, freeway modifications including realignment of existing lanes, columns in the medians, new median barriers, or shoulders required to operate Alternative 1 would increase the existing impervious areas.

All of the stations would be in an aerial configuration, so the ground level area that would be impervious would be limited to the column footings, as well as vertical circulation elements such as elevators and stairs. However, because there are many columns in proximity, as a conservative approach the analysis includes aboveground elements of these components, including the station canopies and platforms to calculate the total impervious area created by the Alternative 1 components. The proposed stations would not result in a significant increase in impervious surfaces because most of the land surfaces in the Project Study Area are currently developed and covered by existing impervious surfaces. However, the TPSSs and I-405 freeway modifications that include new or relocated ramps, expanded shoulders, column locations, and retaining walls would result in a greater increase in impervious surface areas. Table 6-5 lists the existing impervious surface areas, estimated amount of new/reconstructed impervious surfaces added by Alternative 1 components, and the net impervious surface area created.

Alternative 1 would be designed to incorporate several sustainability features (i.e., City of Los Angeles LID requirements), such as pervious pavement, native landscaping/soil improvements, landscaped stormwater conveyance, on-site retention, and other appropriate and applicable design features that would serve to capture, treat, and re-use stormwater in accordance with current LID requirements, promoting infiltration and groundwater recharge (after treatment). These measures and practices would be incorporated at applicable component sites along the Alternative 1 alignment. Alternative 1 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan (LARWQCB, 2014), as well as commonly used industry standards.

Alternative 1 would comply with the Caltrans NPDES Statewide Stormwater Permit, the City of Los Angeles Municipal Code, the City of Los Angeles and County of Los Angeles LID Ordinance, an equivalent to the Metro Rail Design Criteria, and all other applicable regulations for all operational activities, including adherence to an approved Alternative 1-specific LID Plan, which would identify the BMPs for Alternative 1 operations. The LID Plan would identify the BMPs for the Alternative 1 post-construction design (i.e., operational characteristics to control/treat runoff for the range of potential pollutants) in accordance with current LID requirements. As the intent of LID infrastructure is to offset creation of impermeable surfaces by directing surface water toward permeable surfaces for infiltration and groundwater recharge, Alternative 1 would include design elements (e.g., depressed landscape gardens for runoff retention and infiltration, permeable surfaces to reduce runoff volume, hardscape replacement with pervious or planted substitutions, bioswales or artistic water features that creatively convey runoff into planted or pervious areas, and roof downspout discharges to vegetated areas), which would promote groundwater recharge.

Operation of Alternative 1 would not involve the extraction of any groundwater or use of groundwater supply. Therefore, Alternative 1 would not result in a decrease in groundwater supplies or interfere substantially with groundwater recharge to the extent that Alternative 1 may impede sustainable groundwater management of the basin. Depending on final design features, exfiltration from LID/treatment BMPs may improve groundwater recharge characteristics of the area. Additionally, natural treatment of infiltrated runoff would occur, thereby improving exfiltrated water from LID and water quality additions to the groundwater table.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to groundwater supply and recharge during operations of Alternative 1 would be less than significant.

6.3.2.2 Construction Impacts

Construction of the Alternative 1 components would include route planning, site clearing and excavation, utility relocation, foundation construction, installation of support columns and beams, erection of stations, towers, and junctions, as well as construction of MSFs, TPSSs, roadway modifications, replacement or restoration of paving, sidewalks, parking, and landscaping, and the installation of rails and vehicles.

The construction activities for the modifications of the freeway would include the demolition of existing pavement and structures, excavation and grading of the site, construction of the base layer, installation of retaining walls, and paving of roadways along I-405.

Construction activities associated with guideway column foundations would include excavation and concrete work. Excavations for foundations would occur between 6 and 8 feet bgs, and piles would be installed up to approximately 80 feet bgs. Groundwater levels in the Project Study Area generally range from depths of approximately 16 to 115 feet bgs (Metro, 2023), with deeper groundwater depths occurring at the base of the Santa Monica Mountains. The Alternative 1 alignment may require the removal of groundwater that seeps into boreholes during construction. Groundwater encountered during construction would be removed from the boreholes, containerized, and analyzed consistent with existing applicable regulations to determine the proper disposal method. Dewatering would be limited to the construction phase only. Extracting large volumes of groundwater that would decrease groundwater supplies or lower the local groundwater table level would not be expected during construction. The volume of groundwater removed during construction would be monitored and documented.

Alternative 1 would be required to comply with all applicable water quality protection laws and regulations at the federal, state, regional, and local levels, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Policies, NPDES CGP, the MS4 Permit, the Caltrans NPDES Statewide Stormwater Permit and the *Construction Site Best Management Practices (BMP) Manual*, and the City of Los Angeles and County of Los Angeles LID Ordinance.

Due to the limited amount of groundwater seepage anticipated to be encountered, and with adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to groundwater supply and recharge during construction of Alternative 1 would be less than significant.

6.3.2.3 Maintenance and Storage Facilities

MSF Base Design

As described in Sections 6.3.2.1 and 6.3.2.2, the MSF Base Design would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan (LARWQCB, 2014), as well as commonly used industry standards. The MSF Base Design would include design elements that would serve to capture, treat, and re-use stormwater in accordance with current LID requirements, promoting infiltration and groundwater recharge. Operation of the MSF Base Design would not involve the extraction of any groundwater. Dewatering would be limited to the construction phase only. Extracting large volumes of groundwater that would decrease groundwater supplies would not be expected during construction.

Due to the limited amount of groundwater seepage anticipated to be encountered, and with adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to groundwater supply and recharge during construction and operation of the MSF Base Design would be less than significant.

MSF Design Option 1

The previous impact evaluation provided in Section 6.3.2.3 MSF Base Design is applicable to the MSF Design Option 1. With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to groundwater supply and recharge during construction and operation of the MSF Design Option 1 would be less than significant.

Electric Bus MSF

As described in Sections 6.3.2.1 and 6.3.2.2, the electric bus MSF would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan (LARWQCB, 2014), and commonly used industry standards. The electric bus MSF would include design elements that would serve to capture, treat, and re-use stormwater in accordance with current LID requirements, promoting infiltration and groundwater recharge. The electric bus operations would operate on existing roadways and would not require new impervious surfaces or infrastructure that could interfere with groundwater recharge. Operation of the electric bus MSF would not involve the extraction of any groundwater. Dewatering would be limited to the construction phase only. Extracting large volumes of groundwater that would decrease groundwater supplies would not be expected during construction.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to groundwater supply and recharge during construction and operation of the electric bus MSF would be less than significant.

6.3.3 Impact HWQ-3: 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, in a manner which would:

i) result in substantial erosion or siltation on- or off-site;

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?

6.3.3.1 Operational Impacts

Components that would increase the existing impervious surface area include the Metro E Line Station, Santa Monica Boulevard Station, Wilshire Boulevard/Metro D Line Station, Getty Center Station, Sherman Way Station, TPSS, and proposed MSF. Additionally, freeway modifications including realignment of existing lanes, columns in the medians, new median barriers, or shoulders required to operate Alternative 1 would increase the existing impervious areas.

All of the stations would be in an aerial configuration, so the ground level area that would be impervious would be limited to the column footings, as well as vertical circulation elements such as elevators and stairs. However, because there are many columns in proximity, as a conservative approach the analysis includes aboveground elements of these components, including the station canopies and platforms to calculate the total impervious area created by the Alternative 1 components. The proposed stations would not result in a significant increase in impervious surfaces compared to the area of the watershed and groundwater basin, because most of the land surfaces in the Project Study Area are developed and covered by existing impervious surfaces. However, the TPSSs and I-405 freeway modifications that include new or relocated ramps, expanded shoulders, column locations, and retaining walls would result in a greater increase in impervious surface areas. Table 6-5 lists the existing impervious surface area, estimated amount of new/reconstructed impervious surfaces added by Alternative 1 components, and the net impervious surface area created.

The Alternative 1 alignment stations would generally be in the public ROW and on impervious/paved surfaces, with the exception of the Wilshire Boulevard/Metro D Line Station, Getty Center Station, and the Sherman Way Station, which would be constructed on landscaped areas and an undeveloped hillside, respectively. Additionally, the Santa Monica Boulevard Station and the Ventura Boulevard Station would be constructed on parcels containing some existing pervious surfaces, which would be maintained.

The proposed roadway modifications would involve grading, paving, retaining walls, and drainage system improvements, including improvements to stormwater quantity control facilities and stormwater quality control devices as needed. The proposed roadway modifications to I-405 would increase impervious surfaces and stormwater runoff along the Alternative 1 alignment, which would result in increases in flooding and erosion potential and pollutant discharge (e.g., sediment/siltation, petroleum products/lubricants, metals, paints, and solvents) to surface receiving waters. Any increase in impervious surface area would potentially increase runoff rates, pollutant concentrations, and pollutant loading. However, LID features would be implemented to maintain existing drainage patterns, reduce runoff amounts, and minimize pollutant discharge.

To accommodate the proposed roadway widenings, existing drainage systems may need to be modified or removed. However, adherence to existing regulations and review from Caltrans, LA County, and LADWP on design and specifications for the drainage modifications would ensure that the drainage meets all applicable standards and requirements for stormwater management. Existing Caltrans and Los Angeles County Flood Control District (LACFCD) drainage mainline would be maintained, and the existing drainage patterns would be maintained as much as possible. Alternative 1 design and LID BMPs would offset any increases in flow and changes to drainage patterns post-Alternative 1. Operation of Alternative 1 would not alter the course of any streams or rivers or impede or redirect flows.

As previously described, Alternative 1 would be designed to incorporate several sustainability features and would be required to comply with the *Low Impact Development Standards Manual* (LADPW, 2014) and the City of Los Angeles *Planning and Land Development Handbook for Low Impact Development* (City of Los Angeles, 2016), which would serve to reduce impervious area, promote infiltration, and reduce runoff, thereby improving water quality. Alternative 1 would also comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan (LARWQCB, 2014), the MS4 Permit, and commonly used industry standards. Alternative 1 would comply with the Caltrans NPDES Statewide Stormwater Permit, the City of Los Angeles Municipal Code, the City of Los Angeles and County of Los Angeles LID Ordinance, and all other applicable regulations for all operational activities, including adherence to an approved Alternative 1-specific LID Plan, which would identify the BMPs for Alternative 1 operations. The LID Plan would identify the BMPs for the Alternative 1 post-construction design (i.e., operational characteristics to control/treat runoff for the range of potential pollutants). Alternative 1 would include design elements that would serve to infiltrate, capture, and re-use stormwater in accordance with current LID requirements — thereby minimizing the potential for increased runoff rates/amounts, flooding, erosion/siltation, and pollutant runoff. LID design features would slow (detain or retain) stormwater, which would reduce the runoff volume discharged from Alternative 1 and would decrease the peak runoff discharge velocity for design storms — which would also ultimately reduce the amount of stormwater runoff burden into the city's stormwater conveyance systems. As a result, LID design would reduce flow to maintain pre-Alternative 1 conditions; therefore, less flow with fewer pollutants would be transported through the conveyance systems, which would minimize flooding potential and pollutant transport into surface receiving waters.

Alternative 1 is anticipated to require IGP coverage for maintenance facilities, fueling operations, equipment cleaning/washing operations, and TPSSs. As such, an IGP SWPPP would be prepared and submitted to the SWRCB prior to operations and adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases. Other BMPs for the protection of water quality may also be employed as appropriate, such as indoor/covered areas for cabin maintenance, approved flammable/hazmat storage lockers for lubricants and other industrial liquids, drip/spill protection in maintenance areas and similar BMPs when conducting tower maintenance, dry clean-up practices, and dedicated enclosed areas for metal working, painting, and welding.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff in a manner that would result in flooding, creation of runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff, or impede or redirect flood flows during operation of Alternative 1 would be less than significant.

6.3.3.2 Construction Impacts

The majority of the Metro E Line Station, Ventura Boulevard Station, Metro G Line Station, and the Van Nuys Metrolink Station would be constructed on parcels that currently contain existing asphalt and concrete pavement on and/or adjacent to the road ROW, which is surrounded by existing development and structures. Construction activities such as demolition of existing site structures and excavation for foundations would temporarily expose bare soil, which would be at increased risk for erosion. Exposed or stockpiled soils would also be at increased risk for erosion. Construction activities would temporarily increase the potential for stormwater to contact other construction-related contaminants. Sediment from erosion and other pollutants would be carried by stormwater runoff into storm drain inlets and would affect water quality in Alternative 1 receiving waters (e.g., Pacoima Wash, Encino Creek, and the Los Angeles River) if not appropriately managed.

The proposed roadway modifications would involve grading, paving, retaining walls, and drainage system improvements, and would increase impervious surface area. Any increase in impervious surface area would increase stormwater runoff along the Alternative 1 alignment, which, if not properly managed, would result in localized increases in siltation, other pollutants, and changes in sediment loads in surface receiving waters. Additionally, placement of construction equipment and materials may temporarily affect existing drainage patterns. To accommodate the proposed roadway widenings, existing drainage systems may need to be modified or removed. However, adherence to existing regulations and review from Caltrans, LA County, and LADWP on design and specifications for the drainage modifications would ensure that the drainage meets all applicable standards and requirements for stormwater management. Existing Caltrans and LACFCD drainage mainlines, as well as current drainage patterns, would be maintained as much as possible.

The Santa Monica Boulevard Station and the Ventura Boulevard Station would be partially constructed on existing landscaped berms. To the extent possible, existing landscaping would be preserved, as the facilities would be primarily constructed on aerial platforms. The Wilshire Boulevard/Metro D Line Station, Santa Monica Boulevard Station, Getty Center Station, and the Sherman Way Station would be constructed on sites that currently consist of partial pervious surfaces. The existing pervious surfaces would help to control drainage, promote infiltration, and reduce runoff; however, placement of construction equipment and materials may temporarily affect existing drainage patterns.

As previously discussed, Alternative 1 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Polices, NPDES CGP regulations, Caltrans NPDES Statewide Stormwater Permit, Basin Plan (LARWQCB, 2014),s City of Los Angeles Municipal Code, the City of Los Angeles and County of Los Angeles LID Ordinance, and all other applicable regulations for all construction activities.

In accordance with the CGP, Alternative 1 would be required to prepare and submit a construction SWPPP, which must be submitted to the SWRCB prior to construction and adhered to during construction. Proper implementation of the construction SWPPP would avoid potential impacts to water quality. The construction SWPPP would identify the BMPs that would be in place to protect water quality prior to the start of construction activities and during construction. BMP categories would include erosion control, sediment control, non-stormwater management, and materials management BMPs. Although specific temporary construction-related BMPs would be selected at the time of SWPPP preparation, potential BMPs would likely include fiber rolls, bonded-fiber matrix hydroseeding, soil furrowing, water bars, and check dams for erosion control, inlet protection (sand/gravel bags and geotextiles), silt fencing, sediment traps/basins for sediment controls, soil berming around disturbed areas, and phasing of soil disturbance during the wet season (i.e., limiting widespread grading) for effectively managing erosion and pollutant discharge during significant rainfall events.

Construction activities would temporarily impact localized drainage patterns; however, these impacts would not substantially increase the rate or volume of stormwater flows. Construction activities would comply with all applicable federal and local floodplain regulations, including the Los Angeles County Comprehensive Floodplain Management Plan. Furthermore, implementation of runoff control measures and pollution prevention practices would control stormwater runoff from the Alternative 1 construction areas and would minimize construction-related flooding impacts, erosion, and pollutant discharge.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff that would cause flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows during construction of Alternative 1 would be less than significant.

6.3.3.3 Maintenance and Storage Facilities

MSF Base Design

As described in Sections 6.3.3.1 and 6.3.3.2, the MSF Base Design would comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, as well as commonly used industry standards. The MSF Base Design would include design elements that would serve to capture and re-use stormwater in accordance with current LID requirements — thereby minimizing the potential for increased runoff rates/amounts, flooding, erosion and siltation, and pollutant runoff. LID design features would slow (detain or retain) stormwater, which would reduce the runoff volume discharged from the MSF Base Design and would decrease the peak runoff discharge velocity for design storms. As a result, LID BMPs would offset any increases in flow and changes to drainage patterns post-MSF Base Design; therefore, less flow with fewer pollutants would be transported through the conveyance systems, which would minimize flooding and pollutant transport into surface receiving waters. In addition, existing drainage patterns would be maintained as much as possible and operation of the MSF Base Design would not alter the course of any streams or rivers or impede or redirect flows.

During operations, the MSF Base Design would be required to obtain IGP coverage. An IGP SWPPP would be prepared and submitted to the SWRCB prior to operations. The IGP SWPPP would include discharge prohibitions, effluent limitations, and receiving water limitations that must be adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases.

Construction activities would comply with all applicable federal and local floodplain regulations. Any impacts to existing drainage patterns would be temporary. Implementation of runoff control measures and pollution prevention practices in compliance with the construction SWPPP would control stormwater runoff from the MSF Base Design construction areas to minimize construction-related flooding impacts, erosion, and the discharge of potential pollutants, including sedimentation/siltation.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff that would cause flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows during construction and operation of the MSF Base Design would be less than significant.

MSF Design Option 1

The previous impact evaluation provided in Section 6.3.3.3 MSF Base Design is applicable to the MSF Design Option 1. With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff that would cause flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows during construction and operation of the MSF Design Option 1 would be less than significant.

Electric Bus MSF

As described in Sections 6.3.3.1 and 6.3.3.2, the electric bus MSF would comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, as well as commonly used industry standards. The electric bus operations would operate on existing roadways and would not require additional impervious surfaces or drainage modifications. The electric bus MSF would include design elements that would serve to capture and re-use stormwater in accordance with current LID requirements — thereby minimizing the potential for increased runoff rates/amounts, flooding, erosion and siltation, and pollutant runoff. LID design features would slow (detain or retain) stormwater, which would reduce the runoff volume discharged from the electric bus MSF and would decrease the peak runoff discharge velocity for design storms. As a result, the electric bus MSF design and LID BMPs would offset any increases in flow and changes to drainage patterns post-electric bus MSF; therefore, less flow with fewer pollutants would be transported through the conveyance systems, which would minimize flooding potential and pollutant transport into surface receiving waters. In addition, existing drainage patterns would be maintained as much as possible and operation of the electric bus MSF would not alter the course of any streams or rivers or impede or redirect flows.

During operations, the Electric Bus MSF would be required to obtain IGP coverage. An IGP SWPPP would be prepared and submitted to the SWRCB prior to operations. The IGP SWPPP would include discharge prohibitions, effluent limitations, and receiving water limitations that must be adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases.

Construction activities would comply with all applicable federal and local floodplain regulations. Any impacts to existing drainage patterns would be temporary. Implementation of runoff control measures and pollution prevention practices in compliance with the construction SWPPP would control stormwater runoff from the electric bus MSF construction areas to minimize construction-related flooding impacts, erosion, and the discharge of potential pollutants, including sedimentation/siltation.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff that would cause flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows during construction and operation of the electric bus MSF would be less than significant.

6.3.4 Impact HWQ-4: Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

6.3.4.1 Operational Impacts

The majority of the Alternative 1 alignment would be constructed outside of the FEMA-designated 100-year floodplain and would be in an inland area that is not in proximity to the ocean; therefore, the risk of inundation by a tsunami is considered low. A small segment of Alternative 1, located at the ridgetop of the Santa Monica Mountains at Mulholland Drive, and open space areas, owned by Los Angeles County, are located in Zone D, which is an area of undetermined flood hazard. The channelized limits of the Los Angeles River, where it crosses I-405 and Sepulveda Boulevard, is identified as Zone AE, and other small portions within Alternative 1 east of Overland Avenue are within Zone AO and AH and are subject to inundation by a 1 percent annual chance of flooding. There are no 500-year flood plains within the Project Study Area.

The Encino Reservoir is located on the west side of the Project Study Area approximately 2.1 miles west of the Alternative 1 alignment, and the SCR is located on the eastern side of the Project Study Area approximately 1.3 miles east of the Alternative 1 alignment. Both reservoirs are in the Santa Monica Mountains and are subject to Zones A and AE, respectively. These reservoirs have a risk of inundation with a 1 percent annual chance of flooding since they retain a significant amount of water. However, given the distance of Alternative 1 from the reservoirs, any oscillation and subsequent release of water in the reservoirs as part of a seiche would not inundate Alternative 1. Therefore, there would be no potential for risk of release of pollutants due to inundation by seiche.

The Los Angeles River and Ballona Creek are the major flood control measures for draining stormwater from the Project Study Area and directing it safely to the San Pedro Bay and Santa Monica Bay, respectively. The risk related to flooding would be considered low as Alternative 1would extend along well-developed areas that maintain storm drainage and water runoff control. In addition, as previously described, Alternative 1 would implement LID BMPs to offset any increases in runoff rates due to the creation of new impervious surface areas. LID design features would reduce the runoff volume discharged from Alternative 1, thereby minimizing the potential for flooding.

The Alternative 1 alignment would not result in impacts to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways. Alternative 1 would not alter the ability of floodways to convey the 100-year flows and there would be negligible change to the floodplain extents.

Alternative 1 would have no impacts related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during operations would be less than significant.

6.3.4.2 Construction Impacts

Impacts related to release of pollutants due to inundation by flood, tsunami, or seiche during construction activities would be similar to operational impacts. Similar to operational impacts, the majority of the Alternative 1 alignment would be constructed outside of the FEMA-designated 100-year floodplain and would be in an inland area that is not in proximity to the ocean; therefore, the risk of inundation by a tsunami is considered low.

Given the distance of Alternative 1 from Encino and Stone Canyon Reservoirs, any oscillation and subsequent release of water in the reservoirs as part of a seiche would not inundate Alternative 1. Therefore, there would be low potential for risk of release of pollutants due to inundation by seiche.

The Los Angeles River and Ballona Creek are the major flood control systems for draining stormwater from the Project Study Area and directing it safely to the San Pedro Bay and Santa Monica Bay, respectively. The risk related to flooding would be considered low as Alternative 1 would extend along well-developed areas that maintain storm drainage and water runoff control.

The Alternative 1 alignment would not result in impacts to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways.

Alternative 1 would have no impacts related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during construction would be less than significant.

6.3.4.3 Maintenance and Storage Facilities

MSF Base Design

Impacts related to release of pollutants due to inundation by flood, tsunami, or seiche during operational and construction activities of the MSF Base Design would be similar to operational and construction activities of the rest of Alternative 1 components. The MSF Base Design would be constructed outside of the FEMA-designated 100-year floodplain and would be in an inland area that is not in proximity to the ocean; therefore, the risk of inundation by a tsunami is considered low.

Given the distance of the MSF Base Design from Encino and Stone Canyon Reservoirs, any oscillation and subsequent release of water in the reservoirs as part of a seiche would not inundate the MSF Base Design. Therefore, there would be low potential for risk of release of pollutants due to inundation by seiche.

The Los Angeles River and Ballona Creek are the major flood control measures for draining stormwater from the Project Study Area and directing it safely to the San Pedro Bay and Santa Monica Bay, respectively. The risk related to flooding would be considered low as the MSF Base Design is within a well-developed area that maintains storm drainage and water runoff control. The MSF Base Design would not result in impacts to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways.

The MSF Base Design would have no impacts related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during construction or operation of the MSF Base Design would be less than significant.

MSF Design Option 1

The previous impact evaluation provided in Section 6.3.4.3, MSF Base Design, is applicable to the MSF Design Option 1. The MSF Design Option 1 would have no impacts related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during construction or operation of the MSF Design Option 1 would be less than significant.

Electric Bus MSF

Impacts related to release of pollutants due to inundation by flood, tsunami, or seiche during operational and construction activities of the Electric Bus MSF would be similar to operational and construction activities of the rest of Alternative 1 components. The Electric Bus MSF would be constructed outside of the FEMA-designated 100-year floodplain and would be in an inland area that is not in proximity to the ocean; therefore, the risk of inundation by a tsunami is considered low.

Given the distance of the Electric Bus MSF from Encino and Stone Canyon Reservoirs, any oscillation and subsequent release of water in the reservoirs as part of a seiche would not inundate the Electric Bus MSF. Therefore, there would be low potential for risk of release of pollutants due to inundation by seiche.

The Los Angeles River and Ballona Creek are the major flood control measures for draining stormwater from the Project Study Area and directing it safely to the San Pedro Bay and Santa Monica Bay, respectively. The risk related to flooding would be considered low as the Electric Bus MSF is within a well-developed area that maintains storm drainage and water runoff control. The Electric Bus MSF would not result in impacts to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways.

The Electric Bus MSF would have no impacts related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during construction or operation of the Electric Bus MSF would be less than significant.

6.3.5 Impact HWQ-5: Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

6.3.5.1 Operational Impacts

Alternative 1 would require routine maintenance that would be performed by the system operator. Potential pollutants (e.g., petroleum products/lubricants, paints, solvents, and other Alternative 1-related products) used during Alternative 1 operations and maintenance would contribute to water pollution. Uncontrolled discharge of runoff carrying these potential pollutants would result in impacts to water quality in receiving waters, which would violate federal, state, and local water quality standards and WDRs, if not appropriately managed. As previously discussed, Alternative 1 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the City of Los Angeles and County of Los Angeles LID Ordinance, the Basin Plan (LARWQCB, 2014), the Caltrans NPDES Statewide Stormwater Permit,, *Ballona Creek Watershed Management Plan* (LADPW, 2004), and the *LA River Master Plan (*Los Angeles County and Los Angeles County Public Works, 2022)*,* as well as commonly used industry standards.

The City of Los Angeles city ordinances related to stormwater control and its LID requirements for sustainability contain compliance provisions for BMPs that must address water infiltration, treatment, and peak-flow discharge. The City of Los Angeles provides guidance to developers of newly developed projects for compliance with regulatory standards through the LID Standards Manual.

As previously described, Alternative 1 would comply with all applicable regulations for all operational activities, including adherence to an approved LID Plan that would identify the BMPs for Alternative 1 operations. Alternative 1 would incorporate into its design on-site drainage systems and sustainability features that would meet regulatory requirements of the applicable plans for the protection of water resources.

The LID Plan would identify the BMPs for the Alternative 1 post-construction design (i.e., operational characteristics to control/treat runoff for the range of potential pollutants). Alternative 1 would include design elements that would serve to infiltrate, capture, and re-use stormwater in accordance with current LID requirements — thereby minimizing the potential for increased runoff volumes/rates and pollutant transport. LID design features, such as depressed landscape gardens for runoff retention and infiltration, permeable surfaces to reduce runoff volume, hardscape replacement with pervious or planted substitutions, bioswales or artistic water features that creatively convey runoff into planted or pervious areas, roof downspout discharges to vegetated areas, and rainwater cisterns and other on-site stormwater retention methods, would slow (detain or retain) stormwater, which would reduce the runoff volume discharged from Alternative 1 and would decrease the peak runoff discharge velocity for design storms — which would also ultimately reduce the amount of stormwater runoff burden into the city's stormwater conveyance systems. As a result, less flow with fewer pollutants would be transported through the conveyance systems, and ultimately into surface waters, including ancillary exfiltration to the groundwater table. Additionally, natural treatment of infiltrated runoff would occur, thereby improving exfiltrated water from LID and water quality additions to the groundwater table.

Additionally, operation of Alternative 1 would not involve the extraction of any groundwater. Therefore, Alternative 1 would not be expected to result in a decrease in groundwater supplies or interfere substantially with groundwater recharge to the extent that Alternative 1 may impede sustainable groundwater management of the basin. Depending on final design features, exfiltration from LID BMPs is anticipated to improve groundwater recharge characteristics of the area.

Alternative 1 is anticipated to require IGP coverage for maintenance facilities, fueling operations, equipment cleaning/washing operations, and TPSSs. As such, an IGP SWPPP would be prepared and submitted to the SWRCB prior to and adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases. Other BMPs may also be employed as appropriate, such as indoor/covered areas for maintenance, approved flammable/hazmat storage lockers for lubricants and other industrial liquids, drip/spill protection in maintenance areas and similar BMPs when conducting tower maintenance, dry clean-up practices, and dedicated enclosed areas for metal working, painting, and welding.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during operations of Alternative 1 would be less than significant.

6.3.5.2 Construction Impacts

Construction of the Alternative 1 components would be conducted in several phases, including site preparation and installation of foundations and columns; erection of stations; and construction of ancillary components, including replacement or restoration of paving, sidewalk, and landscaping.

Construction of Alternative 1 has the potential to impact water quality of downstream receiving waters if applicable and appropriate BMPs are not implemented. Construction activities such as demolition of existing site structures and excavation for foundations would temporarily expose bare soil, and temporarily increase the potential for erosion. Exposed or stockpiled soils would also be at increased risk for erosion. Uncontrolled erosion and discharge of sediments and other potential pollutants would affect water quality in Alternative 1 receiving waters (e.g., the Pacoima Wash, Tujunga Wash, and Los Angeles River) if not appropriately managed by proper implementation of the construction SWPPP.

In addition to sediments, other pollutants including trash, concrete waste, and petroleum products (e.g., heavy equipment fuels, solvents, and lubricants) would contribute to stormwater pollution if not appropriately managed. The use of construction equipment and other vehicles during Alternative 1 construction would result in spills of oil, brake fluid, grease, antifreeze, or other vehicle-related fluids, which would contribute to water quality impacts. Improper handling, storage, or disposal of fuels and vehicle-related fluids or improper cleaning and maintenance of equipment would result in accidental spills and discharges that would contribute to water pollution.

Nuisance groundwater may be encountered during installation of piles for each of the components, which may result in degradation of groundwater quality if not addressed properly. Additionally, potentially impacted groundwater may result in degradation of surface water if it is not properly managed during construction activities. Although construction activities are not anticipated to interfere substantially with groundwater recharge, groundwater resource supplies, or groundwater quality, any accidental interference would be handled in accordance with applicable federal, state, regional, and local laws and regulations, groundwater management plans, and WDRs for groundwater discharge.

As discussed previously, Alternative 1 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan (LARWQCB, 2014), as well as commonly used industry standards. Alternative 1 would comply with the Caltrans NPDES Statewide Stormwater Permit, the NPDES CGP, the MS4 Permit, the City of Los Angeles and County of Los Angeles LID Ordinance, the City of Los Angeles Municipal Code, and all other applicable regulations for all construction activities.

In accordance with the CGP, Alternative 1 would have a construction SWPPP, which must be submitted to the SWRCB prior to construction, and adhered to during construction. Proper implementation of the construction SWPPP would avoid potential impacts to water quality. The construction SWPPP would identify the BMPs that would be in place to protect water quality prior to the start of construction activities and during construction. The BMP categories would include erosion control, sediment control, non-stormwater management, and materials management BMPs. Although specific temporary construction-related BMPs would be selected at the time of SWPPP preparation, potential BMPs would likely include fiber rolls, bonded-fiber matrix hydroseeding, soil furrowing, water bars, and check dams for erosion control, inlet protection (sand/gravel bags and geotextiles), silt fencing, sediment traps/basins for sediment controls, soil berming around disturbed areas, and phasing of soil disturbance during the wet season (i.e., limiting widespread grading) for effectively managing erosion and pollutant discharge during significant rainfall events.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during construction of Alternative 1 would be less than significant.

6.3.5.3 Maintenance and Storage Facilities

MSF Base Design

Sections 6.3.5.1 and 6.3.5.2 present the impact evaluation for the MSF Base Design. The MSF Base Design would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans. The MSF Base Design would incorporate into its design on-site drainage systems and sustainability features that would meet regulatory requirements of the applicable plans for the protection of water resources. The MSF Base Design would include design elements that would serve to capture, treat, and re-use stormwater in accordance with current LID requirements, promoting infiltration and groundwater recharge. The MSF Base Design would not be expected to result in a decrease in groundwater supplies or interfere substantially with groundwater recharge to the extent that the MSF Base Design may impede sustainable groundwater management of the basin. Dewatering would be limited to the construction phase only. Extracting large volumes of groundwater that would decrease groundwater supplies would not be expected during construction.

With adherence to existing regulations and with proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during construction and operation of the MSF Base Design would be less than significant.

MSF Design Option 1

The previous impact evaluation provided in Section 6.3.5.3 MSF Base Design is applicable to the MSF Design Option 1. With adherence to existing regulations and with proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during construction and operation of the MSF Design Option 1 would be less than significant.

Electric Bus MSF

As described in Sections 6.3.5.1 and 6.3.5.2, the Electric Bus MSF would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans. The Electric Bus MSF would incorporate into its design on-site drainage systems and sustainability features that would meet regulatory requirements of the applicable plans for the protection of water resources. The Electric Bus MSF would include design elements that would serve to capture, treat, and re-use stormwater in accordance with current LID requirements, promoting infiltration and groundwater recharge. The Electric Bus MSF would not be expected to result in a decrease in groundwater supplies or interfere substantially with groundwater recharge to the extent that the Electric Bus MSF may impede sustainable groundwater management of the basin. Dewatering would be limited to the construction phase only. Extracting large volumes of groundwater that would decrease groundwater supplies would not be expected during construction.

With adherence to existing regulations and with proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during construction and operation of the Electric Bus MSF would be less than significant.

6.4 Mitigation Measures

6.4.1 Operational Impacts

No mitigation measures are required.

6.4.2 Construction Impacts

No mitigation measures are required.

6.4.3 Impacts After Mitigation

No mitigation measures are required; impacts are less than significant.

7 ALTERNATIVE 3

7.1 Alternative Description

Alternative 3 is an aerial monorail alignment that would run along the I-405 corridor and would include seven aerial monorail transit (MRT) stations and an underground tunnel alignment between the Getty Center and Wilshire Boulevard with two underground stations. This alternative would provide transfers to five high-frequency fixed guideway transit and commuter rail lines, including the Los Angeles County Metropolitan Transportation Authority's (Metro) E, Metro D, and Metro G Lines, the East San Fernando Valley Light Rail Transit Line, and the Metrolink Ventura County Line. The length of the alignment between the terminus stations would be approximately 16.1 miles, with 12.5 miles of aerial guideway and 3.6 miles of underground configuration.

The seven aerial and two underground MRT stations would be as follows:

1. Metro E Line Expo/Sepulveda Station (aerial)
2. Santa Monica Boulevard Station (aerial)
3. Wilshire Boulevard/Metro D Line Station (underground)
4. UCLA Gateway Plaza Station (underground)
5. Getty Center Station (aerial)
6. Ventura Boulevard/Sepulveda Boulevard Station (aerial)
7. Metro G Line Sepulveda Station (aerial)
8. Sherman Way Station (aerial)
9. Van Nuys Metrolink Station (aerial)

7.1.1 Operating Characteristics

7.1.1.1 Alignment

As shown on Figure 7-1, from its southern terminus at the Metro E Line Expo/Sepulveda Station, the alignment of Alternative 3 would generally follow I-405 to the Los Angeles-San Diego-San Luis Obispo (LOSSAN) rail corridor, except for an underground segment between Wilshire Boulevard and the Getty Center.

The proposed southern terminus station would be located west of the existing Metro E Line Expo/Sepulveda Station, east of I-405 between Pico Boulevard and Exposition Boulevard. Tail tracks would extend just south of the station adjacent to the eastbound Interstate 10 to northbound I-405 connector over Exposition Boulevard. North of the Metro E Line Expo/Sepulveda Station, a storage track would be located off of the main alignment north of Pico Boulevard between I-405 and Cotner Avenue. The alignment would continue north along the east side of I-405 until just south of Santa Monica Boulevard, where a proposed station would be located between the I-405 northbound travel lanes and Cotner Avenue. The alignment would cross over the northbound and southbound freeway lanes north of Santa Monica Boulevard and travel along the west side of I-405. Once adjacent to the U.S. Department of Veterans Affairs (VA) Hospital site, the alignment would cross back over the I-405 lanes and Sepulveda Boulevard, before entering an underground tunnel south of the Federal Building parking lot.

Figure 7-1. Alternative 3: Alignment

Source: LASRE, 2024; HTA, 2024

The alignment would proceed east underground and turn north under Veteran Avenue toward the proposed Wilshire Boulevard/Metro D Line Station located under the University of California, Los Angeles (UCLA) Lot 36 on the east side of Veteran Avenue north of Wilshire Boulevard. North of this station, the underground alignment would curve northeast parallel to Weyburn Avenue before curving north and traveling underneath Westwood Plaza at Le Conte Avenue. The alignment would follow Westwood Plaza until the underground UCLA Gateway Plaza Station in front of the Luskin Conference

Center. The alignment would then continue north under the UCLA campus until Sunset Boulevard, where the tunnel would curve northwest for approximately 2 miles to rejoin I-405.

The Alternative 3 alignment would transition from an underground configuration to an aerial guideway structure after exiting the tunnel portal located at the northern end of the Leo Baeck Temple parking lot. The alignment would cross over Sepulveda Boulevard and the I-405 lanes to the proposed Getty Center Station on the west side of I-405, just north of the Getty Center tram station. The alignment would return to the median for a short distance before curving back to the west side of I-405 south of the Sepulveda Boulevard undercrossing north of the Getty Center Drive interchange. After crossing over Bel Air Crest Road and Skirball Center Drive, the alignment would again return to the median and run under the Mulholland Drive Bridge, then continue north within the I-405 median to descend into the San Fernando Valley (Valley).

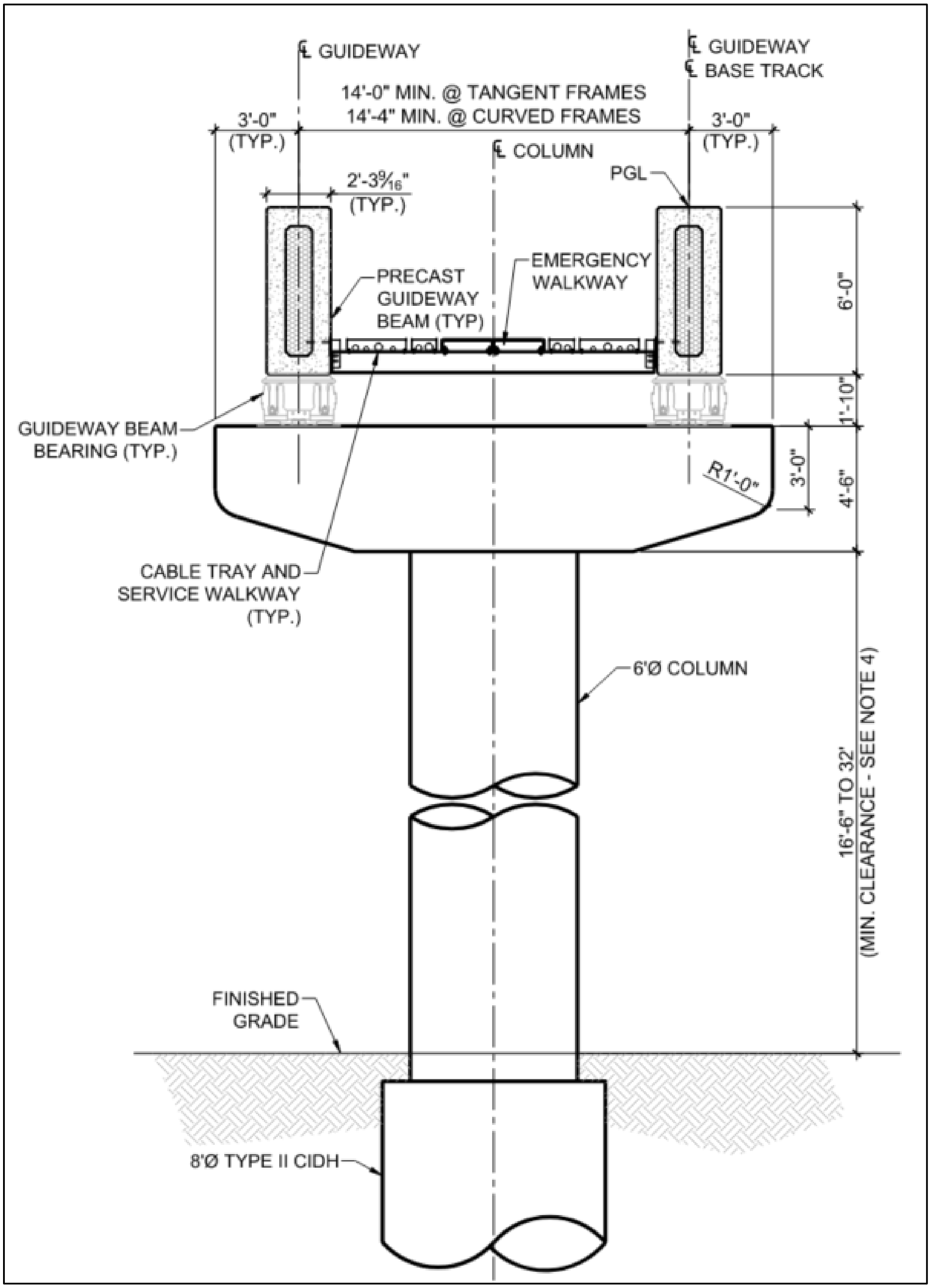
Near Greenleaf Street, the alignment would cross over the northbound freeway lanes and on-ramps toward the proposed Ventura Boulevard Station on the east side of I-405. This station would be located above a transit plaza and replace an existing segment of Dickens Street adjacent to I-405, just south of Ventura Boulevard. Immediately north of the Ventura Boulevard Station, the alignment would cross over the northbound I-405 to U.S. Highway 101 (US-101) connector and continue north between the connector and the I-405 northbound travel lanes. The alignment would continue north along the east side of I-405 — crossing over US-101 and the Los Angeles River — to a proposed station on the east side of I-405 near the Metro G Line Busway. A new at-grade station on the Metro G Line would be constructed for Alternative 3 adjacent to the proposed station. These proposed stations are shown on the Metro G Line inset area on Figure 7-1.

The alignment would then continue north along the east side of I-405 to the proposed Sherman Way Station. The station would be located inside the I-405 northbound loop off-ramp to Sherman Way. North of the station, the alignment would continue along the eastern edge of I-405, then curve to the southeast parallel to the LOSSAN rail corridor. The alignment would run elevated along Raymer Street east of Sepulveda Boulevard and cross over Van Nuys Boulevard to the proposed terminus station adjacent to the Van Nuys Metrolink/Amtrak Station. Overhead utilities along Raymer Street would be undergrounded where they would conflict with the guideway or its supporting columns. Tail tracks would be located southeast of this terminus station.

7.1.1.2 Guideway Characteristics

Alternative 3 would utilize straddle-beam monorail technology, which allows the monorail vehicle to straddle a guide beam that both supports and guides the vehicle. Alternative 3 would operate on aerial and underground guideways with dual-beam configurations. Northbound and southbound trains would travel on parallel beams either in the same tunnel or supported by a single-column or straddle-bent aerial structure. Figure 7-2 shows a typical cross-section of the aerial monorail guideway.

Figure 7-2. Typical Aerial Monorail Guideway Cross-Section

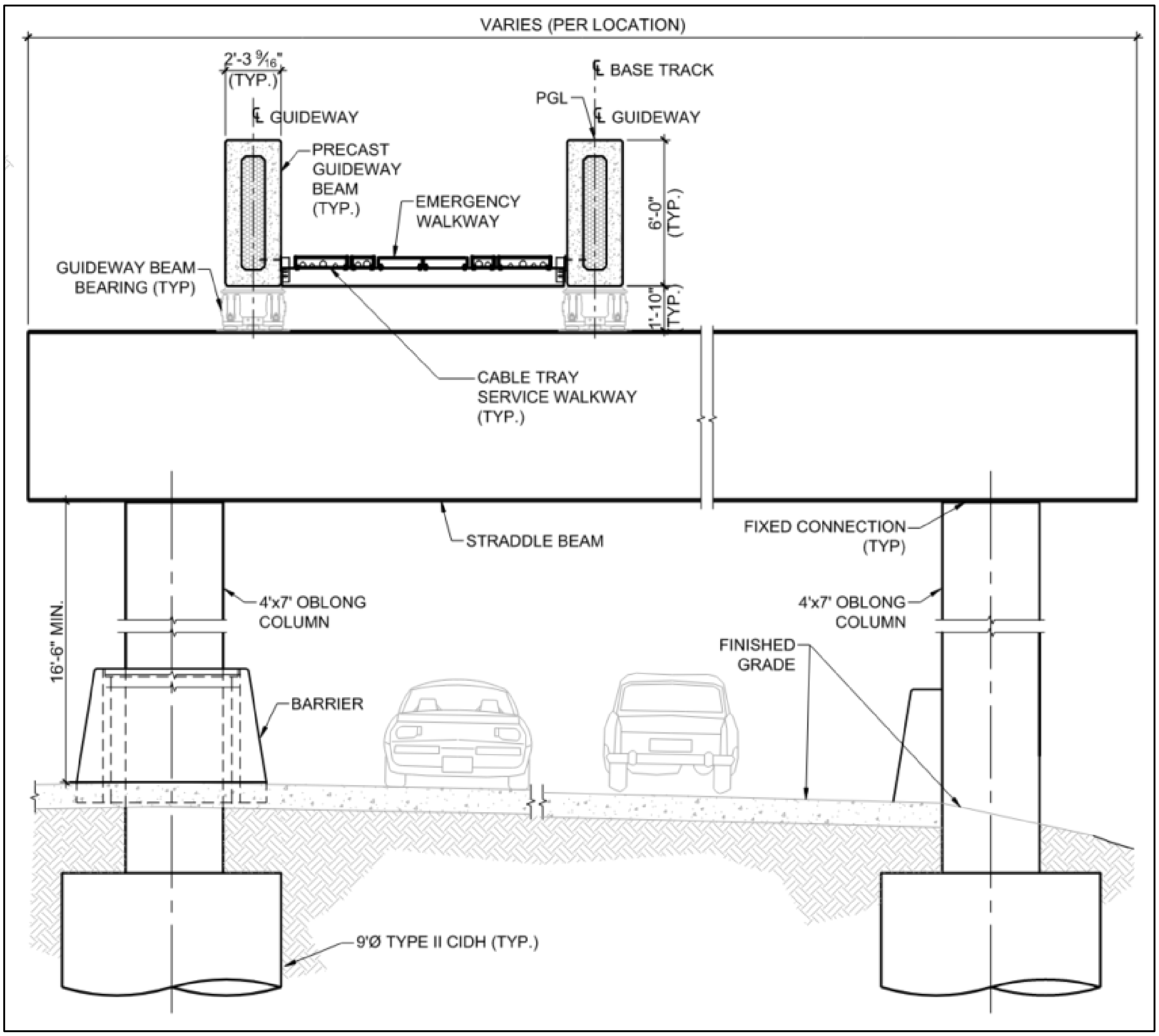


Source: LASRE, 2024

On a typical guideway section (i.e., not at a station), guide beams would rest on 20-foot-wide column caps (i.e., the structure connecting the columns and the guide beams), with typical spans (i.e., the distance between columns) ranging from 70 to 190 feet. The bottom of the column caps would typically be between 16.5 feet and 32 feet above ground level.

Over certain segments of roadway and freeway facilities, a straddle-bent configuration, as shown on Figure 7-3, consisting of two concrete columns constructed outside of the underlying roadway would be used to support the guide beams and column cap. Typical spans for these structures would range between 65 and 70 feet. A minimum 16.5-foot clearance would be maintained between the underlying roadway and the bottom of the column caps.

Figure 7-3. Typical Monorail Straddle-Bent Cross-Section

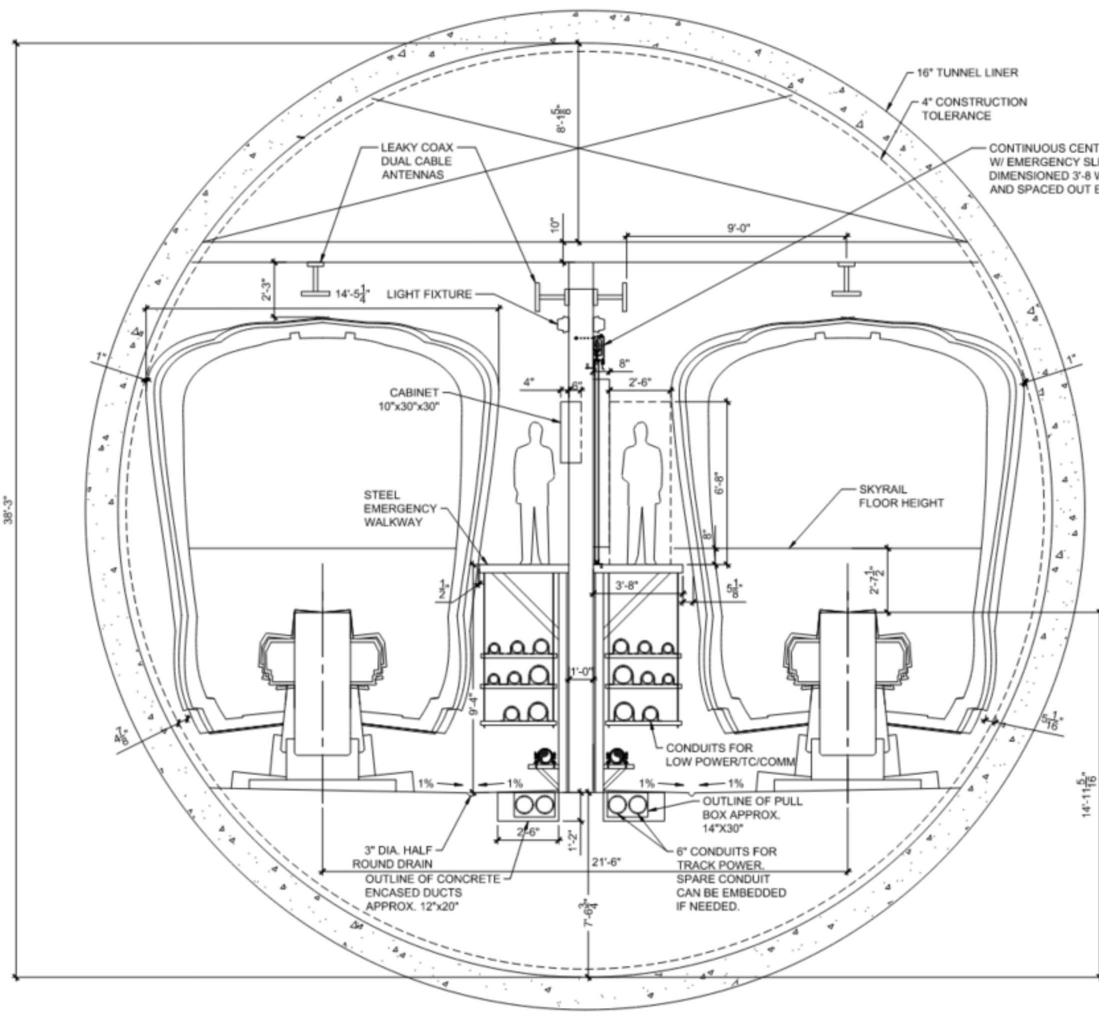


Source: LASRE, 2024

Structural support columns would vary in size and arrangement by alignment location. Columns would be 6 feet in diameter along main alignment segments adjacent to I-405 and be 4 feet wide by 6 feet long in the I-405 median. Straddle-bent columns would be 4 feet wide by 7 feet long. At stations, six rows of dual 5-foot by-8-foot columns would support the aerial guideway. Beam switch locations and long-span structures would also utilize different sized columns, with dual 5-foot columns supporting switch locations and either 9-foot or 10-foot-diameter columns supporting long-span structures. Crash protection barriers would be used to protect the columns. All columns would have a cast-in-drilled-hole (CIDH) pile foundation extending 1 foot in diameter beyond the column width with varying depths for appropriate geotechnical considerations and structural support.

For underground sections, a single 40-foot-diameter tunnel would be needed to accommodate dual-beam configuration. The tunnel would be divided by a 1-foot-thick center wall dividing two compartments with a 14.5-foot-wide space for trains and a 4-foot-wide emergency evacuation walkway. The center wall would include emergency sliding doors placed every 750 to 800 feet. A plenum within the crown of the tunnel, measuring 8 feet tall from the top of the tunnel, would allow for air circulation and ventilation. Figure 7-4 illustrates these components at a typical cross-section of the underground monorail guideway.

Figure 7-4. Typical Underground Monorail Guideway Cross-Section



Source: LASRE, 2024

7.1.1.3 Vehicle Technology

Alternative 3 would utilize straddle-beam monorail technology, which allows the monorail vehicle to straddle a guide beam that both supports and guides the vehicle. Rubber tires would sit both atop and on each side of the guide beam to provide traction and guide the train. Trains would be automated and powered by power rails mounted to the guide beam, with planned peak-period headways of 166 seconds and off-peak-period headways of 5 minutes. Monorail trains could consist of up to eight cars. Alternative 3 would have a maximum operating speed of 56 miles per hour; actual operating speeds would depend on the design of the guideway and distance between stations.

Monorail train cars would be 10.5 feet wide, with two double doors on each side. End cars would be 46.1 feet long with a design capacity of 97 passengers, and intermediate cars would be 35.8 feet long and have a design capacity of 90 passengers.

7.1.1.4 Stations

Alternative 3 would include seven aerial and two underground MRT stations with platforms approximately 320 feet long. Aerial stations would be elevated 50 feet to 75 feet above the ground level, and underground stations would be 80 feet to 110 feet underneath the existing ground level. The Metro E Line Expo/Sepulveda, Santa Monica Boulevard, Ventura Boulevard/Sepulveda Boulevard, Sherman Way, and Van Nuys Metrolink Stations would be center-platform stations where passengers would travel up to a shared platform that would serve both directions of travel. The Wilshire Boulevard/Metro D Line, UCLA Gateway Plaza, Getty Center, and Metro G Line Sepulveda Stations would be side-platform stations where passengers would select and travel up or down to station platforms depending on their direction of travel. Each station, regardless of whether it has side or center platforms, would include a concourse level prior to reaching the train platforms. Each station would have a minimum of two elevators, two escalators, and one stairway from ground level to the concourse.

Aerial station platforms would be approximately 320 feet long and would be supported by six rows of dual 5-foot by- 8-foot columns. The platforms would be covered, but not enclosed. Side-platform stations would be 61.5 feet wide to accommodate two 13-foot-wide station platforms with a 35.5-foot-wide intermediate gap for side-by-side trains. Center-platform stations would be 49 feet wide, with a 25-foot-wide center platform.

Underground side platforms would be 320 feet long and 26 feet wide, separated by a distance of 31.5 feet for side-by-side trains.

Monorail stations would include automatic, bi-parting fixed doors along the edges of station platforms. These doors would be integrated into the automatic train control system and would not open unless a train is stopped at the platform.

The following information describes each station, with relevant entrance, walkway, and transfer information. Bicycle parking would be provided at each station.

Metro E Line Expo/Sepulveda Station

- This aerial station would be located near the existing Metro E Line Expo/Sepulveda Station, just east of I-405 between Pico Boulevard and Exposition Boulevard.
- A transit plaza and station entrance would be located on the east side of the station.
- An off-street passenger pick-up/drop-off loop would be located south of Pico Boulevard west of Cotner Avenue.

- An elevated pedestrian walkway would connect the concourse level of the proposed station to the Metro E Line Expo/Sepulveda Station within the fare paid zone.
- Passengers would be able to park at the existing Metro E Line Expo/Sepulveda Station parking facility, which provides 260 parking spaces. No additional automobile parking would be provided at the proposed station.

Santa Monica Boulevard Station

- This aerial station would be located just south of Santa Monica Boulevard, between the I-405 northbound travel lanes and Cotner Avenue.
- Station entrances would be located on the southeast and southwest corners of Santa Monica Boulevard and Cotner Avenue. The entrance on the southeast corner of the intersection would be connected to the station concourse level via an elevated pedestrian walkway spanning Cotner Avenue.
- No dedicated station parking would be provided at this station.

Wilshire Boulevard/Metro D Line Station

- This underground station would be located under UCLA Lot 36 on the east side of Veteran Avenue north of Wilshire Boulevard.
- A station entrance would be located on the northeast corner of the intersection of Veteran Avenue and Wilshire Boulevard.
- An underground pedestrian walkway would connect the concourse level of the proposed station to the Metro D Line Westwood/UCLA Station using a knock-out panel provided in the Metro D Line Station box. This connection would occur within the fare paid zone.
- No dedicated station parking would be provided at this station.

UCLA Gateway Plaza Station

- This underground station would be located beneath Gateway Plaza.
- Station entrances would be located on the northern end and southeastern end of the plaza.
- No dedicated station parking would be provided at this station.

Getty Center Station

- This aerial station would be located on the west side of I-405 near the Getty Center, approximately 1,000 feet north of the Getty Center tram station.
- An elevated pedestrian walkway would connect the proposed station’s concourse level with the Getty Center tram station. The proposed connection would occur outside the fare paid zone.
- An entrance to the walkway above the Getty Center’s parking lot would be the proposed station’s only entrance.
- No dedicated station parking would be provided at this station.

Ventura Boulevard/Sepulveda Boulevard Station

- This aerial station would be located east of I-405, just south of Ventura Boulevard.

- A transit plaza, including two station entrances, would be located on the east side of the station. The plaza would require the closure of a 0.1-mile segment of Dickens Street between Sepulveda Boulevard and Ventura Boulevard, with a passenger pick-up/drop-off loop and bus stops provided south of the station, off Sepulveda Boulevard.
- No dedicated station parking would be provided at this station.

Metro G Line Sepulveda Station

- This aerial station would be located near the Metro G Line Sepulveda Station, between I-405 and the Metro G Line Busway.
- Entrances to the MRT station would be located on both sides of the new proposed Metro G Line bus rapid transit (BRT) station.
- An elevated pedestrian walkway would connect the concourse level of the proposed station to the proposed new Metro G Line BRT station outside of the fare paid zone.
- Passengers would be able to park at the existing Metro G Line Sepulveda Station parking facility, which has a capacity of 1,205 parking spaces. Currently, only 260 parking spaces are used for transit parking. No additional automobile parking would be provided at the proposed station.

Sherman Way Station

- This aerial station would be located inside the I-405 northbound loop off-ramp to Sherman Way.
- A station entrance would be located on the north side of Sherman Way, directly across the street from the I-405 northbound off-ramp to Sherman Way East.
- An on-street passenger pick-up/drop-off area would be provided on the north side of Sherman Way west of Firmament Avenue.
- No dedicated station parking would be provided at this station.

Van Nuys Metrolink Station

- This aerial station would be located on the east side of Van Nuys Boulevard, just south of the LOSSAN rail corridor, incorporating the site of the current Amtrak ticket office.
- A station entrance would be located on the east side of Van Nuys Boulevard just south of the LOSSAN rail corridor. A second entrance would be located to the north of the LOSSAN rail corridor with an elevated pedestrian walkway connecting to both the concourse level of the proposed station and the platform of the Van Nuys Metrolink/Amtrak Station.
- Existing Metrolink Station parking would be reconfigured, maintaining approximately the same number of spaces, but 180 parking spaces would be relocated north of the LOSSAN rail corridor. Metrolink parking would not be available to Metro transit riders.

7.1.1.5 Station-to-Station Travel Times

Table 7-1 presents the station-to-station distance and travel times for Alternative 3. The travel times includes both running time and dwelling time. The travel times differ between northbound and southbound trips because of grade differentials and operational considerations at end-of-line stations.

Table 7-1. Alternative 3: Station-to-Station Travel Times and Station Dwell Times

From Station	To Station	Distance (miles)	Northbound Station-to-Station Travel Time (seconds)	Southbound Station-to-Station Travel Time (seconds)	Dwell Time (seconds)
Metro E Line Station					*30*
Metro E Line	Santa Monica Boulevard	0.9	123	97	—
Santa Monica Boulevard Station					*30*
Santa Monica Boulevard	Wilshire/Metro D Line	1.1	192	194	—
Wilshire/Metro D Line Station					*30*
Wilshire/Metro D Line	UCLA Gateway Plaza	0.9	138	133	—
UCLA Gateway Plaza Station					*30*
UCLA Gateway Plaza	Getty Center	2.6	295	284	—
Getty Center Station					*30*
Getty Center	Ventura Boulevard	4.7	414	424	—
Ventura Boulevard Station					*30*
Ventura Boulevard	Metro G Line	2.0	179	187	—
Metro G Line Station					*30*
Metro G Line	Sherman Way	1.5	134	133	—
Sherman Way Station					*30*
Sherman Way	Van Nuys Metrolink	2.4	284	279	—
Van Nuys Metrolink Station					*30*

Source: LASRE, 2024

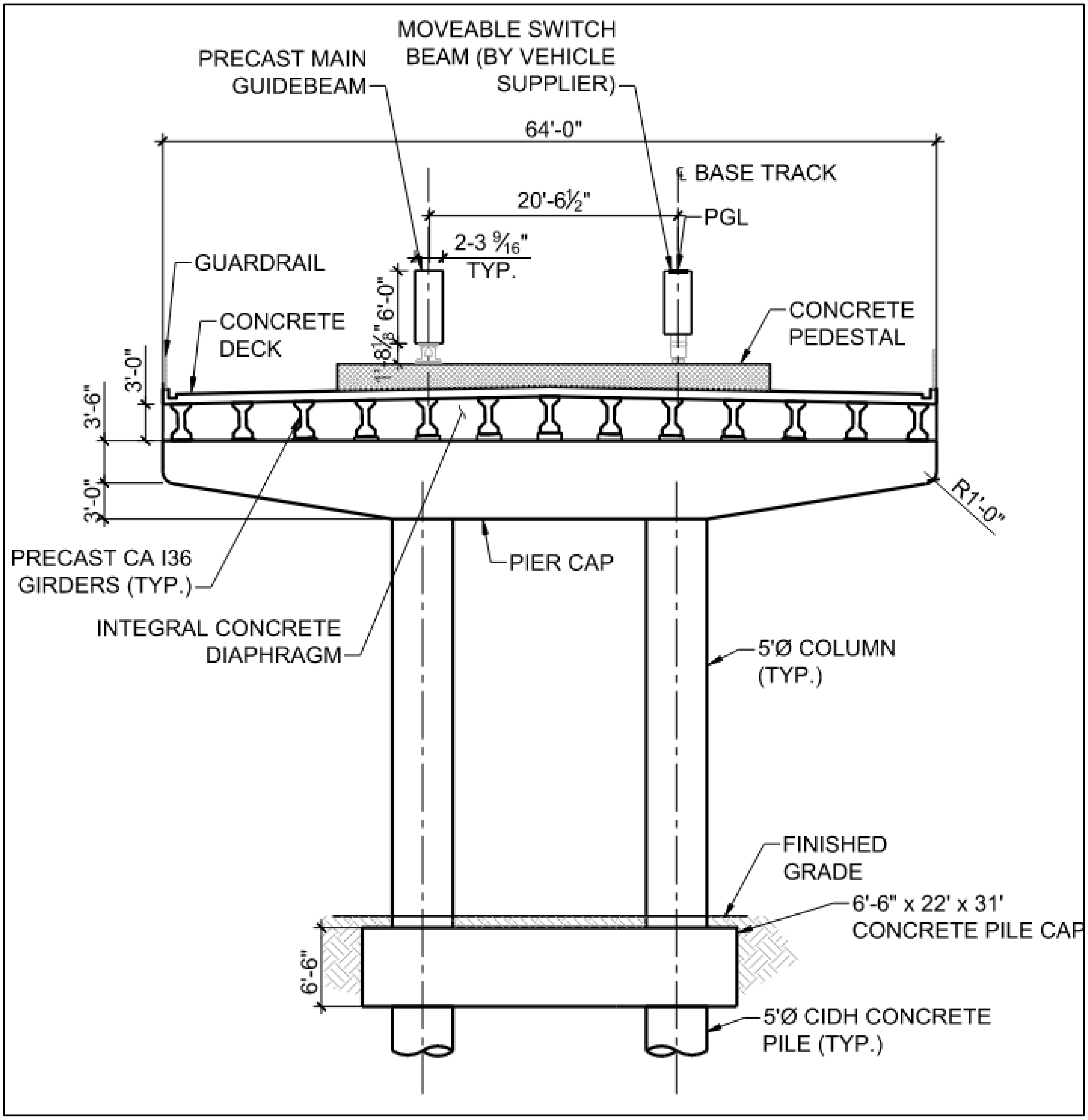
— = no data

7.1.1.6 Special Trackwork

Alternative 3 would include five pairs of beam switches to enable trains to cross over and reverse direction on the opposite beam. All beam switches would be located on aerial portions of the alignment of Alternative 3. From south to north, the first pair of beam switches would be located just north of the Metro E Line Expo/Sepulveda Station. A second pair of beam switches would be located on the west side of I-405, directly adjacent to the VA Hospital site, south of the Wilshire Boulevard/Metro D Line Station. A third pair of beam switches would be located in the Sepulveda Pass just south of Mountaingate Drive and Sepulveda Boulevard. A fourth pair of beam switches would be located south of the Metro G Line Station between the I-405 northbound lanes and the Metro G Line Busway. The final pair would be located near the Van Nuys Metrolink Station.

At beam switch locations, the typical cross-section of the guideway would increase in column and column cap width. The column cap width at these locations would be 64 feet, with dual 5-foot-diameter columns. Underground pile caps for additional structural support would also be required at these locations. Figure 7-5 shows a typical cross-section of the monorail beam switch.

Figure 7-5. Typical Monorail Beam Switch Cross-Section



Source: LASRE, 2024

7.1.1.7 Maintenance and Storage Facility

MSF Base Design

In the maintenance and storage facility (MSF) Base Design for Alternative 3, the MSF would be located on City of Los Angeles Department of Water and Power (LADWP) property east of the Van Nuys Metrolink Station. The MSF Base Design site would be approximately 18 acres and would be designed to accommodate a fleet of 208 monorail vehicles. The site would be bounded by the LOSSAN rail corridor to the north, Saticoy Street to the south, and property lines extending north of Tyrone and Hazeltine Avenues to the east and west, respectively.

Monorail trains would access the site from the main alignment's northern tail tracks at the northwest corner of the site. Trains would travel parallel to the LOSSAN rail corridor before curving southeast to maintenance facilities and storage tracks. The guideway would remain in an aerial configuration within the MSF Base Design, including within maintenance facilities.

The site would include the following facilities:

- Primary entrance with guard shack
- Primary maintenance building that would include administrative offices, an operations control center, and a maintenance shop and office
- Train car wash building
- Emergency generator
- Traction power substation (TPSS)
- Maintenance-of-way (MOW) building
- Parking area for employees

MSF Design Option 1

In the MSF Design Option 1, the MSF would be located on industrial property, abutting Orion Avenue, south of the LOSSAN rail corridor. The MSF Design Option 1 site would be approximately 26 acres and would be designed to accommodate a fleet of 224 monorail vehicles. The site would be bounded by I-405 to the west, Stagg Street to the south, the LOSSAN rail corridor to the north, and Orion Avenue and Raymer Street to the east. The monorail guideway would travel along the northern edge of the site.

Monorail trains would access the site from the monorail guideway east of Sepulveda Boulevard, requiring additional property east of Sepulveda Boulevard and north of Raymer Street. From the northeast corner of the site, trains would travel parallel to the LOSSAN rail corridor before turning south to maintenance facilities and storage tracks parallel to I-405. The guideway would remain in an aerial configuration within the MSF Design Option 1, including within maintenance facilities.

The site would include the following facilities:

- Primary entrance with guard shack
- Primary maintenance building that would include administrative offices, an operations control center, and a maintenance shop and office
- Train car wash building
- Emergency generator
- TPSS
- MOW building
- Parking area for employees

Figure 7-6 shows the locations of the MSF Base Design and MSF Design Option 1 for Alternative 3.

Figure 7-6. Alternative 3: Maintenance and Storage Facility Options

Source: LASRE, 2024; HTA, 2024

7.1.1.8 Traction Power Substations

TPSSs transform and convert high voltage alternating current supplied from power utility feeders into direct current suitable for transit operation. A TPSS on a site of approximately 8,000 square feet would be located approximately every 1 mile along the alignment. Table 7-2 lists the TPSS locations proposed for Alternative 3.

Figure 7-7 shows the TPSS locations along the Alternative 3 alignment.

Table 7-2. Alternative 3: Traction Power Substation Locations

TPSS No.	TPSS Location Description	Configuration
1	TPSS 1 would be located east of I-405, just south of Exposition Boulevard and the monorail guideway tail tracks.	At-grade
2	TPSS 2 would be located east of I-405 and Sepulveda Boulevard, just north of the Getty Center Station.	At-grade
3	TPSS 3 would be located west of I-405, just east of the intersection between Promontory Road and Sepulveda Boulevard.	At-grade
4	TPSS 4 would be located between I-405 and Sepulveda Boulevard, just north of the Skirball Center Drive Overpass.	At-grade
5	TPSS 5 would be located east of I-405, just south of Ventura Boulevard Station, between Sepulveda Boulevard and Dickens Street.	At-grade
6	TPSS 6 would be located east of I-405, just south of the Metro G Line Sepulveda Station.	At-grade
7	TPSS 7 would be located east of I-405, just east of the Sherman Way Station, inside the I-405 Northbound Loop Off-Ramp to Sherman Way westbound.	At-grade
8	TPSS 8 would be located east of I-405, at the southeast quadrant of the I-405 overcrossing with the LOSSAN rail corridor.	At-grade
9	TPSS 9 would be located east of I-405, at the southeast quadrant of the I-405 overcrossing with the LOSSAN rail corridor.	At-grade (within MSF Design Option)
10	TPSS 10 would be located between Van Nuys Boulevard and Raymer Street, south of the LOSSAN rail corridor.	At-grade
11	TPSS 11 would be located south of the LOSSAN rail corridor, between Tyrone Avenue and Hazeltine Avenue.	At-grade (within MSF Base Design)
12	TPSS 12 would be located southwest of Veteran Avenue at Wellworth Avenue.	Underground
13	TPSS 13 would be located within the Wilshire Boulevard/Metro D Line Station.	Underground (adjacent to station)
14	TPSS 14 would be located underneath UCLA Gateway Plaza.	Underground (adjacent to station)

Source: LASRE, 2024; HTA, 2024

Figure 7-7. Alternative 3: Traction Power Substation Locations

Source: LASRE, 2024; HTA, 2024

7.1.1.9 Roadway Configuration Changes

Table 7-3 lists the roadway changes necessary to accommodate the guideway of Alternative 3. Figure 7-8 shows the location of these roadway changes in the Sepulveda Transit Corridor Project (Project) Study Area, except for the I-405 configuration changes, which occur throughout the corridor.

Table 7-3. Alternative 3: Roadway Changes

Location	From	To	Description of Change
Cotner Avenue	Nebraska Avenue	Santa Monica Boulevard	Roadway realignment to accommodate aerial guideway columns
Beloit Avenue	Massachusetts Avenue	Ohio Avenue	Roadway narrowing to accommodate aerial guideway columns
Sepulveda Boulevard	Getty Center Drive	Not Applicable	Southbound right turn lane to Getty Center Drive shortened to accommodate aerial guideway columns
I-405 Northbound On-Ramp and Off-Ramp at Sepulveda Boulevard near I-405 Exit 59	Sepulveda Boulevard near I-405 Northbound Exit 59	Sepulveda Boulevard/I-405 Undercrossing (near Getty Center)	Ramp realignment to accommodate aerial guideway columns and I-405 widening
Sepulveda Boulevard	I-405 Southbound Skirball Center Drive Ramps (north of Mountaingate Drive)	Skirball Center Drive	Roadway realignment into existing hillside to accommodate aerial guideway columns and I-405 widening
I-405 Northbound On-Ramp at Mulholland Drive	Mulholland Drive	Not Applicable	Roadway realignment into the existing hillside between the Mulholland Drive Bridge pier and abutment to accommodate aerial guideway columns and I-405 widening
Dickens Street	Sepulveda Boulevard	Ventura Boulevard	Permanent removal of street for Ventura Boulevard Station construction Pick-up/drop-off area would be provided along Sepulveda Boulevard at the truncated Dickens Street
Sherman Way	Haskell Avenue	Firmament Avenue	Median improvements, passenger drop-off and pick-up areas, and bus pads within existing travel lanes
Raymer Street	Sepulveda Boulevard	Van Nuys Boulevard	Curb extensions and narrowing of roadway width to accommodate aerial guideway columns
I-405	Sepulveda Boulevard Northbound Off-Ramp (Getty Center Drive interchange)	Sepulveda Boulevard Northbound On-Ramp (Getty Center Drive interchange)	I-405 widening to accommodate aerial guideway columns in the median
I-405	Skirball Center Drive	U.S. Highway 101	I-405 widening to accommodate aerial guideway columns in the median

Source: LASRE, 2024; HTA, 2024

Figure 7-8. Alternative 3: Roadway Changes

Source: LASRE, 2024; HTA, 2024

In addition to the changes made to accommodate the guideway, as listed in Table 7-3, roadways and sidewalks near stations would be reconstructed, which would result in modifications to curb ramps and driveways.

7.1.1.10 Ventilation Facilities

For ventilation of the monorail's underground portion, a plenum within the crown of the tunnel would provide a separate compartment for air circulation and allow multiple trains to operate between stations. Vents would be located at the southern portal near the Federal Building parking lot, Wilshire/Metro D Line Station, UCLA Gateway Plaza Station, and at the northern portal near the Leo Baeck Temple parking lot. Emergency ventilation fans would be located at the UCLA Gateway Plaza Station and at the northern and southern tunnel portals.

7.1.1.11 Fire/Life Safety – Emergency Egress

Continuous emergency evacuation walkways would be provided along the guideway. Walkways along the alignment's aerial portions would typically consist of structural steel frames anchored to the guideway beams to support non-slip walkway panels. The walkways would be located between the two guideway beams for most of the aerial alignment; however, where the beams split apart, such as entering center-platform stations, short portions of the walkway would be located on the outside of the beams. For the underground portion of Alternative 3, 3.5-foot-wide emergency evacuation walkways would be located on both sides of the beams. Access to tunnel segments for first responders would be through stations.

7.1.2 Construction Activities

Construction activities for Alternative 3 would include constructing the aerial guideway and stations, underground tunnel and stations, and ancillary facilities, and widening I-405. Construction of the transit facilities through substantial completion is expected to have a duration of 8 ½ years. Early works, such as site preparation, demolition, and utility relocation, could start in advance of construction of the transit facilities.

Aerial guideway construction would begin at the southern and northern ends of the alignment and connect in the middle. Constructing the guideway would require a combination of freeway and local street lane closures throughout the working limits to provide sufficient work area. The first stage of I-405 widening would include a narrowing of adjacent freeway lanes to a minimum width of 11 feet (which would eliminate shoulders) and placing K-rail on the outside edge of the travel lanes to create outside work areas. Within these outside work zones, retaining walls, drainage, and outer pavement widenings would be constructed to allow for I-405 widening. The reconstruction of on- and off-ramps would be the final stage of I-405 widening.

A median work zone along I-405 for the length of the alignment would be required for erection of the guideway structure. In the median work zone, demolition of existing median and drainage infrastructure would be followed by the installation of new K-rails and installation of guideway structural components, which would include full directional freeway closures when guideway beams must be transported into the median work areas during late-night hours. Additional night and weekend directional closures would be required for installation of long-span structures over I-405 travel lanes where the guideway would transition from the median.

Aerial station construction is anticipated to last the duration of construction activities for Alternative 3 and would include the following general sequence of construction:

- Site clearing
- Utility relocation
- Construction fencing and rough grading
- CIDH pile drilling and installation
- Elevator pit excavation
- Soil and material removal

- Pile cap and pier column construction
- Concourse level and platform level falsework and cast-in-place structural concrete
- Guideway beam installation
- Elevator and escalator installation
- Completion of remaining concrete elements such as pedestrian bridges
- Architectural finishes and mechanical, electrical, and plumbing installation

Underground stations, including the Wilshire Boulevard/Metro D Line Station and the UCLA Gateway Plaza Station, would use a “cut-and-cover” construction method whereby the station structure would be constructed within a trench excavated from the surface that is covered by a temporary deck and backfilled during the later stages of station construction. Traffic and pedestrian detours would be necessary during underground station excavation until decking is in place and the appropriate safety measures are taken to resume cross traffic.

A tunnel boring machine (TBM) would be used to construct the underground segment of the guideway. The TBM would be launched from a staging area on Veteran Avenue south of Wilshire Boulevard, and head north toward an exit portal location north of Leo Baeck Temple. The southern portion of the tunnel between Wilshire Boulevard and the Bel Air Country Club would be at a depth between 80 to 110 feet from the surface to the top of the tunnel. The UCLA Gateway Plaza Station would be constructed using cut-and-cover methods. Through the Santa Monica Mountains, the tunnel would range between 30 to 300 feet deep.

Alternative 3 would require construction of a concrete casting facility for columns and beams associated with the elevated guideway. A specific site has not been identified; however, it is expected that the facility would be located on industrially zoned land adjacent to a truck route in either the Antelope Valley or Riverside County. When a site is identified, the contractor would obtain all permits and approvals necessary from the relevant jurisdiction, the appropriate air quality management entity, and other regulatory entities.

TPSS construction would require additional lane closures. Large equipment, including transformers, rectifiers, and switchgears would be delivered and installed through prefabricated modules where possible in at-grade TPSSs. The installation of transformers would require temporary lane closures on Exposition Boulevard, Beloit Avenue, and the I-405 northbound on-ramp at Burbank Boulevard.

Table 7-4 and Figure 7-9 show the potential construction staging areas for Alternative 3. Staging areas would provide the necessary space for the following activities:

- Contractors’ equipment
- Receiving deliveries
- Storing materials
- Site offices
- Work zone for excavation
- Other construction activities (including parking and change facilities for workers, location of construction office trailers, storage, staging and delivery of construction materials and permanent plant equipment, and maintenance of construction equipment)

Table 7-4. Alternative 3: Construction Staging Locations

No.	Location Description
1	Public Storage between Pico Boulevard and Exposition Boulevard, east of I-405
2	South of Dowlen Drive and east of Greater LA Fisher House
3	Federal Building Parking Lot
4	Kinross Recreation Center and UCLA Lot 36
5	North end of the Leo Baeck Temple Parking Lot (tunnel boring machine retrieval)
6	At 1400 North Sepulveda Boulevard
7	At 1760 North Sepulveda Boulevard
8	East of I-405 and north of Mulholland Drive Bridge
9	Inside of I-405 Northbound to US-101 Northbound Loop Connector, south of US-101
10	ElectroRent Building south of G Line Busway, east of I-405
11	Inside the I-405 Northbound Loop Off-Ramp at Victory Boulevard
12	Along Cabrito Road east of Van Nuys Boulevard

Source: LASRE, 2024; HTA, 2024

Figure 7-9. Alternative 3: Construction Staging Locations

Source: LASRE, 2024; HTA, 2024

7.2 Existing Conditions

7.2.1 Water Resources Study Area

The water resources study area includes surface water and groundwater resources within the Project Study Area. A variety of creeks, rivers, human-made reservoirs, and canals exist within the Project Study Area (Figure 7-10). In the northern portion of the Project Study Area, the Pacoima Wash extends to Vanowen Street between Sepulveda Boulevard and Van Nuys Boulevard. North of the Santa Monica Mountains, the Los Angeles River crosses the Project Study Area north of US-101. Encino Creek is located southwest of the junction of Interstate 405 (I-405) and US-101. Located outside and south of the Project Study Area, Ballona Creek, the Centinela Creek Channel, and the Sepulveda Channel cross near State Route 90. South of the Project Study Area, the Sepulveda Channel runs along the westside of I-405 and collects water from various catch basins and transports the water to Ballona Creek. Water from Ballona Creek ultimately discharges at the Marina del Rey Harbor.

There are several reservoirs largely concentrated in the Santa Monica Mountains. The Stone Canyon Reservoir (SCR) is located to the east of I-405 in the Santa Monica Mountains, 13 miles northwest of downtown Los Angeles. This reservoir provides water to 400,000 people in Pacific Palisades, the Santa Monica Mountains, and West Los Angeles. The Encino Reservoir is located west of I-405 within the Santa Monica Mountains in the City of Los Angeles Community of Encino. The Sepulveda Dam Recreation Area is located north of the I-405/US-101 interchange in the Valley.

7.2.2 Watershed Setting and Local Surface Water Bodies

The Project Study Area is located within the Los Angeles Watershed (HUC8) in the Upper Los Angeles River Watershed (HUC10) and the Santa Monica Bay Watershed (HUC8) in the Ballona Creek Watershed (HUC10) and the Garapito Creek-Frontal Santa Monica Bay Watershed (HUC10) (Figure 7-10). The receiving waters within the Project Study Area include the Los Angeles River with its respective tributaries. The Los Angeles River crosses the Project Study Area roughly parallel to US-101.

Figure 7-10. Alternative 3: Watersheds in the Project Study Area

Source: USGS, 2023

7.2.2.1 Los Angeles Watershed

The Los Angeles Watershed covers an area of over 824 square miles from the eastern portions of the Santa Monica Mountains, Simi Hills, and the Santa Susana Mountains in the west to the San Gabriel Mountains in the east (LARWQCB, 2014). The Los Angeles River originates at the western end of the Valley at the confluence of Arroyo Calabasas and Bell Creek. The six major tributaries along the river include Tujunga Wash, Burbank Western Storm Drain, Verdugo Wash, Arroyo Seco, Rio Hondo, and Compton Creek.

The Project Study Area is located in Reach 5 of the Los Angeles River where the river flows east for approximately 16 miles along the base of the Santa Monica Mountains. In the Valley, the river runs through low density residential neighborhoods. It continues through Reseda Park and Sepulveda Basin-a regional recreational facility with a lake, park, and wildlife area. Reach 5 of the Los Angeles River is mostly channelized with some soft-bottom stretches and acts as a transitional zone between the downstream concrete sections and the more natural and free-flowing upstream sections.

Topography throughout the coastal plain area is generally defined by gradually sloping land from the foothills of the San Gabriel Mountains to the Pacific Ocean. The coastal plain area of the Los Angeles Watershed extends from the foothills of the San Gabriel Mountains to the river mouth at the Port of Long Beach and includes communities within the Project Study Area, including Van Nuys, Encino, Bel-Air, Brentwood, and Westwood. Ground elevations range from 10,000 feet in the San Gabriel Mountains to mean sea level at the mouth of the Los Angeles River. The majority of the coastal plain is less than 1,000 feet in elevation, while the upper portion of the watershed is covered by forest and open space. Approximately 500 square miles of the watershed is highly developed with commercial, industrial, and residential uses (LARWQCB, 2014). The vast majority of land in the Los Angeles Watershed (approximately 80 percent) is developed with urban uses.

Despite extensive urbanization, the Los Angeles Watershed contains water features retaining varying degrees of natural characteristics, including Glendale Narrows, which features a rocky bottom with riprap sides, supporting riparian vegetation and recreational uses, and Compton Creek, which supports wetland habitat providing critical ecological value within the developed landscape. Both Glendale Narrows and Compton Creek are outside of the Project Study Area. In addition, the Sepulveda Flood Control Basin maintains semi-natural conditions supporting low-intensity habitat uses.

7.2.2.2 Santa Monica Bay Watershed

The Santa Monica Bay Watershed covers an area of over 414 square miles from the Santa Monica Mountains on the north from the Ventura-Los Angeles County line on the west and extending south across the Los Angeles plain to the Ballona Creek Watershed on the east (LARWQCB, 2014). South of Ballona Creek a narrow strip of wetlands between Playa del Rey and Palos Verdes drains to Santa Monica Bay. The Santa Monica Bay Watershed includes several smaller subwatershed areas, including Ballona Creek Watershed and Garapito Creek-Frontal Santa Monica Bay Watershed.

A majority of the northern portion of the Santa Monica Bay Watershed is rugged open space containing many canyons that carry runoff directly to Santa Monica Bay. Topanga and Malibu Creeks, the two largest watercourses in this area, are fed both by tributary creeks and by channelized storm drains in and near developed areas. Portions of Malibu, Agoura Hills, Westlake Village, and Los Angeles are located in the northern portion of the watershed. The mid- and southern portions of the Santa Monica Bay Watershed are more urban and contain portions of Los Angeles, Santa Monica, El Segundo, Manhattan Beach, Redondo Beach, the Palos Verdes Estates, and Rancho Palos Verdes. These areas are highly developed and contain a network of storm drains that carry runoff to the Santa Monica Bay.

Ballona Creek Watershed

The Ballona Creek Watershed is a subwatershed within the Santa Monica Bay Watershed that consists of Ballona Creek, a nine-mile-long flood protection channel that drains the Los Angeles Basin. The Ballona Creek Watershed covers approximately 130 square miles located in the western portion of the Los Angeles Basin and is made up by the Culver City, Wilshire, and Hollywood sub watersheds. The headwaters of the watershed are located in the Santa Monica Mountains to the north and the Baldwin Hills to the south. Most of the Ballona Creek drainage network has been modified into storm drains, underground culverts, and open concrete channels. Ballona Creek flows in an open concrete channel for approximately 10 miles from mid-Los Angeles through Culver City, reaching the Pacific Ocean at Playa del Rey (Marina del Rey Harbor). The Estuary portion, from Centinela Avenue to its outlet, is soft-bottomed and includes the Ballona Wetlands. A few natural channels remain in the Santa Monica Mountains and Baldwin Hills. The Sepulveda Channel, which runs along I-405 outside of the Project Study Area, is a major concrete-lined tributary to the Ballona Creek Watershed.

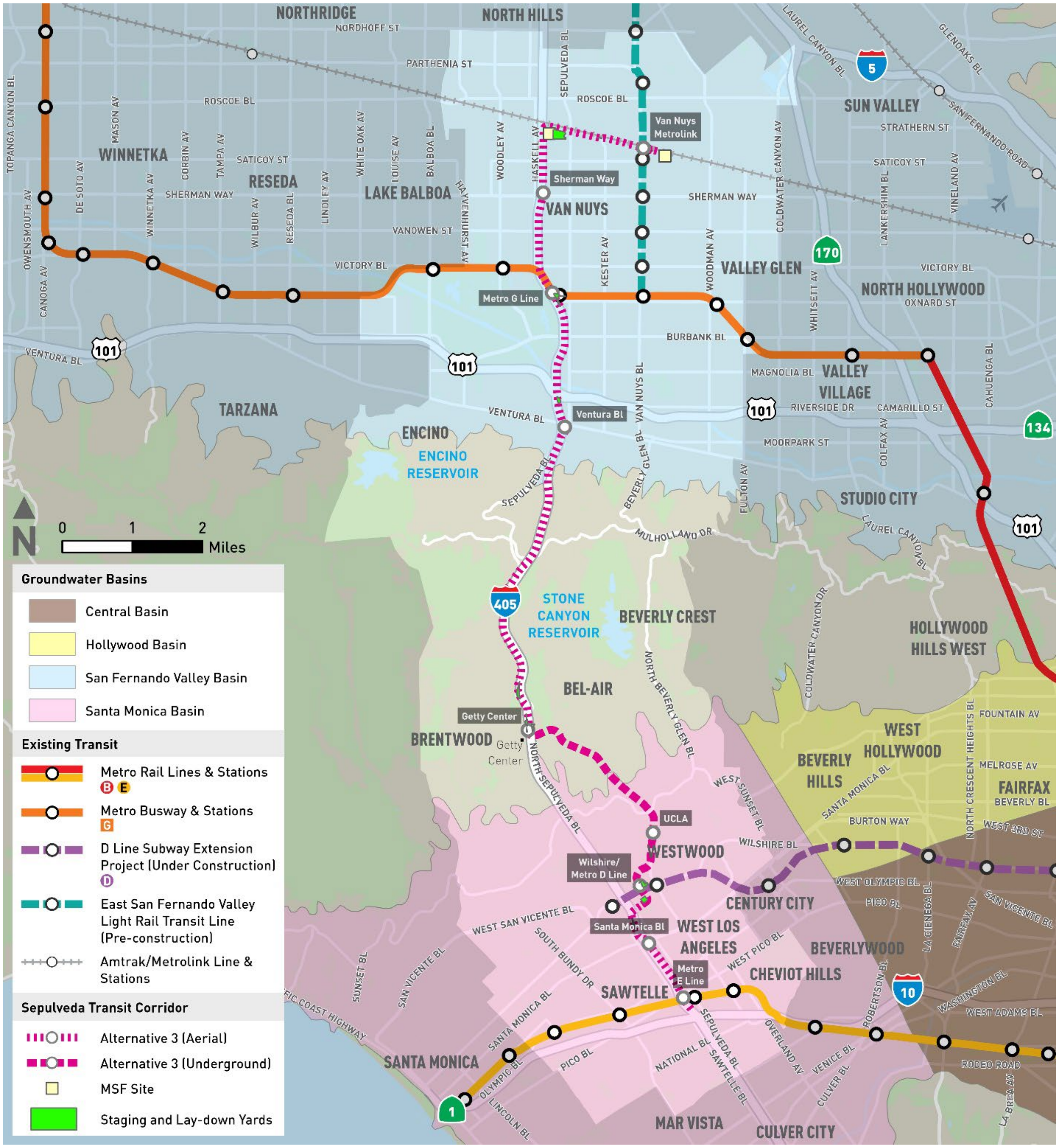
Garapito Creek-Frontal Santa Monica Bay Watershed

Garapito Creek-Frontal Santa Monica Bay Watershed is a subwatershed within the Santa Monica Bay Watershed and covers an area of approximately 130 square miles. The subwatershed is part of the Santa Monica Mountains and a majority of the subwatershed contains rugged mountainous terrain. This subwatershed includes Garapito Creek, which flows through Topanga State Park in the Santa Monica Mountains National Recreation Area. The Santa Monica Mountains are home to a diverse range of plant and animal species and provide critical habitats for wildlife, including several endangered species.

7.2.3 Groundwater

The Project Study Area is within the San Fernando Valley Groundwater Basin and the Santa Monica Subbasin within the Coastal Plain of Los Angeles (Figure 7-11). The Sustainable Groundwater Management Act designated the Santa Monica Subbasin as medium priority, and the San Fernando Valley Groundwater Basin as very low priority based on the basin prioritization (DWR, 2021). Sources of water supply in Los Angeles County include groundwater.

Figure 7-11. Alternative 3: Groundwater Basins Underlying the Project Study Area



Source: LA County Planning, 2020a

7.2.3.1 Coastal Plain of Los Angeles Groundwater Basin, Santa Monica Subbasin

The Santa Monica Subbasin underlies the northwestern part of the Coastal Plain of Los Angeles Groundwater Basin. The Los Angeles Groundwater Basin spans 32,100 acres (50.2 square miles). It is bounded by impermeable rocks of the Santa Monica Mountains on the north and by the Ballona escarpment on the south. The Santa Monica Subbasin extends from the Pacific Ocean on the west to the Inglewood fault on the east. Ballona Creek is the dominant hydrologic feature and drains surface waters to the Pacific Ocean.

Replenishment of groundwater in the Santa Monica Subbasin is mainly by percolation of precipitation and surface runoff onto the subbasin from the Santa Monica Mountains. The Inglewood fault appears to inhibit replenishment by underflow from the Central Basin to the east, though some inflow may occur at its northern end. Total storage capacity of the Santa Monica Subbasin is estimated to be about 1,100,000 acres-feet (DWR, 2020a). The groundwater storage in the subbasin and groundwater budget is unknown.

7.2.3.2 San Fernando Valley Groundwater Basin

The San Fernando Valley Groundwater Basin surface area covers over 145,000 acres (226 square miles) and includes the water-bearing sediments beneath the San Fernando Valley, Tujunga Valley, Browns Canyon, and the alluvial areas surrounding the Verdugo Mountains near La Crescenta and Eagle Rock (DWR, 2020b). The basin is bounded on the north and northwest by the Santa Susana Mountains, on the north and northeast by the San Gabriel Mountains, on the east by the San Rafael Hills, on the south by the Santa Monica Mountains and Chalk Hills, and on the west by the Simi Hills. The Valley is drained by the Los Angeles River and its tributaries. Precipitation in the Valley ranges from 15 to 23 inches per year and averages about 17 inches.

Hydrographs show variations in water levels of 5 feet to 40 feet in the western part of the basin, a variation of about 40 feet in the southern and northern parts of the basin, and a variation of about 80 feet in the eastern part of the basin. The total storage capacity of the San Fernando Valley Groundwater Basin is 3,670,000 acres-feet. The groundwater in storage in 1998 is calculated at 3,049,000 acres-feet with an additional 621,000 acres-feet of storage space available. Though the San Fernando Valley Groundwater Basin is managed by adjudication, not enough data exists to compile a complete groundwater budget. A total of about 108,500 acres-feet of groundwater was extracted from the San Fernando Valley Groundwater Basin during the 1997-1998 water year. In addition, subsurface outflow of about 300 acres-feet to the Raymond Groundwater Basin and 404 acres-feet to the Central Subbasin of the Los Angeles Coastal Plain Groundwater Basin is estimated. To balance the extraction, a total of 61,119 acres-feet of native runoff water was diverted to spreading grounds for infiltration.

7.2.4 Water Quality

7.2.4.1 Los Angeles Watershed

Surface water beneficial uses for Reach 5 of the Los Angeles River include municipal and domestic supply, industrial service supply, groundwater recharge, recreation, and water that supports various habitats and ecosystems.

According to the California State Water Resources Control Board (SWRCB) 2020-2022 303(d) list of impaired water bodies, Reach 5 of the Los Angeles River and its tributaries are listed as impaired for ammonia, benthic community effect, copper, lead, nutrients (algae), oil, toxicity, and trash (SWRCB, 2022c).

Elevated bacteria indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use at the 303(d) listed waterbodies within the Los Angeles Watershed. Recreating in waters with elevated bacteria indicator densities has been associated with adverse health effects. Specifically, local and national epidemiological studies demonstrate a causal relationship between adverse health effects and recreational water quality, as measured by bacteria indicator densities.

7.2.4.2 Ballona Creek Watershed

Surface water beneficial uses for Reach 1 of the Ballona Creek include municipal and domestic supply, industrial service supply, groundwater recharge, recreation, and water that supports various habitats and ecosystems.

Ballona Creek and Ballona Creek Estuary are on the CWA Section 303(d) list of impaired waterbodies for copper, lead, zinc, silver, cyanide, indicator bacteria, toxicity, trash, cadmium, chlordane, dichloro-diphenyl-trichloroethane (DDT), polychlorinated biphenyl (PCB), polycyclic aromatic hydrocarbons (PAH) and toxicity. Sepulveda Channel is included on the 303(d) list for copper, lead, zinc, selenium, and indicator bacteria (SWRCB, 2022c).

Elevated bacterial indicator densities are causing impairment of the REC-1 beneficial use designated for Ballona Estuary and Sepulveda Channel, limited water contact recreation designated for Ballona Creek Reach 2, and non-contact water recreation (REC-2) beneficial uses of Ballona Creek Reach 1. Recreating in waters with elevated bacterial indicator densities has long been associated with adverse human health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.

7.2.4.3 San Fernando Valley Groundwater Basin

Groundwater beneficial uses for the San Fernando Valley Groundwater Basin include water supply for municipal, domestic, industrial process, and agricultural uses. Nitrite pollution in the groundwater of the Sunland-Tujunga area within the San Fernando Valley Groundwater Basin currently precludes direct municipal uses. Since the groundwater in this area can be treated or blended (or both), it retains the municipal designation.

In the western part of the basin, calcium sulfate-bicarbonate character is dominant, and in the eastern part of the basin, calcium bicarbonate character dominates (DWR, 2020b). Total dissolved solids (TDS) range from 326 to 615 milligrams per liter (mg/L), and electrical conductivity ranges from 540 to 996 micromhos. Data from 125 public supply wells shows an average TDS content of 499 mg/L and a range from 176 to 1,160 mg/L.

A number of investigations have determined contamination of volatile organic compounds such as trichloroethylene (TCE), perchloroethylene (PCE), petroleum compounds, chloroform, nitrate, sulfate, and heavy metals. TCE, PCE, and nitrate contamination occurs in the eastern part of the basin and elevated sulfate concentration occurs in the western part of the basin.

7.2.4.4 Coastal Plain of Los Angeles Groundwater Basin, Santa Monica Subbasin

Beneficial uses for Santa Monica Subbasin within the Coastal Plain of Los Angeles include water supply for municipal, domestic, industrial process, and agricultural uses.

Impairments to the Santa Monica Subbasin is unknown to the California Department of Water Resources (DWR, 2020a). Analyses of water from seven public supply wells indicate an average TDS content of 916 mg/L and a range of 729 to 1,156 mg/L.

7.2.5 Drainage

Land in the county and cities within the Project Study Area is urbanized and largely covered with impervious surfaces associated with areas of asphalt, concrete, buildings, and other land uses that concentrate storm runoff. Stormwater and other surface water runoff are conveyed to municipal storm drains and culverts (Figure 7-12). Most local drainage networks are controlled by structural flood control measures. There is a large portion of the Project Study Area that is undeveloped, with pervious lands in the open space area of the Santa Monica Mountains.

The general stormwater drainage pattern in the southern portion of the Project Study Area (from Metro E Line Expo/Sepulveda Station along I-405 to the upper reach of the Ballona Creek Watershed) is from north to south. The majority of stormwater runoff within the Project Study Area drains into the Los Angeles County Flood Control District (LACFCD) Sepulveda Channel, which starts at the upper reach of the Ballona Creek Watershed as a large-diameter storm drain pipe that crosses under I-405 several times. This storm drain then transitions into a large drainage box culvert; further south of the Project Study Area, it becomes an open channel before confluencing with Ballona Creek, an LACFCD flood control channel.

The general stormwater drainage pattern in the northern portion of the Project Study Area in the Upper Los Angeles River Watershed is from south to north in developed storm drain systems. From the ridge of the Sepulveda Pass going north, the majority of Project Study Area stormwater drains to a California Department of Transportation (Caltrans) storm drain main that connects to an LACFCD large drainage box culvert that discharges to the Los Angeles River, an LACFCD flood control channel. Stormwater runoff in the vicinity of the proposed MSFs adjacent to the Van Nuys Metrolink/Amtrak Station at the northern end of the alignment, near the intersection of I-405 and next to the Metro G Line Station, flows into the Los Angeles River through the nearby stormwater collection system.

Figure 7-12. Alternative 3: Existing Stormwater Drainage Infrastructure

Source: LACPW, 2024

7.2.6 Flooding and Inundation

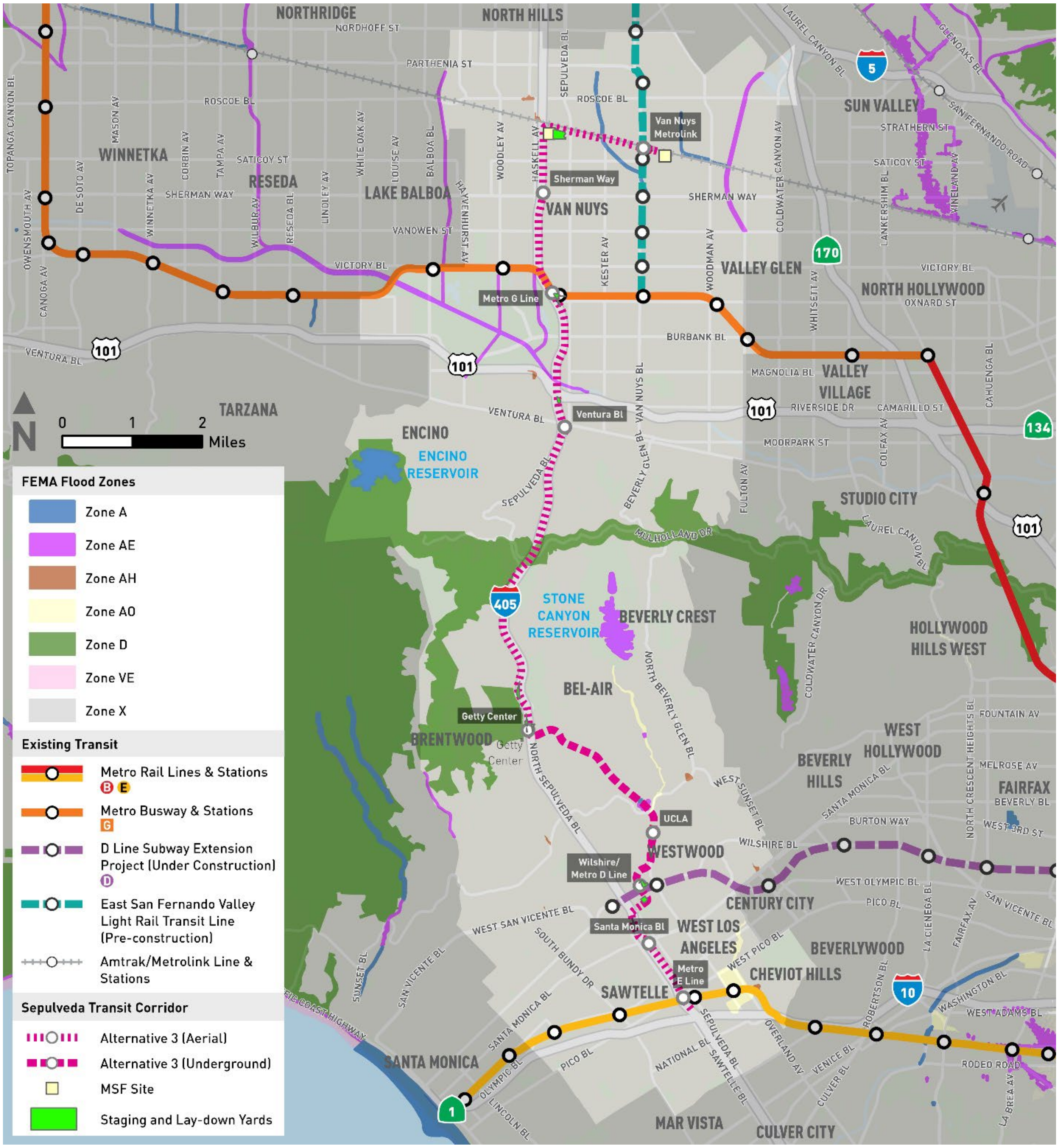
The Federal Emergency Management Agency's (FEMA) Flood Map Service Center (FEMA, 2023) was used to identify flood hazard zones within the Project Study Area. Figure 7-13 illustrates all flood hazard zones within the Project Study Area. Portions of the Project Study Area are subjected to a risk of flooding under FEMA's categorizations. The ridgetop of Santa Monica Mountains, located at Mulholland

Drive, and open space areas owned by Los Angeles County are located in Zone D. Zone D indicates that there is a risk of flooding, with unknown levels of risk. The Encino Reservoir and the SCR, located in the Santa Monica Mountains, are subject to Zones A and AE, respectively, and experience a risk of inundation with a 1 percent annual chance of flooding, alternatively known as a 100-year floodplain, since they each retain a significant amount of water. The channelized limits of the Los Angeles River, where it crosses I-405 and Sepulveda Boulevard, is also identified as Zone AE. Other small portions within the Project Study Area east of Overland Avenue are within Zones AO and AH and are subject to inundation by a 1 percent annual chance of shallow flooding. Approximately 0.44 percent of the Project Study Area is within the 100-year floodplain.

Seiches are a temporary disturbance or oscillation in the water level of an enclosed body of water, usually caused by changes in atmospheric pressure. The Encino Reservoir is located approximately 2.1 miles west of the proposed aerial alignment and median of I-405, and the SCR is located approximately 1.3 miles east of the proposed aerial alignment and I-405.

Tsunamis are large ocean waves caused by major seismic events with the potential of causing flooding in low lying coastal areas.

Figure 7-13. Alternative 3: FEMA Flood Zones



Source: LA County Planning, 2020b

7.2.7 Municipal Water Supply

Within Los Angeles County, the water supply comprises a complex system made up of state agencies and local water districts operating aqueducts, reservoirs, and groundwater basins. Approximately 33 percent of the water in the county comes from local supply sources, while the remaining supply is imported from outside of the county. Due to the county's dependence on imported water supply

sources and its vulnerability to drought, the county is constantly working to develop a diverse range of water resources (LA County Planning, 2015).

Local water supply sources include surface water from mountain runoff, groundwater, and recycled water. Imported sources of water supply include the Colorado River, the Bay-Delta in Northern California via the State Water Project, and the Owens Valley via the Los Angeles Aqueduct. Major water distributors of imported water used in the unincorporated county include the Metropolitan Water District of Southern California (MWD), Santa Clarita Valley Water Agency, Antelope Valley-East Kern Water Agency, Littlerock Creek Irrigation District, and the Palmdale Water District (LA County Planning, 2015).

The Los Angeles County Department of Public Works maintains a database of groundwater supply wells (LADPW, 2019). According to this database, the majority of groundwater wells are in the Valley with three active wells underlying Van Nuys Boulevard.

The LADWP is responsible for supplying, treating, and distributing water for domestic and industrial uses in a portion of the detailed Project Study Area. The LADWP serves an area of approximately 473 square miles with over 681,000 water service connections. LADWP draws its water from three main sources: the Los Angeles Aqueduct (from Eastern Sierra Nevada) (29 percent), the MWD (57 percent), groundwater (12 percent), and recycled water (2 percent) (LADWP, 2013).

7.3 Impacts Evaluation

7.3.1 Impact HWQ-1: Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

7.3.1.1 Operational Impacts

Alternative 3 shares all the same components described for Alternative 1, and information pertaining to regulatory compliance to address site runoff would be the same as what is presented for Alternative 1. The operational impacts discussion for Alternative 1 presents the regulatory requirements to address stormwater discharges. Table 7-5 lists the existing impervious surface area, estimated amount of new/reconstructed impervious surfaces added by the Alternative 3 components, and the estimated net impervious surface area created. The total square feet of impervious surface areas created by Alternative 3 components differs from Alternative 1 because a portion of the Alternative 3 alignment would be underground.

Table 7-5. Alternative 3: New Impervious Surface Area

Components	Existing Impervious Surface Area at Component Site (square feet)	Amount of New and Reconstructed Impervious Surface Area at Component Site (square feet)	Net Impervious Area Created by Component (square feet)
Metro E Line Station	46,023	49,037	3,014
Santa Monica Boulevard Station	13,966	39,300	25,334
Wilshire/Metro D Line Station	71,479	20,313	-51,166
UCLA Gateway Plaza Station	53,257	14,787	-38,470
Getty Center Station	3,110	42,234	39,124
Ventura Boulevard Station	105,947	87,207	-18,740
Metro G Line Station	121,677	67,364	-54,313
Sherman Way Station	7,273	52,544	45,271

Components	Existing Impervious Surface Area at Component Site (square feet)	Amount of New and Reconstructed Impervious Surface Area at Component Site (square feet)	Net Impervious Area Created by Component (square feet)
Van Nuys Metrolink Station	149,161	147,871	-1,290
Traction Power Substations	–	137,164	137,164
Totals	**571,893**	**657,821**	**85,928**
I-405 Modifications	–	1,241,460	1,241,460

Source: LASRE, 2024b

— = no data

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to related to the violation of any water quality standards or WDRs or substantial degradation of surface or groundwater quality during operation of Alternative 3 would be less than significant.

7.3.1.2 Construction Impacts

Construction of Alternative 3 would include a guideway column foundation along I-405, seven aerial rail stations, two underground rail stations, and an approximately 3.6-mile tunnel to the east of I-405. Construction of the Alternative 3 components would include site clearing and excavation, utility relocation, foundation construction, installation of support columns and beams, construction of stations, towers, junctions, and tunnels, as well as construction of MSFs, TPSSs, roadway modifications, replacement or restoration of paving, sidewalks, parking, and landscaping, and the installation of rails and vehicles. Portions of Alternative 3 south of the Wilshire Boulevard/Metro D Line Station and north of the Getty Center Station would be the same as what was previously described for Alternative 1; therefore, construction activities associated with the Alternative 3 alignment would be the same as those described for Alternative 1 and would result in the same potential stormwater discharges. The construction impacts discussion for Alternative 1 presents the regulatory requirements to address stormwater discharges. The same regulatory requirements described for Alternative 1 would also be applicable to Alternative 3 construction activities.

The proposed bored tunnel for Alternative 3 would cut through the south flanks of the Santa Monica Mountains and extend beneath the Bel-Air Country Club and UCLA campus. The depth of the proposed tunnel would range from 30 feet to 300 feet in the south flanks of the Santa Monica Mountains. As the tunnel extends through Westwood area, it would be shallower and transition to a bored tunnel at depths ranging from 80 to 110 feet. The groundwater depth is shallow by Wilshire Boulevard Metro D Line Station ranging from approximately 30 to 40 feet. There is potential for groundwater to be encountered during tunnel boring activities in areas where the tunnel invert is below groundwater level; however, proposed tunnel boring activities would not be expected to require dewatering because tunnel boring would involve a closed mode machine that would operate under the water table, and a precast concrete tunnel liner (designed for full hydrostatic pressure) would be installed post-excavation. Both of these features would substantially reduce (if not eliminate) groundwater ingress during construction.

If dewatering is required, dewatering activities would be conducted in compliance with the Los Angeles Regional Water Quality Control Board's (LARWQCB) NPDES dewatering permits, *Waste Discharge Requirements for Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties* (Order R4-2018-0125) and *Waste*

Discharge Requirements for Specified Discharges to Groundwater in the Santa Clara River and Los Angeles River Basins (Order No. 93-010), as applicable. The watertight systems (e.g., secant pile, slurry wall) to be employed during station construction would minimize groundwater intrusion, and any residual impacts would be managed under the established regulatory framework. In such cases, temporary pumps and filtration systems would be used in compliance with the applicable NPDES permits. The temporary system would be required to comply with all relevant NPDES requirements related to construction and discharges from dewatering operations. Water removed from the boreholes would be containerized and analyzed to determine the proper disposal method or possible treatment and re-use on-site. The treatment and disposal of the dewatered water would occur in accordance with the requirements of NPDES Order R4-2018-0125 and Order No. 93-010, as applicable. The WDRs require that waste be analyzed prior to being discharged in order to determine if it contains pollutants in excess of the applicable Basin Plan water quality objectives. Or if possible, the dewatered water would potentially be treated and reused on-site (e.g., for dust control or cleaning equipment) rather than being disposed.

Improper handling, storage, or disposal of construction materials used during construction activities of underground components, such as sediments, concrete waste, grouting materials, and petroleum products, would result in accidental spills and discharges that would contribute to groundwater pollution. Grouting operations, in particular, may involve the use of chemical additives and materials that, if not properly contained, could infiltrate groundwater or surface water systems. These materials may include bentonite, cement-based grouts, and chemical additives, which could alter water chemistry if discharged improperly. Uncontrolled discharge of groundwater carrying these potential pollutants would result in degradation of groundwater and surface water if it is not properly managed during construction activities. If groundwater containing contaminants such as VOCs, heavy metals, or petroleum hydrocarbons is encountered during dewatering activities, additional treatment or special disposal methods would be required to comply with applicable regulatory requirements and prevent contamination of receiving waters. BMPs would be implemented to ensure proper containment and disposal of grouting materials and wastewater, as well regular monitoring and adaptive management.

Alternative 3 would be required to comply with all applicable water quality protection laws and regulations at the federal, state, regional, and local levels, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Policies, NPDES Construction General Permit (CGP), the Municipal Separate Storm Sewer Systems (MS4) Permit, Caltrans NPDES Statewide Stormwater Permit, and the City of Los Angeles and County of Los Angeles LID Ordinance.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to the violation of any water quality standards or WDRs or substantial degradation of surface or groundwater quality during construction activities of Alternative 3 would be less than significant.

7.3.1.3 Maintenance and Storage Facilities

MSF Base Design

Maintenance of monorail vehicles and equipment would occur at the MSF Base Design. Multiple buildings would be constructed, including a multi-level maintenance-of-way building, track storage area, wash bays, ancillary storage buildings, and TPSS structure. The MSF would be constructed on parcels containing existing pervious surfaces. Additionally, the MSF Base Design compound would be in an aerial configuration, limiting the ground-level area that would be impervious to column footings and vertical circulation elements such as elevators and stairs. Therefore, the MSF Base Design would not substantially increase the existing impervious surface area at the MSF Base Design site.

Improper handling, storage, or disposal of fuels, chemical, soaps and vehicle-related fluids or improper cleaning and maintenance of equipment within the maintenance shop and train car wash building of the MSF Base Design would result in accidental spills and discharges that would contribute to water pollution.

During operations, the MSF Base Design would be required to obtain IGP coverage. An IGP SWPPP would be prepared and submitted to the SWRCB prior to operations. The IGP SWPPP would include discharge prohibitions, effluent limitations, and receiving water limitations that must be adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases. Other BMPs would also be employed, as appropriate, such as indoor/covered areas for maintenance, approved flammable/hazmat storage lockers for lubricants and other industrial liquids, drip/spill protection in maintenance areas and similar BMPs when conducting maintenance, dry clean-up practices, and dedicated enclosed areas for metal working, painting, and welding.

Construction activities such as demolition, excavation, and grading would temporarily expose bare soil, increasing the risk of erosion. Sediments (and their associated pollutants) from erosion if not properly managed would accumulate and block storm drain inlets in the vicinity of the MSF Base Design or indirectly be carried into the closest receiving water body (e.g., Pacoima Wash).

In addition to sediments, other pollutants including trash, concrete waste, and petroleum products, such as fuels, solvents, and lubricants, would degrade water quality and contribute to water pollution if not appropriately managed. The use of construction equipment and vehicles during construction of the MSF Base Design would result in spills of vehicle-related fluids that would contribute to water pollution. Improper handling, storage, or disposal of these materials or improper cleaning and maintenance of equipment would result in accidental spills and discharges that would contribute to water pollution.

Construction activities associated with foundations would involve general earthwork and concrete work to prepare the foundations. Excavations for foundations would be between 6 and 8 feet bgs, and piles would be installed up to approximately 80 feet bgs. The groundwater depth increases progressively northward along the Project Study Area up to approximately 90 feet below grade, where the alignment shifts from being adjacent to I-405 to being adjacent to the Southern California Regional Rail Authority Metrolink right-of-way (ROW) where the MSF Base Design would be located. As a result, the seepage of groundwater into boreholes would be minimal. However, in the unlikely event of seepage, water removed from the boreholes would be containerized and analyzed to determine the proper disposal method.

The MSF Base Design would be required to comply with the CGP in effect at the time of construction. In accordance with the CGP, the MSF Base Design would be required to prepare and submit a construction SWPPP, which must be submitted to the SWRCB prior to construction, and adhered to during construction of the MSF Base Design. Proper implementation of the construction SWPPP would avoid potential impacts to water quality. The construction SWPPP would identify the BMPs that would be in place to protect water quality prior to the start of construction activities and during construction of the MSF Base Design. BMP categories would include erosion control, sediment control, tracking control, wind erosion, stormwater and non-stormwater management, and materials management. Although specific temporary construction-related BMPs would be selected at the time of SWPPP preparation, potential BMPs would likely include fiber rolls, bonded-fiber matrix hydroseeding, soil furrowing, water bars, and check dams for erosion control, inlet protection (sand/gravel bags and geotextiles), silt fencing, sediment traps/basins for sediment controls, soil berming around disturbed areas, and phasing of soil disturbance during the wet season (i.e., limiting widespread grading) for effectively managing erosion and pollutant discharge during significant rainfall events.

The operation and construction of the MSF Base Design would be required to comply with all applicable water quality protection laws and regulations at the federal, state, regional, and local levels, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Policies, NPDES CGP, the MS4 Permit, and the City of Los Angeles and County of Los Angeles LID Ordinance.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to the violation of any water quality standards or WDRs or substantial degradation of surface or groundwater quality during construction and operation of the MSF Base Design would be less than significant.

MSF Design Option 1

Potential impacts associated with the MSF Design Option 1 would be the same as that previously described for the MSF Base Design. The discussion of the MSF Base Design presents the impact evaluation for the MSF Design Option 1.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to the violation of any water quality standards or WDRs or substantial degradation of surface or groundwater quality during construction and operation of the MSF Design Option 1 would be less than significant.

7.3.2 Impact HWQ-2: 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?

7.3.2.1 Operational Impacts

Alternative 3 shares similar components described for Alternative 1 except that the Alternative 3 alignment would be underground in a TBM-bored tunnel south from Getty Center Station to I-405 at Wilshire Boulevard and two stations would be underground. Information on increases in impervious surface area is provided in Table 7-5, and regulatory compliance requirements to address groundwater discharge and recharge would be the same as those presented for Alternative 1.

Operation of Alternative 3, including the underground stations, would not involve the extraction of any groundwater and would not be expected to impact groundwater supplies or groundwater recharge. Therefore, Alternative 3 would not result in a decrease in groundwater supplies or interfere substantially with groundwater recharge to the extent that Alternative 3 may impede sustainable groundwater management of the basin. Depending on final design features, exfiltration from LID/treatment BMPs may improve groundwater recharge characteristics of the area. Additionally, natural treatment of infiltrated runoff would occur, thereby improving exfiltrated water from LID and water quality additions to the groundwater table.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to groundwater supply and recharge during operations of Alternative 3 would be less than significant.

7.3.2.2 Construction Impacts

Construction activities associated with the above ground portions of the Alternative 3 alignment would be the same as those previously described for Alternative 1. The construction impacts discussion for Alternative 1 presents the regulatory compliance requirements to address groundwater impacts.

The proposed bored tunnel for Alternative 3 would cut through the south flanks of the Santa Monica Mountains and extend beneath the Bel-Air Country Club and UCLA campus. The depth of the proposed tunnel would range from 30 feet to 300 feet in the south flanks of the Santa Monica Mountains. As the tunnel extends through Westwood area, it would be shallower and transition to a bored tunnel at depths ranging from 80 to 110 feet. The groundwater depth is shallow by Wilshire Boulevard Metro D Line Station ranging from approximately 30 to 40 feet. There is potential for groundwater to be encountered during tunnel boring activities in areas where the tunnel invert is below groundwater level; however, proposed tunnel boring activities would not be expected to require dewatering because tunnel boring would involve a closed mode machine that would operate under the water table, and a precast concrete tunnel liner (designed for full hydrostatic pressure) would be installed post-excavation. Both of these features would substantially reduce (if not eliminate) groundwater ingress during construction.

Removal of groundwater that seeps into boreholes during construction may be required for the pile installations and tunneling at each of the components. If dewatering is required, groundwater would be removed, containerized, and analyzed consistent with existing applicable regulations to determine the proper disposal method, or the dewatered water would potentially be treated and reused on-site (e.g., for dust control or cleaning equipment) rather than being disposed. Dewatering would be limited to the construction phase only. Extracting large volumes of groundwater that would decrease groundwater supplies or lower the local groundwater table level would not be expected during construction. The volume of groundwater removed during construction would be monitored and documented.

Alternative 3 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Policies, NPDES CGP, the MS4 Permit, Caltrans NPDES Statewide Stormwater Permit, and the City of Los Angeles and County of Los Angeles LID Ordinance.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, construction activities are not anticipated to interfere substantially with groundwater recharge or groundwater resource supplies, and potential impacts to groundwater supply and recharge during construction of Alternative 3 would be less than significant.

7.3.2.3 Maintenance and Storage Facilities

MSF Base Design

As described in Sections 7.3.2.1 and 7.3.2.2, the MSF Base Design would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan, as well as commonly used industry standards. The MSF Base Design would include design elements that would serve to capture, treat, and re-use stormwater in accordance with current LID requirements, promoting infiltration and groundwater recharge. Operation of the MSF Base Design would not involve the extraction of any groundwater. Dewatering would be limited to the construction phase only.

Extracting large volumes of groundwater that would decrease groundwater supplies would not be expected during construction.

Due to the limited amount of groundwater seepage anticipated to be encountered and with adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to groundwater supply and recharge during construction and operation of the MSF Base Design would be less than significant.

MSF Design Option 1

The previous impact evaluation provided in Section 7.3.2.3 MSF Base Design is applicable to the MSF Design Option 1. With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to groundwater supply and recharge during construction and operation of the MSF Design Option 1 would be less than significant.

7.3.3 Impact HWQ-3: 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, in a manner which would:

- **i) result in substantial erosion or siltation on- or off-site;**
- **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?**

7.3.3.1 Operational Impacts

While Alternative 3 includes two underground stations, both in areas with existing impervious surfaces, Alternative 3 shares all of the same components described for Alternative 1. Therefore, information on regulatory compliance to address site runoff and drainage would be the same as Alternative 1. The operational impacts discussion for Alternative 1 presents the regulatory requirements to address drainage. Operation of Alternative 3 would not result in substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff that would cause flooding, creation of runoff that would exceed drainage system capacity, or provide additional sources of polluted runoff, or impede or redirect flood flows.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff that would cause flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows during operation of Alternative 3 would be less than significant.

7.3.3.2 Construction Impacts

Alternative 3 shares all of the same components described for Alternative 1. Therefore, Alternative 1 presents the impact evaluation of the Alternative 3 components and discusses the regulatory requirements to address site runoff and drainage. Construction of Alternative 3 would also include tunneling and cut-and-cover construction. Drilling fluids and tunnel spoils generated during boring operations would be properly managed to prevent pollutant discharge. Cut-and-cover construction for underground stations may temporarily increase erosion or sediment discharge, which would be addressed through erosion control BMPs such as silt fencing and sediment basins.

As previously discussed, Alternative 3 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, as well as commonly used industry standards. These would include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Polices, NPDES CGP regulations, Caltrans NPDES Statewide Stormwater Permit, Basin Plan (LARWQCB, 2014), City of Los Angeles Municipal Code, the City of Los Angeles and County of Los Angeles LID Ordinance, and all other applicable regulations for all construction activities.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff that would cause flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows during construction of Alternative 3 would be less than significant.

7.3.3.3 Maintenance and Storage Facilities

MSF Base Design

As described in Sections 7.3.3.1 and 7.3.3.2, the MSF Base Design would comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, as well as commonly used industry standards. The MSF Base Design would include design elements that would serve to capture and re-use stormwater in accordance with current LID requirements — thereby minimizing the potential for increased runoff rates/amounts, flooding, erosion and siltation, and pollutant runoff. LID design features would slow (detain or retain) stormwater, which would reduce the runoff volume discharged from the MSF Base Design and would decrease the peak runoff discharge velocity for design storms. As a result, LID BMPs would offset any increases in flow and changes to drainage patterns post-MSF Base Design; therefore, less flow with fewer pollutants would be transported through the conveyance systems, which would minimize flooding and pollutant transport into surface receiving waters. In addition, existing drainage patterns would be maintained as much as possible and operation of the MSF Base Design would not alter the course of any streams or rivers or impede or redirect flows.

During operations, the MSF Base Design would be required to obtain IGP coverage. An IGP SWPPP would be prepared and submitted to the SWRCB prior to operations. The IGP SWPPP would include discharge prohibitions, effluent limitations, and receiving water limitations that must be adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases.

Construction activities would comply with all applicable federal and local floodplain regulations. Any impacts to existing drainage patterns would be temporary. Implementation of runoff control measures and pollution prevention practices in compliance with the construction SWPPP would control stormwater runoff from the project site to minimize construction-related flooding impacts, erosion, and the discharge of potential pollutants, including sedimentation/siltation.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff that would cause flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows during construction and operation of the MSF Base Design would be less than significant.

MSF Design Option 1

The previous impact evaluation provided in Section 7.3.3.3 for the MSF Base Design is applicable to the MSF Design Option 1. The MSF Design Option 1 would be required to comply with applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan, as well as commonly used industry standards. The MSF Design Option 1 would include design elements that would serve to capture and re-use stormwater in accordance with current LID requirements — thereby minimizing the potential for increased runoff rates/amounts, flooding, erosion and siltation, and pollutant runoff. In addition, existing drainage patterns would be maintained as much as possible and operation of the MSF Design Option 1 would not alter the course of any streams or rivers or impede or redirect flows. Construction activities would comply with all applicable federal and local floodplain regulations and any impacts to existing drainage patterns would be temporary. Implementation of BMPs in compliance with the construction SWPPP would control stormwater runoff from the MSF Design Option 1 construction areas to minimize construction-related flooding impacts, erosion, and the discharge of potential pollutants, including sedimentation/siltation.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff that would cause flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows during construction and operation of the MSF Design Option 1 would be less than significant.

7.3.4 Impact HWQ-4: Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

7.3.4.1 Operational Impacts

Alternative 3 shares all of the same components described for Alternative 1; therefore, information on potential flood risks would be the same as Alternative 1. The majority of the Alternative 3 alignment would be constructed outside of the FEMA-designated 100-year floodplain and would be in an inland area that is not in proximity to the ocean; therefore, the risk of inundation by a tsunami is considered low. A small segment of Alternative 3 — located at the ridgetop of the Santa Monica Mountains at Mulholland Drive and open space areas owned by Los Angeles County — would be located in Zone D, which is an area of undetermined flood hazard. The channelized limits of the Los Angeles River, where it crosses I-405 and Sepulveda Boulevard, is identified as Zone AE, and other small portions within Alternative 3 east of Overland Avenue are within Zones AO and AH and are subject to inundation by a 1 percent annual chance of flooding. There are no 500-year flood plains within the Project Study Area.

The Encino Reservoir, located on the west side of the Project Study Area approximately 2.1 miles west of the Alternative 3 alignment, and the SCR, located on the eastern side of the Project Study Area approximately 1.3 miles east of the Alternative 3 alignment, are subject to Zones A and AE, respectively. These reservoirs have a risk of inundation with a 1 percent annual chance of flooding since they retain a significant amount of water; however, given the distance of Alternative 3 from the reservoirs, any oscillation and subsequent release of water in the reservoirs as part of a seiche would not inundate

Alternative 3. Therefore, there would be no potential for risk of release of pollutants due to inundation by seiche.

The Los Angeles River and Ballona Creek are the major flood control measures for draining stormwater from the Project Study Area and directing it safely to the San Pedro Bay and Santa Monica Bay, respectively. The risk related to flooding would be considered low as Alternative 3 would extend along well-developed areas that maintain storm drainage and water runoff control. In addition, as previously described, Alternative 3 would implement LID BMPs to offset any increases in runoff rates due to the creation of new impervious surface areas. LID design features would reduce the runoff volume discharged from Alternative 3, thereby minimizing the potential for flooding.

The Alternative 3 alignment would not result in impacts to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways. Alternative 3 would not alter the ability of floodways to convey the 100-year flows and there would be negligible change to the floodplain extents.

Alternative 3 would have no impacts related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during operations would be less than significant.

7.3.4.2 Construction Impacts

Impacts related to release of pollutants due to inundation by flood, tsunami, or seiche during construction activities would be similar to operational impacts. Similar to operational impacts, the majority of the Alternative 3 alignment would be constructed outside of the FEMA-designated 100-year floodplain and would be in an inland area that is not in proximity to the ocean; therefore, the risk of inundation by a tsunami is considered low.

Given the distance of Alternative 3 from Encino and Stone Canyon Reservoirs, any oscillation and subsequent release of water in the reservoirs as part of a seiche would not inundate Alternative 3. Therefore, there would be low potential for risk of release of pollutants due to inundation by seiche.

The Los Angeles River and Ballona Creek are the major flood control measures for draining stormwater from the Project Study Area and directing it safely to the San Pedro Bay and Santa Monica Bay, respectively. The risk related to flooding would be considered low as Alternative 3 would extend along well-developed areas that maintain storm drainage and water runoff control.

The Alternative 3 alignment would not result in impacts to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways.

Alternative 3 would have no impacts related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during construction would be less than significant.

7.3.4.3 Maintenance and Storage Facilities

MSF Base Design

Impacts related to release of pollutants due to inundation by flood, tsunami, or seiche during operational and construction activities of the MSF Base Design would be similar to operational and construction activities of the rest of Alternative 3 components. The MSF Base Design would be constructed outside of the FEMA-designated 100-year floodplain and would be in an inland area that is not in proximity to the ocean; therefore, the risk of inundation by a tsunami is considered low.

Given the distance of the MSF Base Design from Encino and Stone Canyon Reservoirs, any oscillation and subsequent release of water in the reservoirs as part of a seiche would not inundate the MSF Base

Design. Therefore, there would be low potential for risk of release of pollutants due to inundation by seiche.

The Los Angeles River and Ballona Creek are the major flood control measures for draining stormwater from the Project Study Area and directing it safely to the San Pedro Bay and Santa Monica Bay, respectively. The risk related to flooding would be considered low as the MSF Base Design is within a well-developed area that maintains storm drainage and water runoff control. The MSF Base Design would not result in impacts to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways.

The MSF Base Design would have no impacts related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during construction or operation of the MSF Base Design would be less than significant.

MSF Design Option 1

The previous impact evaluation provided in Section 7.3.4.3, MSF Base Design, is applicable to the MSF Design Option 1. The MSF Design Option 1 would have no impacts related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during construction or operation of the MSF Design Option 1 would be less than significant.

7.3.5 Impact HWQ-5: Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

7.3.5.1 Operational Impacts

Alternative 3 would require routine maintenance that would be performed by the system operator. Potential pollutants (e.g., petroleum products/lubricants, paints, solvents, and other Alternative 3-related products) used during Alternative 3 operations and maintenance would contribute to water pollution. Uncontrolled discharge of runoff carrying these potential pollutants would result in impacts to water quality in receiving waters, which would violate federal, state, and local water quality standards and WDRs, if not appropriately managed. As previously discussed, Alternative 3 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan (LARWQCB, 2014), Caltrans NPDES Statewide Stormwater Permit, the City of Los Angeles and County of Los Angeles LID Ordinance*, Ballona Creek Watershed Management Plan* (LADPW, 2004), and the *LA River Master Plan* (Los Angeles County and Los Angeles County Depart of Public Works, 2022)*,* as well as commonly used industry standards.

The City of Los Angeles city ordinances related to stormwater control and its LID requirements for sustainability contain compliance provisions for BMPs that must address water infiltration, treatment, and peak-flow discharge. The City of Los Angeles provides guidance to developers of newly developed projects for compliance with regulatory standards through the LID Standards Manual.

As previously described, Alternative 3 would comply with all applicable regulations for all operational activities, including adherence to an approved LID Plan that would identify the BMPs for Alternative 3 operations. Alternative 3 would incorporate into its design on-site drainage systems and sustainability features that would meet regulatory requirements of the applicable plans for the protection of water resources.

The LID Plan would identify the BMPs for the Alternative 3 post-construction design (i.e., operational characteristics to control/treat runoff for the range of potential pollutants). Alternative 3 would include design elements that would serve to infiltrate, capture, and re-use stormwater in accordance with current LID requirements — thereby minimizing the potential for increased runoff volumes/rates and pollutant transport. LID design features, such as depressed landscape gardens for runoff retention and infiltration, permeable surfaces to reduce runoff volume, hardscape replacement with pervious or planted substitutions, bioswales or artistic water features that creatively convey runoff into planted or pervious areas, roof downspout discharges to vegetated areas, and rainwater cisterns and other on-site stormwater retention methods, would slow (detain or retain) stormwater, which would reduce the runoff volume discharged from Alternative 3 and would decrease the peak runoff discharge velocity for design storms — which also would ultimately reduce the amount of stormwater runoff burden into the city's stormwater conveyance systems. As a result, less flow with fewer pollutants would be transported through the conveyance systems, and ultimately into surface waters, including ancillary exfiltration to the groundwater table. Additionally, natural treatment of infiltrated runoff would occur, thereby improving exfiltrated water from LID and water quality additions to the groundwater table.

Additionally, operation of Alternative 3 would not involve the extraction of any groundwater. Therefore, Alternative 3 would not be expected to result in a decrease in groundwater supplies or interfere substantially with groundwater recharge to the extent that Alternative 3 may impede sustainable groundwater management of the basin. Depending on final design features, exfiltration from LID/treatment BMPs is anticipated to improve groundwater recharge characteristics of the area.

Alternative 3 is anticipated to require IGP coverage for maintenance facilities, fueling operations, equipment cleaning/washing operations, and TPSSs. As such, an IGP SWPPP would be prepared and submitted to the SWRCB prior to and adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases. Other BMPs may also be employed as appropriate, such as indoor/covered areas for maintenance, approved flammable/hazmat storage lockers for lubricants and other industrial liquids, drip/spill protection in maintenance areas and similar BMPs when conducting tower maintenance, dry clean-up practices, and dedicated enclosed areas for metal working, painting, and welding.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during operations of Alternative 3 would be less than significant.

7.3.5.2 Construction Impacts

Construction of the Alternative 3 components would be conducted in several phases, including site preparation and installation of foundations and columns; erection of stations; construction of tunnels; and construction of ancillary components, including replacement or restoration of paving, sidewalk, and landscaping.

Construction of Alternative 3 has the potential to impact the water quality of downstream receiving waters if applicable and appropriate BMPs are not implemented. Construction activities such as demolition of existing site structures and excavation for foundations would temporarily expose bare soil, and temporarily increase the potential for erosion. Exposed or stockpiled soils would also be at increased risk for erosion. Uncontrolled erosion and discharge of sediments and other potential pollutants would affect water quality in Alternative 3 receiving waters (e.g., the Pacoima Wash, Tujunga Wash, and Los Angeles River) if not appropriately managed by proper implementation of the construction SWPPP.

In addition to sediments, other pollutants including trash, concrete waste, and petroleum products (e.g., heavy equipment fuels, solvents, and lubricants) would contribute to stormwater pollution if not appropriately managed. The use of construction equipment and other vehicles during Alternative 3 construction would result in spills of oil, brake fluid, grease, antifreeze, or other vehicle-related fluids, which would contribute to water quality impacts. Improper handling, storage, or disposal of fuels and vehicle-related fluids or improper cleaning and maintenance of equipment would result in accidental spills and discharges that would contribute to water pollution.

Nuisance groundwater may be encountered during installation of piles for each of the components, which may result in degradation of groundwater quality if not addressed properly. Additionally, potentially impacted groundwater may result in degradation of surface water if it is not properly managed during construction activities. Although construction activities are not anticipated to interfere substantially with groundwater recharge, groundwater resource supplies, or groundwater quality, any accidental interference would be handled in accordance with applicable federal, state, regional, and local laws and regulations, groundwater management plans, and WDRs for groundwater discharge.

As discussed previously, Alternative 3 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan (LARWQCB, 2014), as well as commonly used industry standards. Alternative 3 would comply with the Caltrans NPDES Statewide Stormwater Permit, the NPDES CGP, the MS4 Permit, the City of Los Angeles and County of Los Angeles LID Ordinance, the City of Los Angeles Municipal Code, and all other applicable regulations for all construction activities.

In accordance with the CGP, Alternative 3 would have a construction SWPPP, which must be submitted to the SWRCB prior to construction, and adhered to during construction. Proper implementation of the construction SWPPP would avoid potential impacts to water quality. The construction SWPPP would identify the BMPs that would be in place to protect water quality prior to the start of construction activities and during construction. The BMP categories would include erosion control, sediment control, non-stormwater management, and materials management BMPs. Although specific temporary construction-related BMPs would be selected at the time of SWPPP preparation, potential BMPs would likely include fiber rolls, bonded-fiber matrix hydroseeding, soil furrowing, water bars, and check dams for erosion control, inlet protection (sand/gravel bags and geotextiles), silt fencing, sediment traps/basins for sediment controls, soil berming around disturbed areas, and phasing of soil disturbance during the wet season (i.e., limiting widespread grading) for effectively managing erosion and pollutant discharge during significant rainfall events.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during construction of Alternative 3 would be less than significant.

7.3.5.3 Maintenance and Storage Facilities

MSF Base Design

Sections 7.3.5.1 and 7.3.5.2 present the impact evaluation for the MSF Base Design. The MSF Base Design would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans. The MSF Base Design would incorporate into its design on-site drainage systems and sustainability features that would meet regulatory requirements of the applicable plans for the protection of water resources. The MSF Base Design would include design elements that would serve to capture, treat, and re-use stormwater in accordance with current LID requirements, promoting infiltration and groundwater recharge. The MSF Base Design would not be expected to result in a decrease in groundwater supplies or interfere substantially with groundwater recharge to the extent that the MSF Base Design may impede sustainable groundwater management of the basin. Dewatering would be limited to the construction phase only. Extracting large volumes of groundwater that would decrease groundwater supplies would not be expected during construction.

With adherence to existing regulations and with proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during construction and operation of the MSF Base Design would be less than significant.

MSF Design Option 1

The previous impact evaluation provided in Section 7.3.5.3 MSF Base Design is applicable to the MSF Design Option 1. With adherence to existing regulations and with proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during construction and operation of the MSF Design Option 1 would be less than significant.

7.4 Mitigation Measures

7.4.1 Operational Impacts

No mitigation measures are required.

7.4.2 Construction Impacts

No mitigation measures are required.

7.4.3 Impacts After Mitigation

No mitigation measures are required; impacts are less than significant.

8 ALTERNATIVE 4

8.1 Alternative Description

Alternative 4 is a heavy rail transit (HRT) system with a hybrid underground and aerial guideway track configuration that would include four underground stations and four aerial stations. This alternative would provide transfers to five high-frequency fixed guideway transit and commuter rail lines, including the Los Angeles County Metropolitan Transportation Authority's (Metro) E, Metro D, and Metro G Lines, the East San Fernando Valley Light Rail Transit Line, and the Metrolink Ventura County Line. The length of the alignment between the terminus stations would be approximately 13.9 miles, with 5.7 miles of aerial guideway and 8.2 miles of underground configuration.

The four underground and four aerial HRT stations would be as follows:

1. Metro E Line Expo/Sepulveda Station (underground)
2. Santa Monica Boulevard Station (underground)
3. Wilshire Boulevard/Metro D Line Station (underground)
4. UCLA Gateway Plaza Station (underground)
5. Ventura Boulevard/Sepulveda Boulevard Station (aerial)
6. Metro G Line Sepulveda Station (aerial)
7. Sherman Way Station (aerial)
8. Van Nuys Metrolink Station (aerial)

8.1.1 Operating Characteristics

8.1.1.1 Alignment

As shown on Figure 8-1, from its southern terminus station at the Metro E Line Expo/Sepulveda Station, the alignment of Alternative 4 would run underground north through the Westside of Los Angeles (Westside) and the Santa Monica Mountains to a tunnel portal south of Ventura Boulevard in the San Fernando Valley (Valley). At the tunnel portal, the alignment would transition to an aerial guideway that would generally run above Sepulveda Boulevard before curving eastward along the south side of the Los Angeles-San Diego-San Luis Obispo (LOSSAN) rail corridor to the northern terminus station adjacent to the Van Nuys Metrolink/Amtrak Station.

The proposed southern terminus station would be located underground east of Sepulveda Boulevard between the existing elevated Metro E Line tracks and Pico Boulevard. Tail tracks for vehicle storage would extend underground south of National Boulevard east of Sepulveda Boulevard. The alignment would continue north beneath Bentley Avenue before curving northwest to an underground station at the southeast corner of Santa Monica Boulevard and Sepulveda Boulevard. From the Santa Monica Boulevard Station, the alignment would continue and curve eastward toward the Wilshire Boulevard/Metro D Line Station beneath the Metro D Line Westwood/UCLA Station, which is currently under construction as part of the Metro D Line Extension Project. From there, the underground alignment would curve slightly to the northeast and continue beneath Westwood Boulevard before reaching the UCLA Gateway Plaza Station.

Figure 8-1. Alternative 4: Alignment

Source: STCP, 2024; HTA, 2024

From the UCLA Gateway Plaza Station, the alignment would turn to the northwest beneath the Santa Monica Mountains to the east of Interstate 405 (I-405). South of Mulholland Drive, the alignment would curve to the north to reach a tunnel portal at Del Gado Drive, just east of I-405 and south of Sepulveda Boulevard.

The alignment would transition from an underground configuration to an aerial guideway structure after exiting the tunnel portal and would continue northeast to the Ventura Boulevard/Sepulveda Boulevard

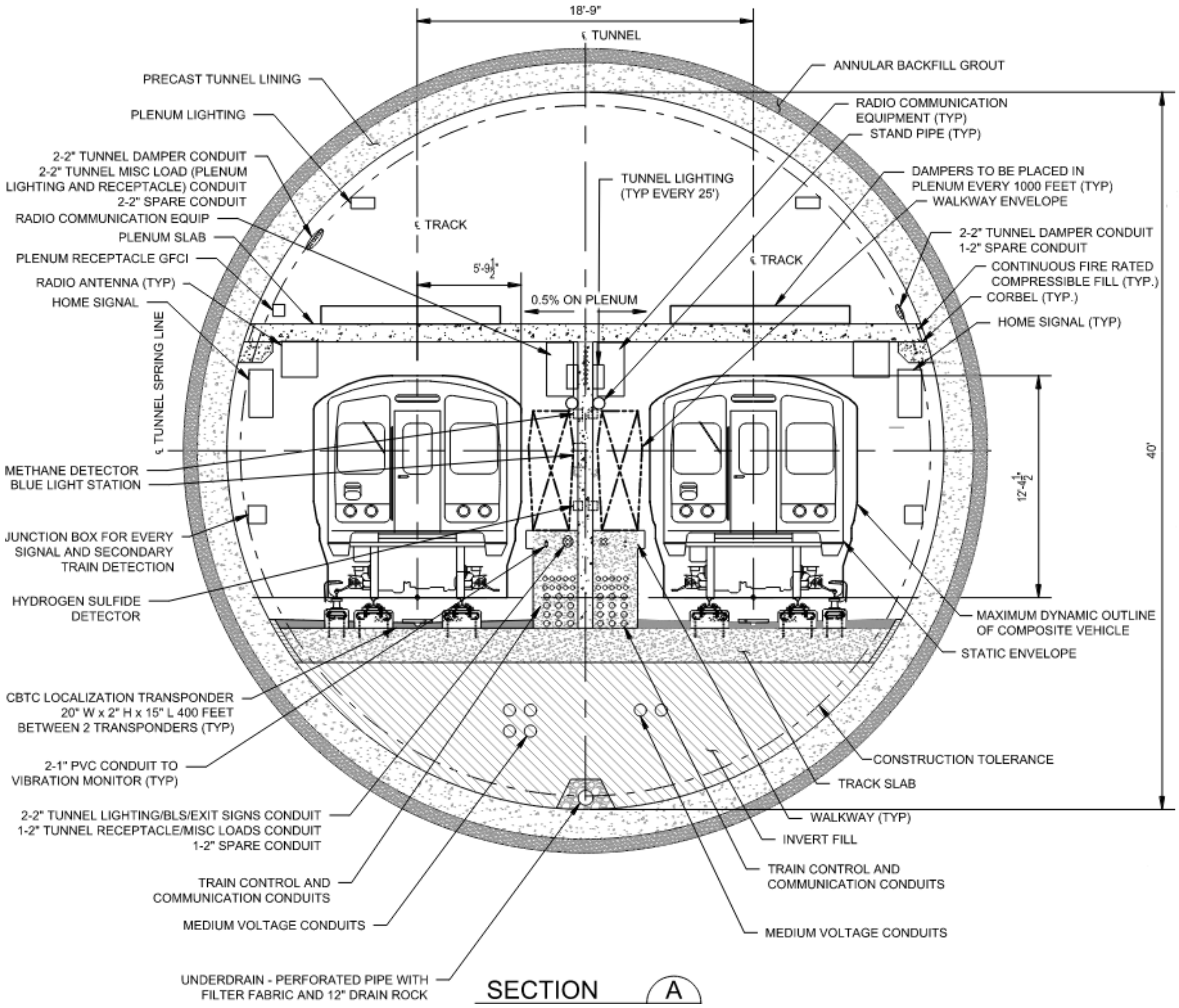
Station located over Dickens Street, immediately west of the Sepulveda Boulevard and Dickens Street intersection. North of the station, the aerial guideway would transition to the center median of Sepulveda Boulevard. The aerial guideway would continue north on Sepulveda Boulevard and cross over U.S. Highway 101 (US-101) and the Los Angeles River before continuing to the Metro G Line Sepulveda Station, immediately south of the Metro G Line Busway. Overhead utilities along Sepulveda Boulevard in the Valley would be undergrounded where they would conflict with the guideway or its supporting columns.

The aerial guideway would continue north above Sepulveda Boulevard where it would reach the Sherman Way Station just south of Sherman Way. After leaving the Sherman Way Station, the alignment would continue north before curving to the southeast to parallel the LOSSAN rail corridor on the south side of the existing tracks. Parallel to the LOSSAN rail corridor, the guideway would conflict with the existing Willis Avenue Pedestrian Bridge, which would be demolished. The alignment would follow the LOSSAN rail corridor before reaching the proposed northern terminus Van Nuys Metrolink Station located adjacent to the existing Metrolink/Amtrak Station. Tail tracks and yard lead tracks would descend to a proposed at-grade maintenance and storage facility (MSF) east of the northern terminus station. Modifications to the existing pedestrian underpass to the Metrolink platforms to accommodate these tracks would result in reconfiguration of an existing rail spur serving City of Los Angeles Department of Water and Power (LADWP) property.

8.1.1.2 Guideway Characteristics

Alternative 4 would utilize a single-bore tunnel configuration for underground tunnel sections, with an outside diameter of approximately 43.5 feet. The tunnel would include two parallel tracks with 18.75-foot track spacing in tangent sections separated by a continuous central dividing wall throughout the tunnel. Inner walkways would be constructed adjacent to the two tracks. Inner and outer walkways would be constructed within tunnel sections near the track crossovers. At the crown of tunnel, a dedicated air plenum would be provided by constructing a concrete slab above the railway corridor. The air plenum would allow for ventilation throughout the underground portion of the alignment. Figure 8-2 illustrates these components at a typical cross-section of the underground guideway.

Figure 8-2. Typical Underground Guideway Cross-Section

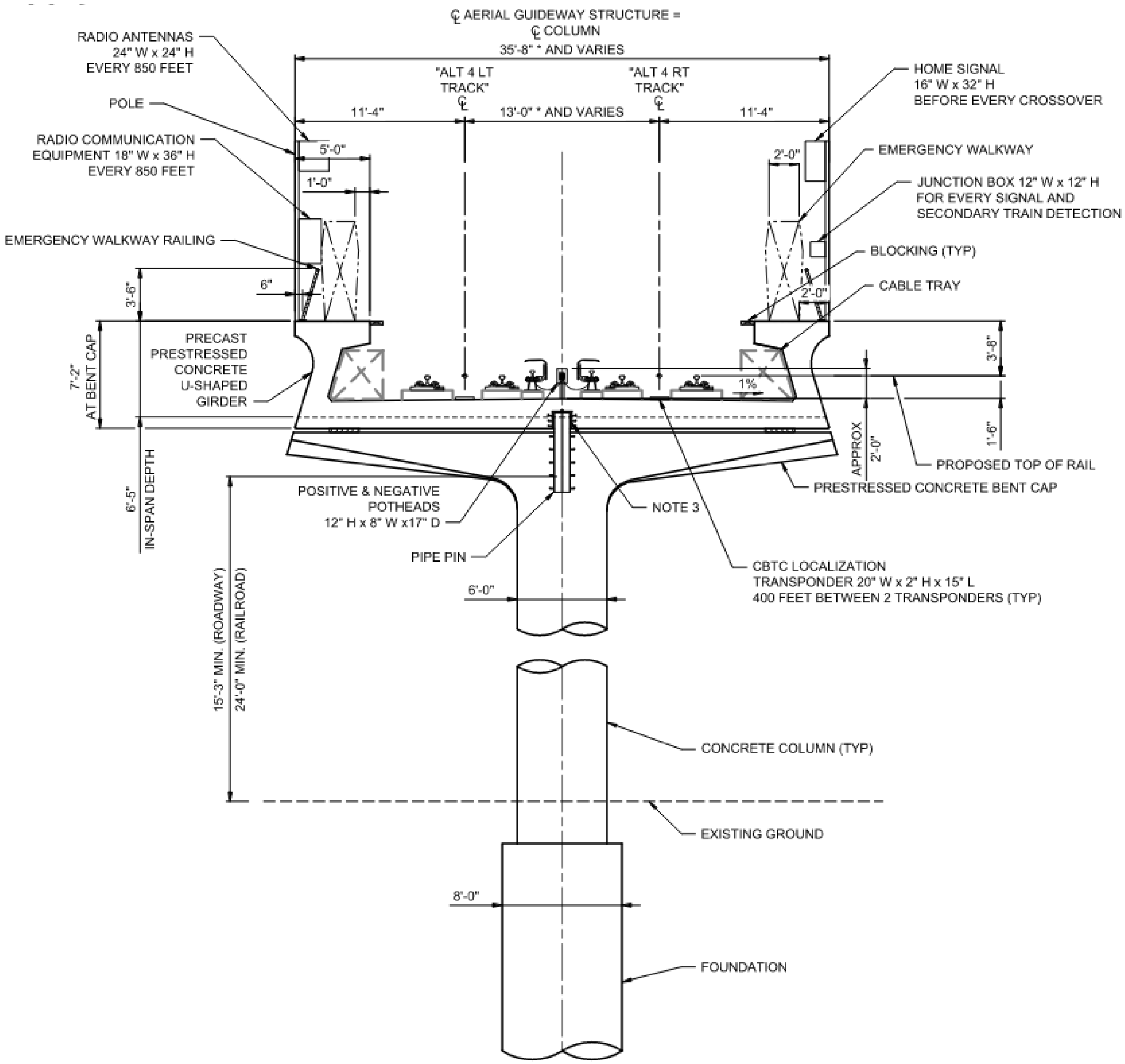


Source: STCP, 2024

In aerial sections, the guideway would be supported by either single columns or straddle-bents. Both types of structures would support a U-shaped concrete girder and the HRT track. The aerial guideway would be approximately 36 feet wide. The track would be constructed on the concrete girders with direct fixation and would maintain a minimum of 13 feet between the centerlines of the two tracks. On the outer side of the tracks, emergency walkways would be constructed with a minimum width of 2 feet.

The single-column pier would be the primary aerial structure throughout the aerial portion of the alignment. Crash protection barriers would be used to protect columns located in the median of Sepulveda Boulevard in the Valley. Figure 8-3 shows a typical cross-section of the single-column aerial guideway.

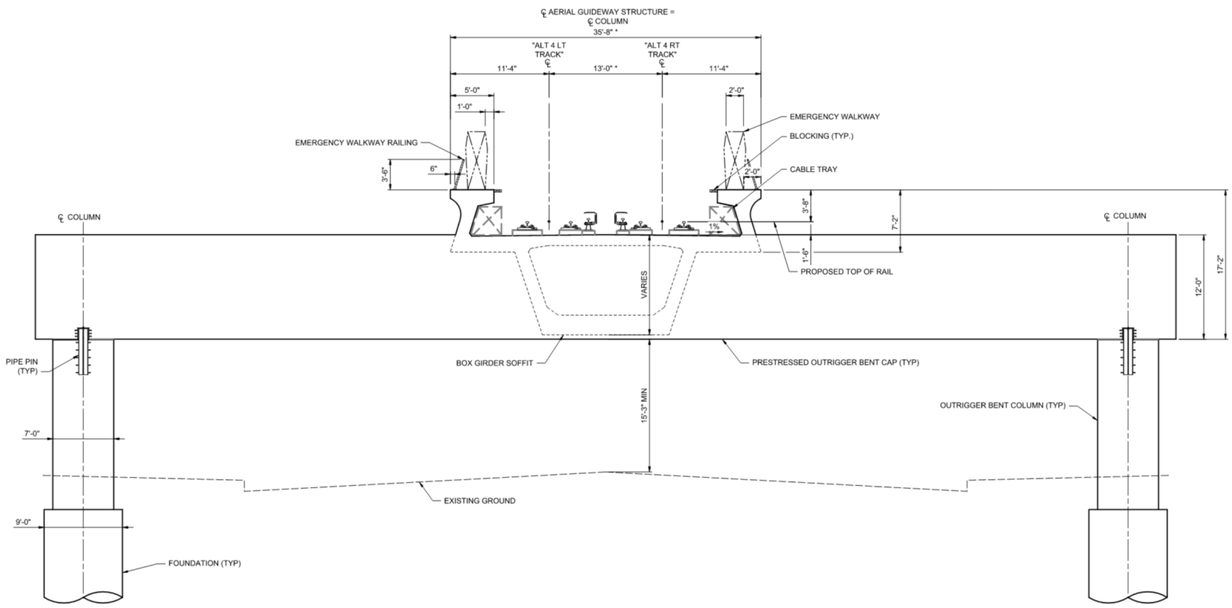
Figure 8-3. Typical Aerial Guideway Cross-Section



Source: STCP, 2024

In order to span intersections and maintain existing turn movements, sections of the aerial guideway would be supported by straddle bents, a concrete straddle-beam placed atop two concrete columns constructed outside of the underlying roadway. Figure 8-4 illustrates a typical straddle-bent configuration.

Figure 8-4. Typical Aerial Straddle-Bent Cross-Section



Source: STCP, 2024

8.1.1.3 Vehicle Technology

Alternative 4 would utilize steel-wheel HRT trains, with automated train operations and planned peak-period headways of 2.5 minutes and off-peak-period headways ranging from 4 to 6 minutes. Each train could consist of three or four cars with open gangways between cars. The HRT vehicle would have a maximum operating speed of 70 miles per hour; actual operating speeds would depend on the design of the guideway and distance between stations. Train cars would be approximately 10 feet wide with three double doors on each side. Each car would be approximately 72 feet long with capacity for 170 passengers. Trains would be powered by a third rail.

8.1.1.4 Stations

Alternative 4 would include four underground stations and four aerial stations with station platforms measuring 280 feet long for both station configurations. The aerial stations would be constructed a minimum of 15.25 feet above ground level, supported by rows of dual columns with 8-foot diameters. The southern terminus station would be adjacent to the Metro E Line Expo/Sepulveda Station, and the northern terminus station would be adjacent to the Van Nuys Metrolink/Amtrak Station.

All stations would be side-platform stations where passengers would select and travel to station platforms depending on their direction of travel. All stations would include 20-foot-wide side platforms separated by 30 feet for side-by-side trains. Aerial station platforms would be covered, but not enclosed. Each underground station would include an upper and lower concourse level prior to reaching the train platforms. Each aerial station, except for the Sherman Way Station, would include a mezzanine level prior to reaching the station platforms. At the Sherman Way Station, separate entrances on opposite sides of the street would provide access to either the northbound or southbound platform with an overhead pedestrian walkway providing additional connectivity across platforms. Each station would have a minimum of two elevators, two escalators, and one stairway from the ground level to the concourse or mezzanine.

Stations would include automatic, bi-parting fixed doors along the edges of station platforms. These platform screen doors would be integrated into the automatic train control system and would not open unless a train is stopped at the platform.

The following information describes each station, with relevant entrance, walkway, and transfer information. Bicycle parking would be provided at each station.

Metro E Line Expo/Sepulveda Station

- This underground station would be located just north of the existing Metro E Line Expo/Sepulveda Station, on the east side of Sepulveda Boulevard.
- A station entrance would be located on the east side of Sepulveda Boulevard north of the Metro E Line.
- A walkway to transfer to the Metro E Line would be provided at street level within the fare paid zone.
- A 126-space parking lot would be located immediately north of the station entrance, east of Sepulveda Boulevard. Passengers would also be able to park at the existing Metro E Line Expo/Sepulveda Station parking facility, which provides 260 parking spaces.

Santa Monica Boulevard Station

- This underground station would be located under the southeast corner of Santa Monica Boulevard and Sepulveda Boulevard.
- The station entrance would be located on the south side of Santa Monica Boulevard between Sepulveda Boulevard and Bentley Avenue.
- No dedicated station parking would be provided at this station.

Wilshire Boulevard/Metro D Line Station

- This underground station would be located beneath the Metro D Line tracks and platform under Gayley Avenue between Wilshire Boulevard and Lindbrook Drive.
- Station entrances would be provided on the northeast corner of Wilshire Boulevard and Gayley Avenue and on the northeast corner of Lindbrook Drive and Gayley Avenue. Passengers would also be able to use the Metro D Line Westwood/UCLA Station entrances to access the station platform.
- A direct internal station transfer to the Metro D Line would be provided at the south end of the station.
- No dedicated station parking would be provided at this station.

UCLA Gateway Plaza Station

- This underground station would be located underneath Gateway Plaza on the University of California, Los Angeles (UCLA) campus.
- Station entrances would be provided on the north side of Gateway Plaza and on the east side of Westwood Boulevard across from Strathmore Place.
- No dedicated station parking would be provided at this station.

Ventura Boulevard/Sepulveda Boulevard Station

- This aerial station would be located west of Sepulveda Boulevard spanning over Dickens Street.

- A station entrance would be provided on the west side of Sepulveda Boulevard south of Dickens Street.
- A 52-space parking lot would be located adjacent to the station entrance on the southwest corner of the Sepulveda Boulevard and Dickens Street intersection, and an additional 40-space parking lot would be located on the northwest corner of the same intersection.

Metro G Line Sepulveda Station

- This aerial station would be located over Sepulveda Boulevard immediately south of the Metro G Line Busway.
- A station entrance would be provided on the west side of Sepulveda Boulevard south of the Metro G Line Busway.
- An elevated pedestrian walkway would connect the platform level of the proposed station to the planned aerial Metro G Line Busway platforms within the fare paid zone.
- Passengers would be able to park at the existing Metro G Line Sepulveda Station parking facility, which has a capacity of 1,205 parking spaces. Currently, only 260 parking spaces are used for transit parking. No additional automobile parking would be provided at the proposed station.

Sherman Way Station

- This aerial station would be located over Sepulveda Boulevard between Sherman Way and Gault Street.
- Station entrances would be provided on either side of Sepulveda Boulevard south of Sherman Way.
- A 46-space parking lot would be located on the northwest corner of the Sepulveda Boulevard and Gault Street intersection, and an additional 76-space parking lot would be located west of the station along Sherman Way.

Van Nuys Metrolink Station

- This aerial station would span Van Nuys Boulevard, just south of the LOSSAN rail corridor.
- The primary station entrance would be located on the east side of Van Nuys Boulevard just south of the LOSSAN rail corridor. A secondary station entrance would be located between Raymer Street and Van Nuys Boulevard.
- An underground pedestrian walkway would connect the station plaza to the existing pedestrian underpass to the Metrolink/Amtrak platform outside the fare paid zone.
- Existing Metrolink Station parking would be reconfigured, maintaining approximately the same number of spaces, but 66 parking spaces would be relocated west of Van Nuys Boulevard. Metrolink parking would not be available to Metro transit riders.

8.1.1.5 Station-to-Station Travel Times

Table 8-1 presents the station-to-station distance and travel times at peak period for Alternative 4. The travel times include both run time and dwell time. Dwell time is 30 seconds for transfer stations and 20 seconds for other stations. Northbound and southbound travel times vary slightly because of grade differentials and operational considerations at end-of-line stations.

Table 8-1. Alternative 4: Station-to-Station Travel Times and Station Dwell Times

From Station	To Station	Distance (miles)	Northbound Station-to-Station Travel Time (seconds)	Southbound Station-to-Station Travel Time (seconds)	Dwell Time (seconds)
Metro E Line Station					*30*
Metro E Line	Santa Monica Boulevard	0.9	89	86	—
Santa Monica Boulevard Station					*20*
Santa Monica Boulevard	Wilshire/Metro D Line	0.9	91	92	—
Wilshire/Metro D Line Station					*30*
Wilshire/Metro D Line	UCLA Gateway Plaza	0.7	75	68	—
UCLA Gateway Plaza Station					*20*
UCLA Gateway Plaza	Ventura Boulevard	6.1	376	366	—
Ventura Boulevard Station					*20*
Ventura Boulevard	Metro G Line	1.9	149	149	—
Metro G Line Station					*30*
Metro G Line	Sherman Way	1.4	110	109	—
Sherman Way Station					*20*
Sherman Way	Van Nuys Metrolink	1.9	182	180	—
Van Nuys Metrolink Station					*30*

Source: STCP, 2024

— = no data

8.1.1.6 Special Trackwork

Alternative 4 would include 10 double crossovers throughout the alignment, enabling trains to cross over to the parallel track. Each terminus station would include a double crossover immediately north and south of the station. Except for the Santa Monica Boulevard Station, each station would have a double crossover immediately south of the station. The remaining crossovers would be located along the alignment midway between the UCLA Gateway Plaza Station and the Ventura Boulevard Station.

8.1.1.7 Maintenance and Storage Facility

The MSF for Alternative 4 would be located east of the Van Nuys Metrolink Station and would encompass approximately 46 acres. The MSF would be designed to accommodate 184 rail cars and would be bounded by single-family residences to the south, the LOSSAN rail corridor to the north, Woodman Avenue on the east, and Hazeltine Avenue and industrial manufacturing enterprises to the west. Trains would access the site from the fixed guideway's tail tracks at the northwest corner of the site. Trains would then travel southeast to maintenance facilities and storage tracks.

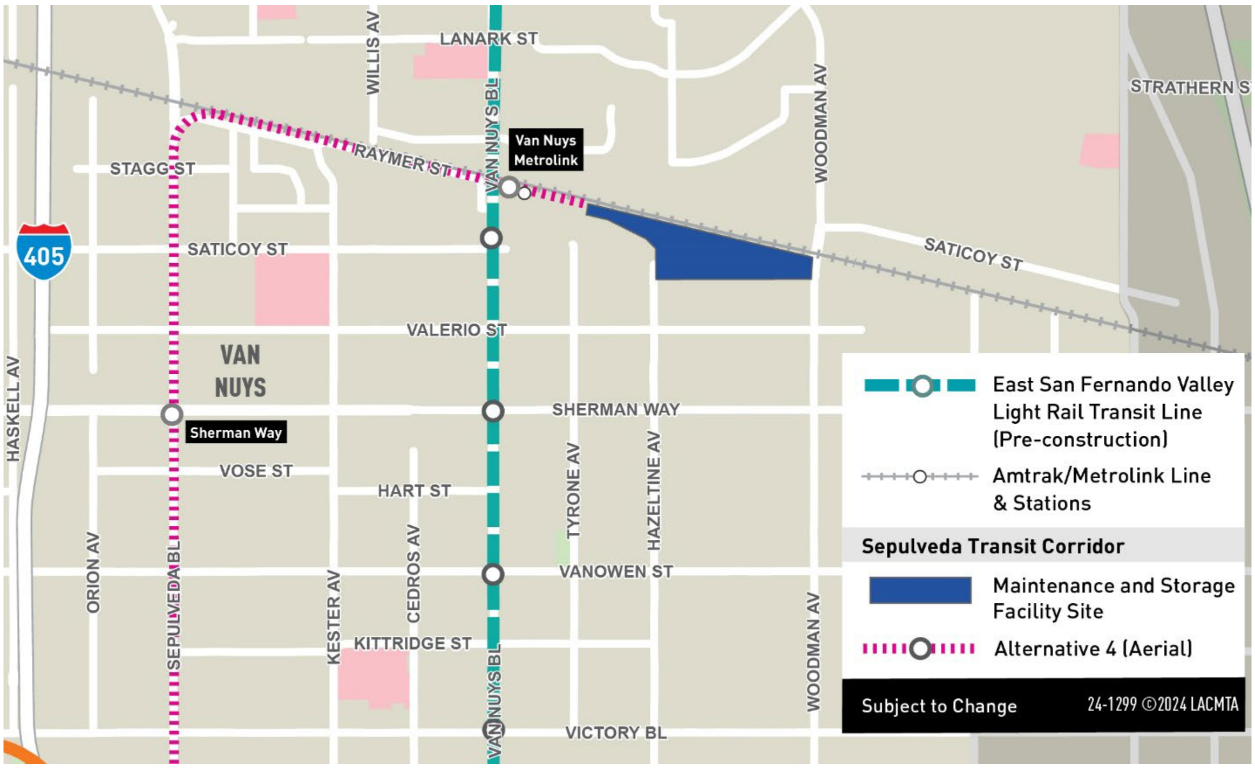
The site would include the following facilities:

- Two entrance gates with guard shacks
- Main shop building
- Maintenance-of-way building
- Storage tracks
- Carwash building
- Cleaning and inspections platforms
- Material storage building
- Hazmat storage locker

- Traction power substation (TPSS) located on the west end of the MSF to serve the mainline
- TPSS located on the east end of the MSF to serve the yard and shops
- Parking area for employees
- Grade separated access roadway (over the HRT tracks at the east end of the facility, and necessary drainage)

Figure 8-5 shows the location of the MSF site for Alternative 4.

Figure 8-5. Alternative 4: Maintenance and Storage Facility Site



Source: STCP, 2024; HTA, 2024

8.1.1.8 Traction Power Substations

TPSSs transform and convert high voltage alternating current supplied from power utility feeders into direct current suitable for transit operation. Twelve TPSS facilities would be located along the alignment and would be spaced approximately 0.5 to 2.5 miles apart. TPSS facilities would generally be located within the stations, adjacent to the tunnel through the Santa Monica Mountains, or within the MSF. TPSSs would be approximately 2,000 to 3,000 square feet. Table 8-2 lists the TPSS locations for Alternative 4.

Figure 8-6 shows the TPSS locations along the Alternative 4 alignment.

Table 8-2. Alternative 4: Traction Power Substation Locations

TPSS No.	Location Description	Configuration
1	TPSS 1 would be located east of Sepulveda Boulevard and north of the Metro E Line.	Underground (within station)
2	TPSS 2 would be located south of Santa Monica Boulevard between Sepulveda Boulevard and Bentley Avenue.	Underground (within station)
3	TPSS 3 would be located at the southeast corner of UCLA Gateway Plaza.	Underground (within station)
4	TPSS 4 would be located south of Bellagio Road and west of Stone Canyon Road.	Underground (adjacent to tunnel)
5	TPSS 5 would be located west of Roscomare Road between Donella Circle and Linda Flora Drive.	Underground (adjacent to tunnel)
6	TPSS 6 would be located east of Loom Place between Longbow Drive and Vista Haven Road.	Underground (adjacent to tunnel)
7	TPSS 7 would be located west of Sepulveda Boulevard between the I-405 Northbound On-Ramp and Dickens Street.	At-grade (within station)
8	TPSS 8 would be located west of Sepulveda Boulevard between the Metro G Line Busway and Oxnard Street.	At-grade (within station)
9	TPSS 9 would be located at the southwest corner of Sepulveda Boulevard and Sherman Way.	At-grade (within station)
10	TPSS 10 would be located south of the LOSSAN rail corridor and north of Raymer Street and Kester Avenue.	At-grade
11	TPSS 11 would be located south of the LOSSAN rail corridor and east of the Van Nuys Metrolink Station.	At-grade (within MSF)
12	TPSS 12 would be located south of the LOSSAN rail corridor and east of Hazeltine Avenue.	At-grade (within MSF)

Source: STCP, 2024; HTA, 2024

Figure 8-6. Alternative 4: Traction Power Substation Locations

Source: STCP, 2024; HTA, 2024

8.1.1.9 Roadway Configuration Changes

Table 8-3 lists the roadway changes necessary to accommodate the guideway of Alternative 4. Figure 8-7 shows the location of roadway changes in the Sepulveda Transit Corridor Project (Project) Study Area, and Figure 8-8 shows detail of the street vacation at Del Gado Drive.

In addition to the changes made to accommodate the guideway, as listed in Table 8-3, roadways and sidewalks near stations would be reconstructed, resulting in modifications to curb ramps and driveways.

Table 8-3. Alternative 4: Roadway Changes

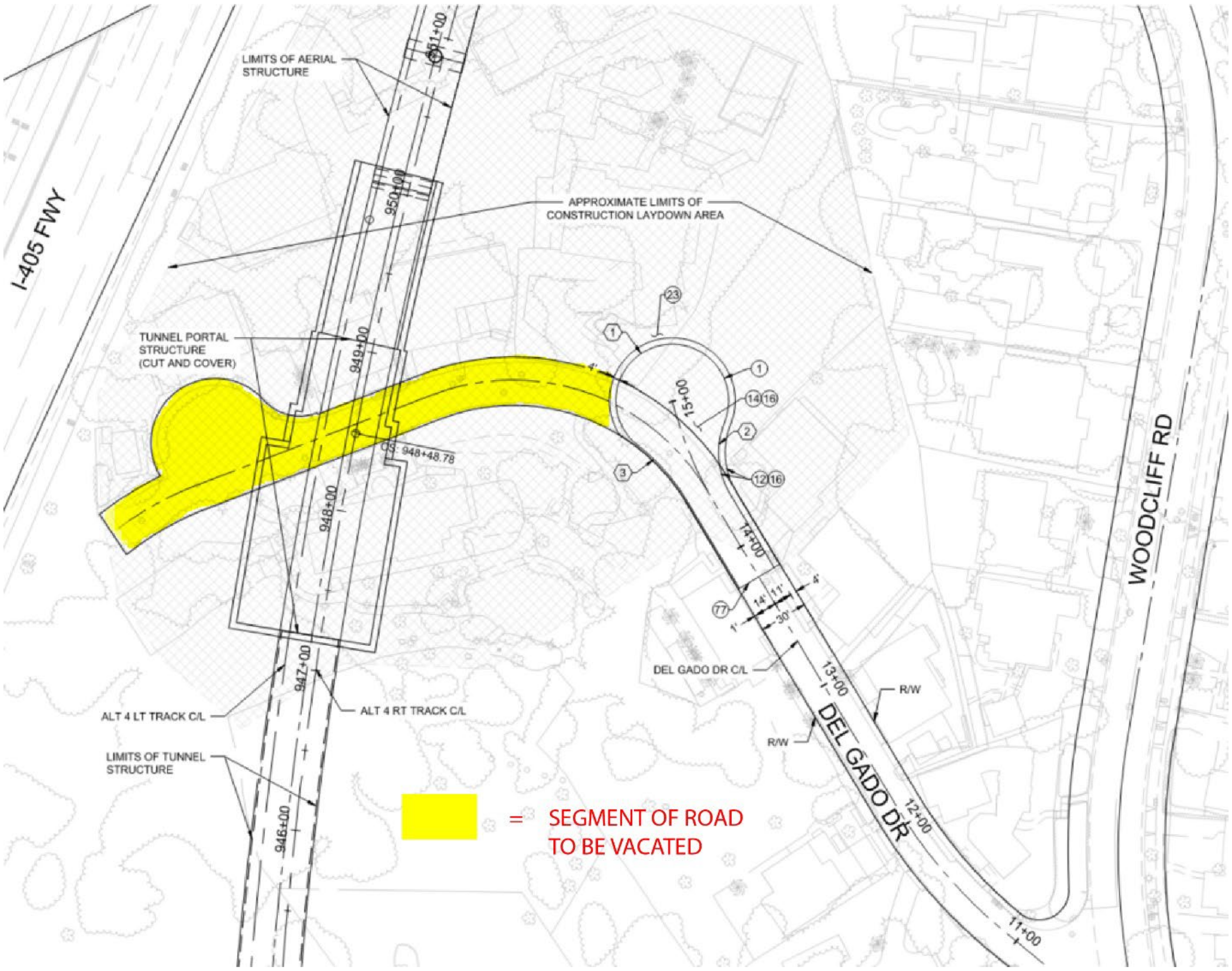
Location	From	To	Description of Change
Del Gado Drive	Woodcliff Road	Not Applicable	Vacation of approximately 325 feet of Del Gado Drive east of I-405 to accommodate tunnel portal
Sepulveda Boulevard	Ventura Boulevard	Raymer Street	Construction of raised median and removal of all on-street parking on the southbound side of the street and some on-street parking on the northbound side of the street to accommodate aerial guideway columns
Sepulveda Boulevard	La Maida Street	Not Applicable	Prohibition of left turns to accommodate aerial guideway columns
Sepulveda Boulevard	Valleyheart Drive South, Hesby Street, Hartsook Street, Archwood Street, Hart Street, Leadwell Street, Covello Street	Not Applicable	Prohibition of left turns to accommodate aerial guideway columns
Raymer Street	Kester Avenue	Keswick Street	Reconstruction resulting in narrowing of width and removal of parking on the westbound side of the street to accommodate aerial guideway columns

Source: STCP, 2024; HTA, 2024

Figure 8-7. Alternative 4: Roadway Changes

Source: STCP, 2024; HTA, 2024

Figure 8-8. Alternative 4: Street Vacation at Del Gado Drive



Source: STCP, 2024; HTA, 2024

8.1.1.10 Ventilation Facilities

For ventilation of the alignment's underground portion, a plenum within the crown of the tunnel would provide a separate compartment for air circulation and allow multiple trains to operate between stations. Each underground station would include a fan room with additional ventilation facilities. Alternative 4 would also include a stand-alone ventilation facility at the tunnel portal on the northern end of the tunnel segment, located east of I-405 and south of Del Gado Drive. Within this facility, ventilation fan rooms would provide both emergency ventilation, in case of a tunnel fire, and regular ventilation, during non-revenue hours. The facility would also house sump pump rooms to collect water from various sources, including stormwater; wash water (from tunnel cleaning); and water from a fire-fighting incident, system testing, or pipe leaks.

8.1.1.11 Fire/Life Safety – Emergency Egress

Within the tunnel segment, emergency walkways would be provided between the center dividing wall and each track. Sliding doors would be located in the central dividing wall at required intervals to connect the two sides of the railway with a continuous walkway to allow for safe egress to a point of safety (typically at a station) during an emergency. Similarly, the aerial guideway would include two emergency walkways with safety railing located on the outer side of the tracks. Access to tunnel segments for first responders would be through stations and the portal.

8.1.2 Construction Activities

Temporary construction activities for Alternative 4 would occur within project work zones at permanent facility locations, construction staging and laydown areas, and construction office areas. Construction of the transit facilities through substantial completion is expected to have a duration of 8 ¼ years. Early works, such as site preparation, demolition, and utility relocation, could start in advance of construction of the transit facilities.

For the guideway, Alternative 4 would consist of a single-bore tunnel through the Westside and Santa Monica Mountains. The tunnel would be comprised of two separate segments, one running north from the southern terminus to the UCLA Gateway Plaza Station (Westside segment), and the other running south from the portal in the San Fernando Valley to the UCLA Gateway Plaza Station (Santa Monica Mountains segment). Two tunnel boring machines (TBM) with approximately 45-foot-diameter cutting faces would be used to construct the two tunnel segments underground. For the Westside segment, the TBM would be launched from Staging Area No. 1 in Table 8-4 at Sepulveda Boulevard and National Boulevard. For the Santa Monica Mountains segment, the TBM would be launched from Staging Area No. 4 in the San Fernando Valley. Both TBMs would be extracted from the UCLA Gateway Plaza Station Staging Area No. 3 in Table 8-4. Figure 8-9 shows the location of construction staging locations along the Alternative 4 alignment.

Table 8-4. Alternative 4: On-Site Construction Staging Locations

No.	Location Description
1	Commercial properties on southeast corner of Sepulveda Boulevard and National Boulevard
2	North side of Wilshire Boulevard between Veteran Avenue and Gayley Avenue
3	UCLA Gateway Plaza
4	Residential properties on both sides of Del Gado Drive and south side of Sepulveda Boulevard adjacent to I-405
5	West of Sepulveda Boulevard between Valley Vista Boulevard and Sutton Street
6	West of Sepulveda Boulevard between US-101 and Sherman Oaks Castle Park
7	Lot behind Los Angeles Fire Department Station 88
8	Commercial property on southeast corner of Sepulveda Boulevard and Raymer Street
9	South of the LOSSAN rail corridor east of Van Nuys Metrolink Station, west of Woodman Avenue

Source: STCP, 2024; HTA, 2024

Figure 8-9. Alternative 4: On-Site Construction Staging Locations

Source: STCP, 2024; HTA, 2024

The distance from the surface to the top of the tunnel for the Westside tunnel segment would vary from approximately 40 feet to 90 feet depending on the depth needed to construct the underground stations. The depth of the Santa Monica Mountains tunnel segment would vary from approximately 470 feet as it passes under the Santa Monica Mountains to 50 feet near UCLA. The tunnel segment through the Westside would be excavated in soft ground, while the tunnel through the Santa Monica Mountains would be excavated primarily in hard ground or rock as geotechnical conditions transition from soft to hard ground near the UCLA Gateway Plaza Station.

The aerial guideway viaduct would be primarily situated in the center of Sepulveda Boulevard in the San Fernando Valley, with guideway columns located in both the center and outside of the right-of-way of Sepulveda Boulevard. This would result in a linear work zone spanning the full width of Sepulveda Boulevard along the length of the aerial guideway. Three to five main phases would be required to construct the aerial guideway. A phased approach would allow travel lanes along Sepulveda Boulevard to remain open as construction individually occupies either the center, left, or right side of the roadway via the use of lateral lane shifts. Additional lane closures on side streets may be required along with appropriate detour routing.

The aerial guideway would comprise a mix of simple spans and longer balanced cantilever spans ranging from 80 to 250 feet in length. The repetitive simple spans would be utilized when guideway bent is located within the center median of Sepulveda Boulevard and would be constructed using Accelerated Bridge Construction (ABC) segmental span-by-span technology. Longer balanced cantilever spans would be provided at locations such as freeways, arterials, or street crossings, and would be constructed using ABC segmental balance cantilever technology. Foundations would consist of cast-in-drilled-hole (CIDH) shafts with both precast and cast-in-place structural elements. During construction of the aerial guideway, multiple crews would work on components of the guideway simultaneously.

Construction work zones would also be co-located with future MSF and station locations. All work zones would comprise the permanent facility footprint with additional temporary construction easements from adjoining properties.

The Metro E Line, Santa Monica Boulevard, Wilshire Boulevard/Metro D Line, and UCLA Gateway Plaza Stations would be constructed using a "cut-and-cover" method whereby the station structure would be constructed within a trench excavated from the surface with a portion or all being covered by a temporary deck and backfilled during the later stages of station construction. Traffic and pedestrian detours would be necessary during underground station excavation until decking is in place and the appropriate safety measures are taken to resume cross traffic. Constructing the Ventura Boulevard/Sepulveda Boulevard, Metro G Line Sepulveda, Sherman Way, and Van Nuys Metrolink Stations would include construction of CIDH elevated viaduct with two parallel side platforms supported by outrigger bents.

In addition to work zones, Alternative 4 would require construction staging and laydown areas at multiple locations along the alignment as well as off-site staging areas. Construction staging areas would provide the necessary space for the following activities:

- Contractors' equipment
- Receiving deliveries
- Testing of soils for minerals or hazards
- Storing materials
- Site offices
- Work zone for excavation
- Other construction activities (including parking and change facilities for workers, location of construction office trailers, storage, staging and delivery of construction materials and permanent plant equipment, and maintenance of construction equipment)

A larger, off-site staging area would be used for temporary storage of excavated material from both tunneling and station cut-and-cover excavation activities. Table 8-4 and Figure 8-9 present potential construction staging areas along the alignment for Alternative 4. Table 8-5 and Figure 8-10 present candidate sites for off-site staging and laydown areas.

Table 8-5. Alternative 4: Potential Off-Site Construction Staging Locations

No.	Location Description
S1	East of Santa Monica Airport Runway
S2	Ralph’s Parking Lot in Westwood Village
N1	West of Sepulveda Basin Sports Complex, south of the Los Angeles River
N2	West of Sepulveda Basin Sports Complex, north of the Los Angeles River
N3	Metro G Line Sepulveda Station Park & Ride Lot
N4	North of Roscoe Boulevard and Hayvenhurst Avenue
N5	LADWP property south of the LOSSAN rail corridor, east of Van Nuys Metrolink Station

Source: STCP, 2024; HTA, 2024

Figure 8-10. Alternative 4: Potential Off-Site Construction Staging Locations

Source: STCP, 2024; HTA, 2024

Construction of the HRT guideway between the Van Nuys Metrolink Station and the MSF would require reconfiguration of an existing rail spur serving LADWP property. The new location of the rail spur would require modification to the existing pedestrian undercrossing at the Van Nuys Metrolink Station.

Alternative 4 would require construction of a concrete casting facility for tunnel lining segments because no existing commercial fabricator capable of producing tunnel lining segments for a large-diameter tunnel exists within a practical distance of the Project Study Area. The site of the MSF would initially be used for this casting facility. The casting facility would include casting beds and associated casting equipment, storage areas for cement and aggregate, and a field quality control facility, which would need to be constructed on-site. When a more detailed design of the facility is completed, the contractor would obtain all permits and approvals necessary from the City of Los Angeles, the South Coast Air Quality Management District, and other regulatory entities.

As areas of the MSF site begin to become available following completion of pre-casting operations, construction of permanent facilities for the MSF would begin, including construction of surface buildings such as maintenance shops, administrative offices, train control, traction power and systems facilities. Some of the yard storage track would also be constructed at this time to allow delivery and inspection of passenger vehicles that would be fabricated elsewhere. Additional activities occurring at the MSF during the final phase of construction would include staging of trackwork and welding of guideway rail.

8.2 Existing Conditions

8.2.1 Water Resources Study Area

The water resources study area includes surface water and groundwater resources within the Project Study Area. A variety of creeks, rivers, human-made reservoirs, and canals exist within the Project Study Area (Figure 8-11). In the northern portion of the Project Study Area, the Pacoima Wash extends to Vanowen Street between Sepulveda Boulevard and Van Nuys Boulevard. North of the Santa Monica Mountains, the Los Angeles River crosses the Project Study Area north of US-101. Encino Creek is located southwest of the junction of I-405 and US-101. Located outside and south of the Project Study Area, Ballona Creek, the Centinela Creek Channel, and the Sepulveda Channel cross near State Route 90. South of the Project Study Area, the Sepulveda Channel runs along the westside of I-405 and collects water from various catch basins and transports the water to Ballona Creek. Water from Ballona Creek ultimately discharges at the Marina del Rey Harbor.

There are several reservoirs largely concentrated in the Santa Monica Mountains. The Stone Canyon Reservoir (SCR) is located to the east of I-405 in the Santa Monica Mountains, 13 miles northwest of downtown Los Angeles. This reservoir provides water to 400,000 people in Pacific Palisades, the Santa Monica Mountains, and West Los Angeles. The Encino Reservoir is located west of I-405 within the Santa Monica Mountains in the City of Los Angeles Community of Encino. The Sepulveda Dam Recreation Area is located north of the I-405/US-101 interchange in the Valley.

8.2.2 Watershed Setting and Local Surface Water Bodies

The Project Study Area is located within the Los Angeles Watershed (HUC8) in the Upper Los Angeles River Watershed (HUC10) and the Santa Monica Bay Watershed (HUC8) in the Ballona Creek Watershed (HUC10) and the Garapito Creek-Frontal Santa Monica Bay Watershed (HUC10) (Figure 8-11). The receiving waters within the Project Study Area include the Los Angeles River with its respective tributaries. The Los Angeles River crosses the Project Study Area roughly parallel to US-101.

Figure 8-11. Alternative 4: Watersheds in the Project Study Area

Source: USGS, 2023

8.2.2.1 Los Angeles Watershed

The Los Angeles Watershed covers an area of over 824 square miles from the eastern portions of the Santa Monica Mountains, Simi Hills, and the Santa Susana Mountains in the west to the San Gabriel Mountains in the east (LARWQCB, 2014). The Los Angeles River originates at the western end of the Valley at the confluence of Arroyo Calabasas and Bell Creek. The six major tributaries along the river

include Tujunga Wash, Burbank Western Storm Drain, Verdugo Wash, Arroyo Seco, Rio Hondo, and Compton Creek.

The Project Study Area is located in Reach 5 of the Los Angeles River where the river flows east for approximately 16 miles along the base of the Santa Monica Mountains. In the Valley, the river runs through low density residential neighborhoods. It continues through Reseda Park and Sepulveda Basin–a regional recreational facility with a lake, park, and wildlife area. Reach 5 of the Los Angeles River is mostly channelized with some soft-bottom stretches and acts as a transitional zone between the downstream concrete sections and the more natural and free-flowing upstream sections.

Topography throughout the coastal plain area is generally defined by gradually sloping land from the foothills of the San Gabriel Mountains to the Pacific Ocean. The coastal plain area of the Los Angeles Watershed extends from the foothills of the San Gabriel Mountains to the river mouth at the Port of Long Beach and includes communities within the Project Study Area, including Van Nuys, Encino, Bel-Air, Brentwood, and Westwood. Ground elevations range from 10,000 feet in the San Gabriel Mountains to mean sea level at the mouth of the Los Angeles River. The majority of the coastal plain is less than 1,000 feet in elevation, while the upper portion of the watershed is covered by forest and open space. Approximately 500 square miles of the watershed is highly developed with commercial, industrial, and residential uses (LARWQCB, 2014). The vast majority of land in the Los Angeles Watershed (approximately 80 percent) is developed with urban uses.

Despite extensive urbanization, the Los Angeles Watershed contains water features retaining varying degrees of natural characteristics, including Glendale Narrows, which features a rocky bottom with riprap sides, supporting riparian vegetation and recreational uses, and Compton Creek, which supports wetland habitat providing critical ecological value within the developed landscape. Both Glendale Narrows and Compton Creek are outside of the Project Study Area. In addition, the Sepulveda Flood Control Basin maintains semi-natural conditions supporting low-intensity habitat uses.

8.2.2.2 Santa Monica Bay Watershed

The Santa Monica Bay Watershed covers an area of over 414 square miles from the Santa Monica Mountains on the north from the Ventura-Los Angeles County line on the west and extending south across the Los Angeles plain to the Ballona Creek Watershed on the east (LARWQCB, 2014). South of Ballona Creek a narrow strip of wetlands between Playa del Rey and Palos Verdes drains to Santa Monica Bay. The Santa Monica Bay Watershed includes several smaller subwatershed areas, including Ballona Creek Watershed and Garapito Creek-Frontal Santa Monica Bay Watershed.

A majority of the northern portion of the Santa Monica Bay Watershed is rugged open space containing many canyons that carry runoff directly to Santa Monica Bay. Topanga and Malibu Creeks, the two largest watercourses in this area, are fed both by tributary creeks and by channelized storm drains in and near developed areas. Portions of Malibu, Agoura Hills, Westlake Village, and Los Angeles are located in the northern portion of the watershed. The mid- and southern portions of the Santa Monica Bay Watershed are more urban and contain portions of Los Angeles, Santa Monica, El Segundo, Manhattan Beach, Redondo Beach, the Palos Verdes Estates, and Rancho Palos Verdes. These areas are highly developed and contain a network of storm drains that carry runoff to the Santa Monica Bay.

Ballona Creek Watershed

The Ballona Creek Watershed is a subwatershed within the Santa Monica Bay Watershed that consists of Ballona Creek, a nine-mile-long flood protection channel that drains the Los Angeles Basin. The Ballona Creek Watershed covers approximately 130 square miles located in the western portion of the Los

Angeles Basin and is made up by the Culver City, Wilshire, and Hollywood sub watersheds. The headwaters of the watershed are located in the Santa Monica Mountains to the north and the Baldwin Hills to the south. Most of the Ballona Creek drainage network has been modified into storm drains, underground culverts, and open concrete channels. Ballona Creek flows in an open concrete channel for approximately 10 miles from mid-Los Angeles through Culver City, reaching the Pacific Ocean at Playa del Rey (Marina del Rey Harbor). The Estuary portion, from Centinela Avenue to its outlet, is soft-bottomed and includes the Ballona Wetlands. A few natural channels remain in the Santa Monica Mountains and Baldwin Hills. The Sepulveda Channel, which runs along I-405 outside of the Project Study Area, is a major concrete-lined tributary to the Ballona Creek Watershed.

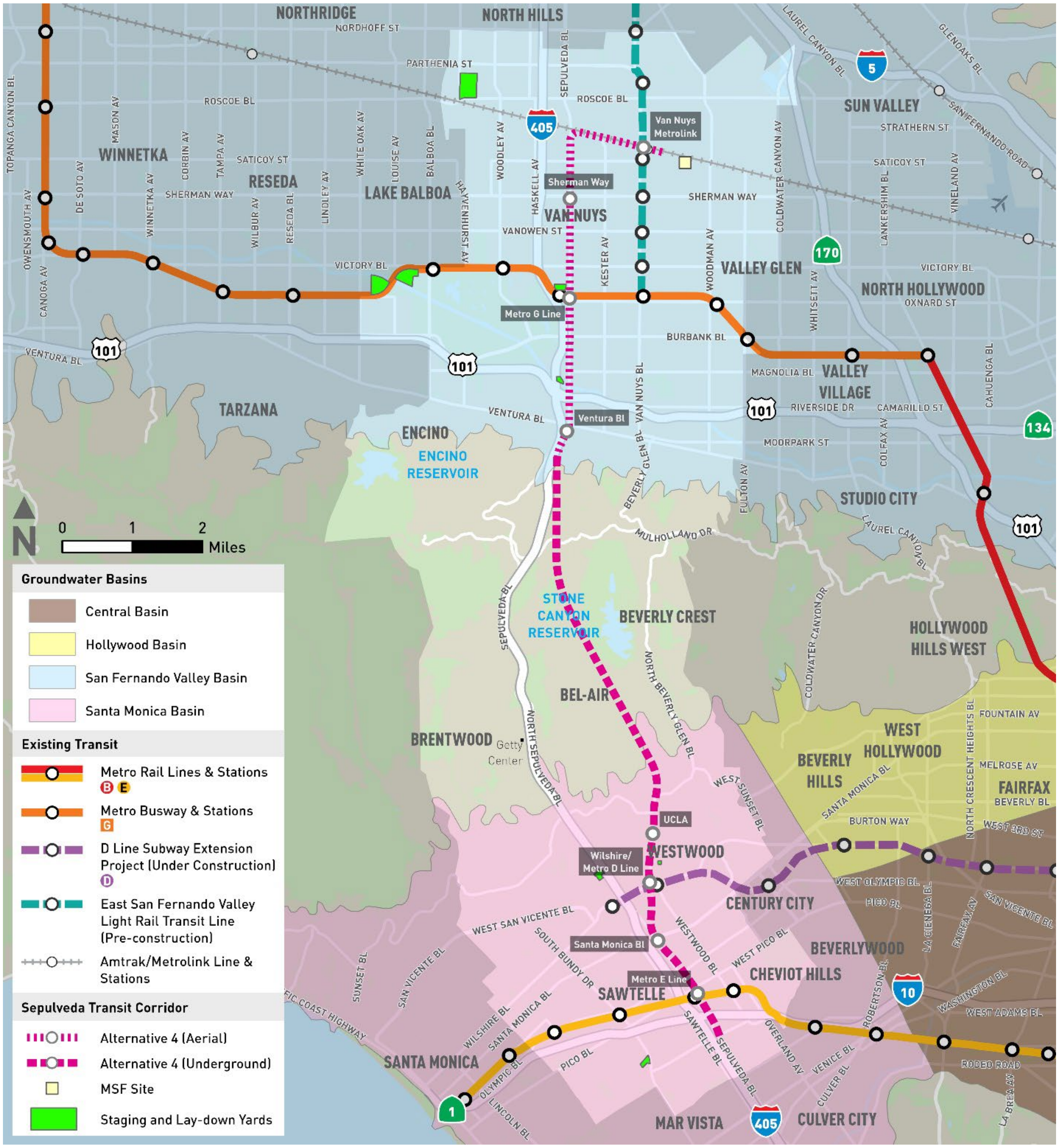
Garapito Creek-Frontal Santa Monica Bay Watershed

Garapito Creek-Frontal Santa Monica Bay Watershed is a subwatershed within the Santa Monica Bay Watershed and covers an area of approximately 130 square miles. The subwatershed is part of the Santa Monica Mountains and a majority of the subwatershed contains rugged mountainous terrain. This subwatershed includes Garapito Creek, which flows through Topanga State Park in the Santa Monica Mountains National Recreation Area. The Santa Monica Mountains are home to a diverse range of plant and animal species and provide critical habitats for wildlife, including several endangered species.

8.2.3 Groundwater

The Project Study Area is within the San Fernando Valley Groundwater Basin and the Santa Monica Subbasin within the Coastal Plain of Los Angeles (Figure 8-12). The Sustainable Groundwater Management Act designated the Santa Monica Subbasin as medium priority, and the San Fernando Valley Groundwater Basin as very low priority based on the basin prioritization (DWR, 2021). Sources of water supply in Los Angeles County include groundwater.

Figure 8-12. Alternative 4: Groundwater Basins Underlying the Project Study Area



Source: LA County Planning, 2020a

8.2.3.1 Coastal Plain of Los Angeles Groundwater Basin, Santa Monica Subbasin

The Santa Monica Subbasin underlies the northwestern part of the Coastal Plain of Los Angeles Groundwater Basin. The Los Angeles Groundwater Basin spans 32,100 acres (50.2 square miles). It is bounded by impermeable rocks of the Santa Monica Mountains on the north and by the Ballona escarpment on the south. The Santa Monica Subbasin extends from the Pacific Ocean on the west to the

Inglewood fault on the east. Ballona Creek is the dominant hydrologic feature and drains surface waters to the Pacific Ocean.

Replenishment of groundwater in the Santa Monica Subbasin is mainly by percolation of precipitation and surface runoff onto the subbasin from the Santa Monica Mountains. The Inglewood fault appears to inhibit replenishment by underflow from the Central Basin to the east, though some inflow may occur at its northern end. Total storage capacity of the Santa Monica Subbasin is estimated to be about 1,100,000 acres-feet (DWR, 2020a). The groundwater storage in the subbasin and groundwater budget is unknown.

8.2.3.2 San Fernando Valley Groundwater Basin

The San Fernando Valley Groundwater Basin surface area covers over 145,000 acres (226 square miles) and includes the water-bearing sediments beneath the San Fernando Valley, Tujunga Valley, Browns Canyon, and the alluvial areas surrounding the Verdugo Mountains near La Crescenta and Eagle Rock (DWR, 2020b). The basin is bounded on the north and northwest by the Santa Susana Mountains, on the north and northeast by the San Gabriel Mountains, on the east by the San Rafael Hills, on the south by the Santa Monica Mountains and Chalk Hills, and on the west by the Simi Hills. The Valley is drained by the Los Angeles River and its tributaries. Precipitation in the Valley ranges from 15 to 23 inches per year and averages about 17 inches.

Hydrographs show variations in water levels of 5 feet to 40 feet in the western part of the basin, a variation of about 40 feet in the southern and northern parts of the basin, and a variation of about 80 feet in the eastern part of the basin. The total storage capacity of the San Fernando Valley Groundwater Basin is 3,670,000 acres-feet. The groundwater in storage in 1998 is calculated at 3,049,000 acres-feet with an additional 621,000 acres-feet of storage space available. Though the San Fernando Valley Groundwater Basin is managed by adjudication, not enough data exists to compile a complete groundwater budget. A total of about 108,500 acres-feet of groundwater was extracted from the San Fernando Valley Groundwater Basin during the 1997-1998 water year. In addition, subsurface outflow of about 300 acres-feet to the Raymond Groundwater Basin and 404 acres-feet to the Central Subbasin of the Los Angeles Coastal Plain Groundwater Basin is estimated. To balance the extraction, a total of 61,119 acres-feet of native runoff water was diverted to spreading grounds for infiltration.

8.2.4 Water Quality

8.2.4.1 Los Angeles Watershed

Surface water beneficial uses for Reach 5 of the Los Angeles River include municipal and domestic supply, industrial service supply, groundwater recharge, recreation, and water that supports various habitats and ecosystems.

According to the California State Water Resources Control Board (SWRCB) 2020-2022 303(d) list of impaired water bodies, Reach 5 of the Los Angeles River and its tributaries are listed as impaired for ammonia, benthic community effect, copper, lead, nutrients (algae), oil, toxicity, and trash (SWRCB, 2022c).

Elevated bacteria indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use at the 303(d) listed waterbodies within the Los Angeles Watershed. Recreating in waters with elevated bacteria indicator densities has been associated with adverse health effects. Specifically, local and national epidemiological studies demonstrate a causal relationship between adverse health effects and recreational water quality, as measured by bacteria indicator densities.

8.2.4.2 Ballona Creek Watershed

Surface water beneficial uses for Reach 1 of the Ballona Creek include municipal and domestic supply, industrial service supply, groundwater recharge, recreation, and water that supports various habitats and ecosystems.

Ballona Creek and Ballona Creek Estuary are on the CWA Section 303(d) list of impaired waterbodies for copper, lead, zinc, silver, cyanide, indicator bacteria, toxicity, trash, cadmium, chlordane, dichloro-diphenyl-trichloroethane (DDT), polychlorinated biphenyl (PCB), polycyclic aromatic hydrocarbons (PAH) and toxicity. Sepulveda Channel is included on the 303(d) list for copper, lead, zinc, selenium, and indicator bacteria (SWRCB, 2022c).

Elevated bacterial indicator densities are causing impairment of the REC-1 beneficial use designated for Ballona Estuary and Sepulveda Channel, limited water contact recreation designated for Ballona Creek Reach 2, and non-contact water recreation (REC-2) beneficial uses of Ballona Creek Reach 1. Recreating in waters with elevated bacterial indicator densities has long been associated with adverse human health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.

8.2.4.3 San Fernando Valley Groundwater Basin

Groundwater beneficial uses for the San Fernando Valley Groundwater Basin include water supply for municipal, domestic, industrial process, and agricultural uses. Nitrite pollution in the groundwater of the Sunland-Tujunga area within the San Fernando Valley Groundwater Basin currently precludes direct municipal uses. Since the groundwater in this area can be treated or blended (or both), it retains the municipal designation.

In the western part of the basin, calcium sulfate-bicarbonate character is dominant, and in the eastern part of the basin, calcium bicarbonate character dominates (DWR, 2020b). Total dissolved solids (TDS) range from 326 to 615 milligrams per liter (mg/L), and electrical conductivity ranges from 540 to 996 micromhos. Data from 125 public supply wells shows an average TDS content of 499 mg/L and a range from 176 to 1,160 mg/L.

A number of investigations have determined contamination of volatile organic compounds such as trichloroethylene (TCE), perchloroethylene (PCE), petroleum compounds, chloroform, nitrate, sulfate, and heavy metals. TCE, PCE, and nitrate contamination occurs in the eastern part of the basin and elevated sulfate concentration occurs in the western part of the basin.

8.2.4.4 Coastal Plain of Los Angeles Groundwater Basin, Santa Monica Subbasin

Beneficial uses for Santa Monica Subbasin within the Coastal Plain of Los Angeles include water supply for municipal, domestic, industrial process, and agricultural uses.

Impairments to the Santa Monica Subbasin is unknown to the California Department of Water Resources (DWR, 2020a). Analyses of water from seven public supply wells indicate an average TDS content of 916 mg/L and a range of 729 to 1,156 mg/L.

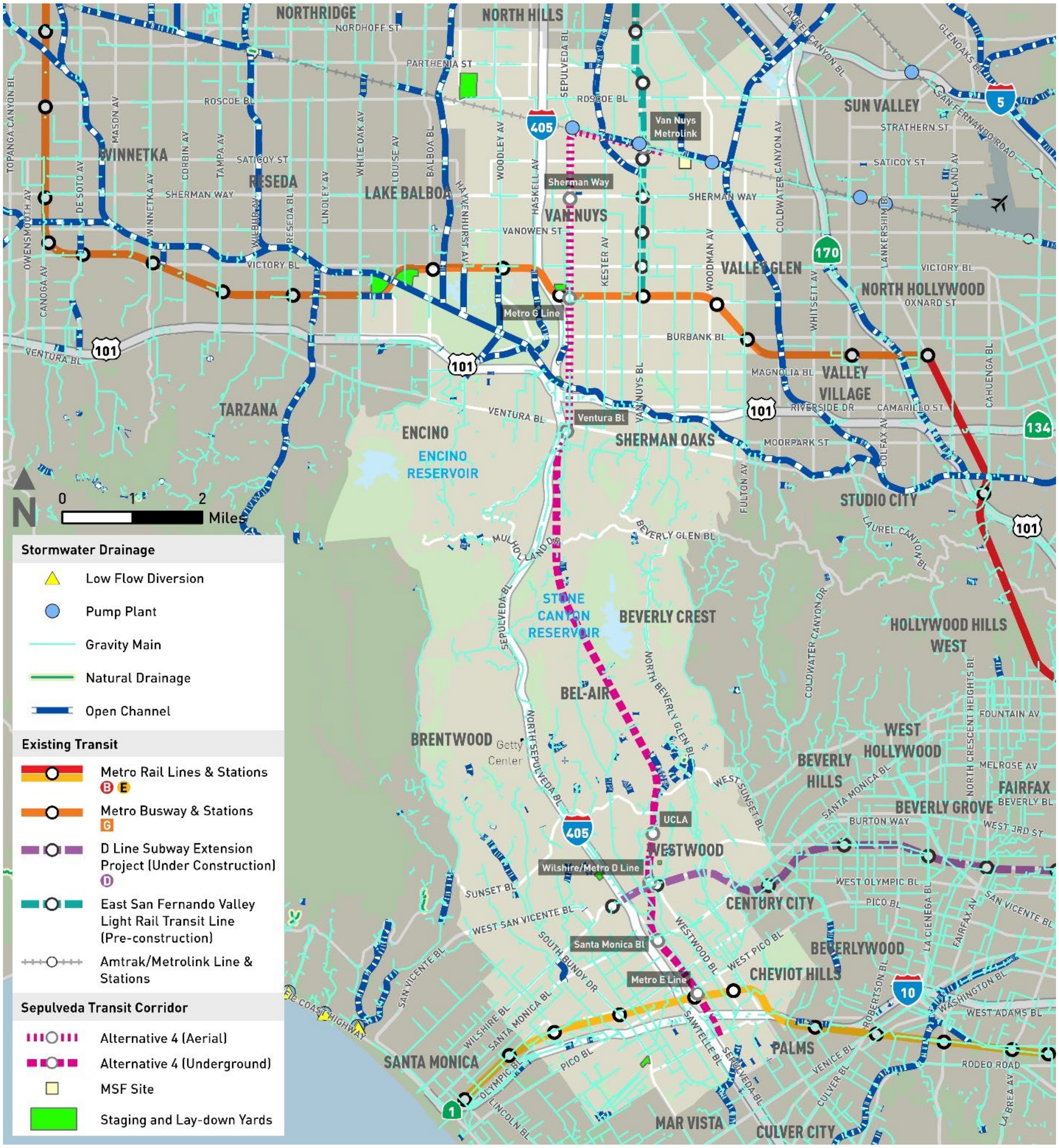
8.2.5 Drainage

Land in the county and cities within the Project Study Area is urbanized and largely covered with impervious surfaces associated with areas of asphalt, concrete, buildings, and other land uses that concentrate storm runoff. Stormwater and other surface water runoff are conveyed to municipal storm drains and culverts (Figure 8-13). Most local drainage networks are controlled by structural flood control measures. There is a large portion of the Project Study Area that is undeveloped, pervious lands in the open space area of the Santa Monica Mountains.

The general stormwater drainage pattern in the southern portion of the Project Study Area (from Metro E Line Expo/Sepulveda Station along I-405 to the upper reach of the Ballona Creek Watershed) is from north to south. The majority of stormwater runoff within the Project Study Area drains into the Los Angeles County Flood Control District (LACFCD) Sepulveda Channel, which starts at the upper reach of the Ballona Creek Watershed as a large diameter storm drain pipe that crosses under I-405 several times. This storm drain then transitions into a large drainage box culvert; further south of the Project Study Area, it becomes an open channel before confluencing with Ballona Creek, an LACFCD flood control channel.

The general stormwater drainage pattern in the northern portion of the Project Study Area in the Upper Los Angeles River Watershed is from south to north in developed storm drain systems. From the ridge of the Sepulveda Pass going north, the majority of Project Study Area stormwater drains to a California Department of Transportation (Caltrans) storm drain main that connects to an LACFCD large drainage box culvert that discharges to the Los Angeles River, an LACFCD flood control channel.

Figure 8-13. Alternative 4: Existing Stormwater Drainage Infrastructure



Source: LACPW, 2024

8.2.6 Flooding and Inundation

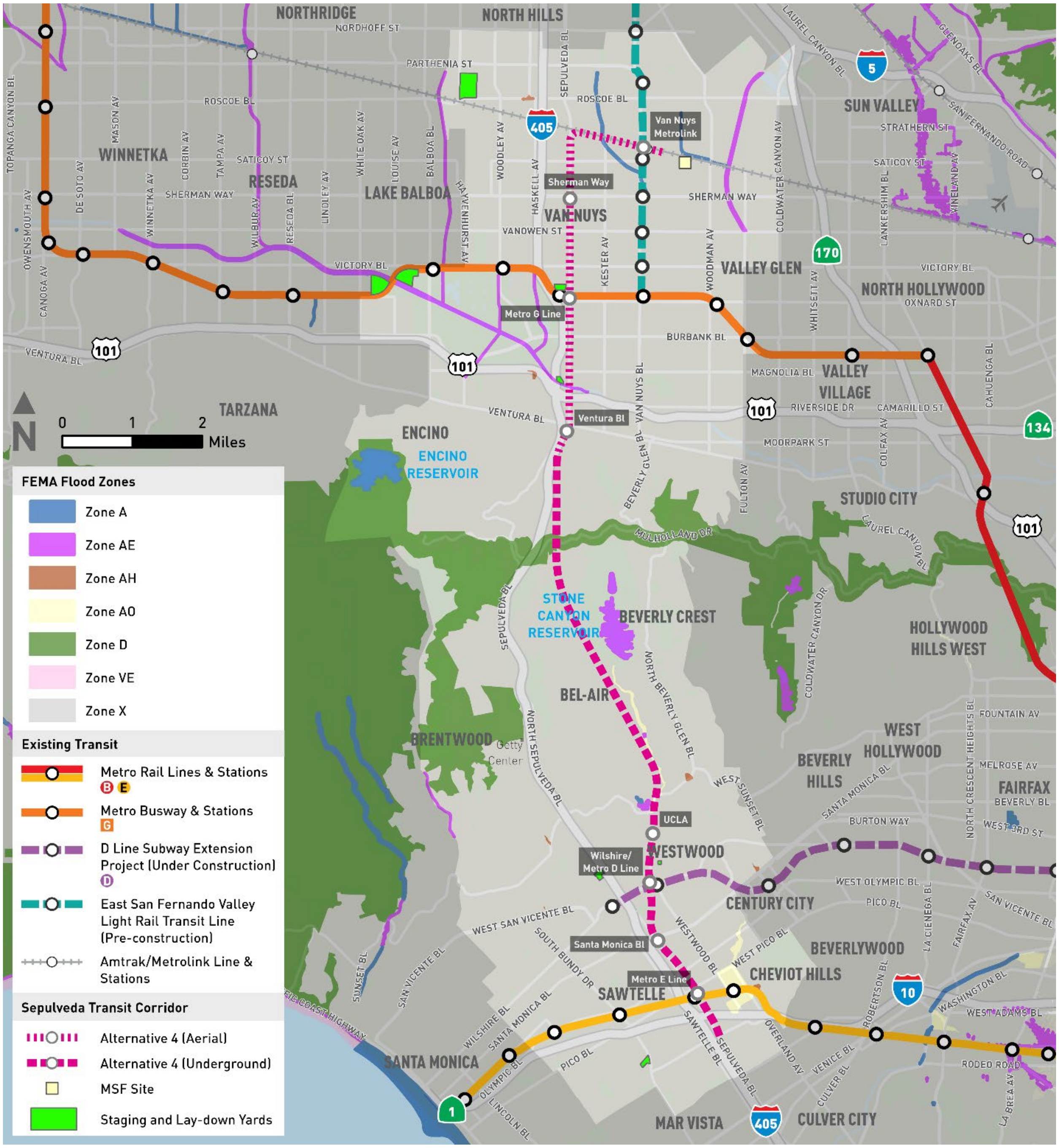
The Federal Emergency Management Agency's (FEMA) Flood Map Service Center (FEMA, 2023) was used to identify flood hazard zones within the Project Study Area. Figure 8-14 illustrates all flood hazard zones within the Project Study Area. Portions of the Project Study Area are subjected to a risk of flooding under FEMA's categorizations. The ridgetop of Santa Monica Mountains, located at Mulholland

Drive, and open space areas owned by Los Angeles County are located in Zone D. Zone D indicates that there is a risk of flooding, with unknown levels of risk. The Encino Reservoir and SCR, located in the Santa Monica Mountains, are subject to Zones A and AE, respectively, and experience a risk of inundation with a 1 percent annual chance of flooding, alternatively known as a 100-year floodplain, since they each retain a significant amount of water. The channelized limits of the Los Angeles River, where it crosses I-405 and Sepulveda Boulevard, is also identified as Zone AE. Other small portions within the Project Study Area east of Overland Avenue are within Zone AO and AH and are subject to inundation by a 1 percent annual chance of shallow flooding. Approximately 0.32 percent of the Project Study Area is within the 100-year floodplain.

Seiches are a temporary disturbance or oscillation in the water level of an enclosed body of water, usually caused by changes in atmospheric pressure. The Encino Reservoir is located approximately 2.1 miles west of the proposed alignment and median of I-405, and the SCR is located approximately 0.5 mile east of the proposed alignment and median of I-405.

Tsunamis are large ocean waves caused by major seismic events with the potential of causing flooding in low lying coastal areas.

Figure 8-14. Alternative 4: FEMA Flood Zones



Source: LA County Planning, 2020b

8.2.7 Municipal Water Supply

Within Los Angeles County, the water supply comprises a complex system made up of state agencies and local water districts operating aqueducts, reservoirs, and groundwater basins. Approximately 33 percent of the water in the county comes from local supply sources, while the remaining supply is imported from outside of the county. Due to the county's dependence on imported water supply

sources and its vulnerability to drought, the county is constantly working to develop a diverse range of water resources (LA County Planning, 2015).

Local water supply sources include surface water from mountain runoff, groundwater, and recycled water. Imported sources of water supply include the Colorado River, the Bay-Delta in Northern California via the State Water Project, and the Owens Valley via the Los Angeles Aqueduct. Major water distributors of imported water used in the unincorporated county include the Metropolitan Water District of Southern California (MWD), Santa Clarita Valley Water Agency, Antelope Valley-East Kern Water Agency, Littlerock Creek Irrigation District, and the Palmdale Water District (LA County Planning, 2015).

The Los Angeles County Department of Public Works maintains a database of groundwater supply wells (LADPW, 2019). According to this database, the majority of groundwater wells are in the Valley with three active wells underlying Van Nuys Boulevard.

The LADWP is responsible for supplying, treating, and distributing water for domestic and industrial uses in a portion of the detailed Project Study Area. The LADWP serves an area of approximately 473 square miles with over 681,000 water service connections. LADWP draws its water from three main sources: the Los Angeles Aqueduct (from Eastern Sierra Nevada) (29 percent), the MWD (57 percent), groundwater (12 percent), and recycled water (2 percent) (LADWP, 2013).

8.3 Impacts Evaluation

8.3.1 Impact HWQ-1: Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

8.3.1.1 Operational Impacts

During operations, Alternative 4 would result in a net decrease in impervious surfaces compared to existing conditions because approximately half of Alternative 4 (four stations) would be underground, and the majority of the land surfaces associated with the proposed aerial stations and other ancillary facilities in the Project Study Area are developed and covered by existing impervious surfaces. Table 8-6 presents the initial estimates of existing and new impervious surface areas, and the estimated net impervious surface area created at each of the Alternative 4 component sites.

Components that would increase the existing impervious surface area include the UCLA Gateway Plaza Station, Metro G Line Station, and the Van Nuys Metrolink Station. Components that would decrease the existing impervious surface area include the Metro E Line Station, Santa Monica Boulevard Station, Wilshire Boulevard/Metro D Line Station, Ventura Boulevard Station, Sherman Way Station, and proposed MSFs adjacent to the Van Nuys Metrolink/Amtrak Station at the northern end of Alternative 4. The actual footprint of the aerial stations at the ground level would be covered only by column footings and vertical circulation elements. However, to be conservative, the analysis includes aboveground elements of these components, including the station canopies and platforms to calculate the total impervious area created by the Alternative 4 components. The footprints of the Alternative 4 components would be nominal when compared to the area of the watershed or groundwater basin.

Table 8-6. Alternative 4: New Impervious Surface Area

Stations	Existing Impervious Surface Area at Component Site (square feet)	New and Reconstructed Impervious Surface Area at Component Site (square feet)	Net Impervious Area Created by Component (square feet)
Metro E Line/Sepulveda Station	88,293	80,682	-7,611
Santa Monica Boulevard Station	45,946	44,014	-1,932
Wilshire/Metro D Line Station	41,799	41,769	-30
UCLA Gateway Plaza Station	35,568	37,444	1,876
Ventura Boulevard Station	73,415	71,025	-2,390
Metro G Line Station	53,340	53,592	252
Sherman Way Station	95,634	90,378	-5,256
Van Nuys Metrolink Station	39,991	41,585	1,594
Totals	**473,986**	**460,489**	**-13,497**

Source: STCP, 2024

Operation of Alternative 4 would require routine maintenance that would be performed by the system operator. Maintenance activities associated with the transit system operation, such as train car maintenance and lubrication, would occur at the proposed MSF. Rail maintenance would occur along the corridor alignment. Potential pollutants (e.g., petroleum products/lubricants, paints, solvents, and other Alternative 4-related products) used or generated during Alternative 4 operations and maintenance would contribute to water pollution if not properly dispensed, stored, or disposed. If not appropriately managed, uncontrolled discharge of runoff carrying these potential pollutants would result in significant impacts to water quality in receiving waters, which would violate federal, state, and local water quality standards and Waste Discharge Requirements (WDR).

Storage and disposal of hazardous materials and waste would be conducted in accordance with all applicable federal and state regulatory requirements. As described in the *Sepulveda Transit Corridor Project Hazards and Hazardous Materials Technical Report* (Metro, 2025), Alternative 4 would be required to reduce the potential effects of the use and storage of hazardous materials at MSF and TPSSs through the implementation of hazardous materials monitoring plans, including a hazardous materials business plan developed in accordance with California Health and Safety Code requirements.

As previously discussed, Alternative 4 would comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the *Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan) (LARWQCB, 2014), and the Municipal Separate Storm Sewer Systems (MS4) Permit, as well as commonly used industry standards.

Alternative 4 would be designed to incorporate several sustainability features, such as native landscaping, rainwater cisterns for capture and re-use, permeable surfaces, soil improvements, increased vegetation, and on-site retention, in compliance with the *Low Impact Development Standards Manual* (LADPW, 2014) and the City of Los Angeles *Planning and Land Development Handbook for Low Impact Development* (City of Los Angeles, 2016), which would serve to reduce impervious area and promote infiltration, thereby improving water quality. Alternative 4 would comply with the Caltrans National Pollutant Discharge Elimination System (NPDES) Statewide Stormwater Permit, City of Los Angeles Municipal Code, the City of Los Angeles and County of Los Angeles LID Ordinance, and all other applicable regulations for all operational activities, including adherence to an approved Alternative 4-specific Low Impact Development (LID) Plan, which would identify the best management practices

(BMP) for Alternative 4 operations. The types of LID BMP designs to be incorporated would be determined during the design phase. Although final design would dictate actual stormwater management aspects of Alternative 4, potential BMPs would include depressed landscape gardens for runoff retention and infiltration, permeable surfaces to reduce runoff volume, hardscape replacement with pervious or planted substitutions, bioswales or artistic water features that creatively convey runoff into planted or pervious areas, roof downspout discharges to vegetated areas, and rainwater cisterns and other on-site stormwater retention methods. These measures and practices would be incorporated at applicable component sites and would serve to promote infiltration.

The Alternative 4-specific LID Plan would identify the BMPs for the Alternative 4 post-construction design (i.e., operational characteristics to control/treat runoff for the range of potential pollutants). Alternative 4 would include design elements that would serve to infiltrate, capture, and re-use stormwater in accordance with current LID requirements — thereby minimizing the potential for increased runoff rates and pollutant discharge. LID design features would slow (detain or retain) stormwater, which would reduce the runoff volume discharged from Alternative 4 and would decrease the peak runoff discharge velocity for design storms. Implementation of LID BMPs would offset any increases in runoff rates due to the creation of new impervious surface areas. As a result, less flow with fewer pollutants would be transported through the conveyance systems, and ultimately into surface waters, including ancillary exfiltration to the groundwater table. Additionally, natural treatment of infiltrated runoff would occur, thereby improving exfiltrated water from LID and water quality additions to the groundwater table, including treatment for potential pollutants (e.g., petroleum products/lubricants, metals, paints, solvents, and other Alternative 4-related products) used or generated during Alternative 4 operations.

Alternative 4 is anticipated to require Industrial General Permit (IGP) coverage for maintenance facilities, fueling operations, equipment cleaning/washing operations, and TPSSs. As such, an IGP Stormwater Pollution Prevention Plan (SWPPP) would be prepared and submitted to the SWRCB prior to operations. The IGP includes discharge prohibitions, effluent limitations, and receiving water limitations that must be adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases. Other BMPs may also be employed, as appropriate, such as indoor/covered areas for maintenance, approved flammable/hazmat storage lockers for lubricants and other industrial liquids, drip/spill protection in maintenance areas and similar BMPs when conducting maintenance, dry clean-up practices, and dedicated enclosed areas for metal working, painting, and welding.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to the violation of any water quality standards or WDRs or substantial degradation of surface or groundwater quality during operations of Alternative 4 would be less than significant.

8.3.1.2 Construction Impacts

Construction of Alternative 4 would involve underground, at-grade, and aerial activities. Underground activities would include relocation of existing utilities, tunnel guideway construction, and station construction. At-grade activities would involve site clearing and excavation, utility relocation, foundation construction, installation of support columns and beams for aerial guideway, erection of stations, towers, and junctions, as well as construction of maintenance and storage facilities, replacement or restoration of paving, sidewalks, parking, and landscaping. Temporary components of Alternative 4 would include construction staging areas, office areas, and work zones at permanent facilities.

Alternative 4 is divided into three primary segments: South Westside Basin (south), Central-Santa Monica Mountains (central), and North-San Fernando Valley (north). The construction activities within the north segment of Alternative 4 would be conducted exclusively at grade in the dense urban area along Sepulveda Boulevard. This includes building an elevated guideway structure for the aerial portion of Alternative 4 and four aerial stations, and at-grade MSF. Aerial stations located in the segment include the Ventura Boulevard Station, Metro G Line Station, Sherman Way Station, and the Van Nuys Metrolink Station.

Construction activities such as demolition, excavation, and grading would temporarily expose bare soil, increasing the risk of erosion. Uncontrolled erosion and discharge of sediments and other potential pollutants, including the discharge of fill material, would affect water quality in Alternative 4 receiving waters (e.g., the Pacoima Wash, Tujunga Wash, and Los Angeles River) if not appropriately managed by proper implementation of the construction SWPPP.

In addition to sediments, other pollutants including trash, concrete waste, and petroleum products, such as fuels, solvents, and lubricants, would degrade water quality and contribute to water pollution if not appropriately managed. The use of construction equipment and vehicles during Alternative 4 would result in spills of vehicle-related fluids that would contribute to water pollution. Improper handling, storage, or disposal of these materials or improper cleaning and maintenance of equipment would result in accidental spills and discharges that would contribute to water pollution.

Alternative 4 would be located within the Los Angeles Watershed and the Santa Monica Bay Watershed in the Ballona Creek subwatershed. The vast majority of land in the Los Angeles Watershed (approximately 80 percent) is developed with urban uses. Most of the Ballona Creek subwatershed drainage network has been modified into storm drains, underground culverts, and open concrete channels. A few natural channels remain in the Santa Monica Mountains. Construction activities such as excavation near Santa Monica Mountains would have the potential to temporarily impact these natural channels by contributing increased sediment/pollutants if not appropriately managed.

Construction activities associated with elevated guideway foundations involve general earthwork and concrete work to prepare the foundations. Excavations for foundations would occur between 6 and 12 feet below ground surface (bgs) and piles would be installed up to a maximum of approximately 140 feet bgs. Groundwater levels in this segment of Alternative 4 generally range from depths of approximately 50 to 80 feet bgs, with deeper groundwater close to the Van Nuys Metrolink Station and shallower groundwater close to the Ventura Boulevard Station.

Since the average proposed excavation depth for the foundations at the aerial stations would be lower than the depth of groundwater in the vicinity of the four aerial stations, removal of nuisance water that seeps into boreholes during construction would be required for foundation excavations.

The construction activities within the south segment of Alternative 4 would be mainly conducted underground in the dense urban area from west of Los Angeles to the southern base of Santa Monica Mountains. This includes constructing an underground track guideway/tunnel and four underground stations. Underground stations located in the segment include the Metro E Line Station, Santa Monica Boulevard Station, Wilshire Boulevard/Metro D Line Station, and the UCLA Gateway Plaza Station. The stations would be constructed using the cut-and-cover method. At the Metro E Line Station, the depth of excavation would be up to approximately 100 feet bgs, with the groundwater table in the vicinity of the station approximately 40 feet bgs. At the Santa Monica Boulevard Station, the depth of excavation would be approximately 100 feet bgs and the groundwater table would be 30 feet below the ground surface. The excavation depth of the Wilshire Boulevard/Metro D Line Station would be approximately 150 feet, and groundwater would be encountered approximately 25 bgs in the vicinity of the station. The excavation depth of the UCLA Gateway Plaza Station would be approximately 130 feet, and groundwater would be encountered around 45 feet bgs. Since there is potential for groundwater to be encountered during excavation activities for all of these stations, dewatering would be required.

If dewatering is required, dewatering activities would be conducted in compliance with the Los Angeles Regional Water Quality Control Board's NPDES dewatering permits, *Waste Discharge Requirements for Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties* (Order R4-2018-0125) and *Waste Discharge Requirements for Specified Discharges to Groundwater in the Santa Clara River and Los Angeles River Basins* (Order No. 93-010), as applicable. The watertight systems (e.g., secant pile, slurry wall) to be employed during station construction would minimize groundwater intrusion, and any residual impacts would be managed under the established regulatory framework. In such cases, temporary pumps and filtration systems would be used in compliance with the applicable NPDES permits. The temporary system would be required to comply with all relevant NPDES requirements related to construction and discharges from dewatering operations. Water removed from the boreholes would be containerized and analyzed to determine the proper disposal method or possible treatment and re-use on-site. The treatment and disposal of the dewatered water would occur in accordance with the requirements of NPDES Order R4-2018-0125 and Order No. 93-010, as applicable. The WDRs require that waste be analyzed prior to being discharged in order to determine if it contains pollutants in excess of the applicable Basin Plan water quality objectives. Or if possible, the dewatered water would potentially be treated and reused on-site (e.g., for dust control or cleaning equipment) rather than being disposed.

The construction activities within the central segment of Alternative 4 would be mainly conducted underground to construct a track guideway/tunnel, with the exception of the tunnel north portal at the northern base of the Santa Monica Mountains and an LADWP substation, which may need to be constructed at the southern base of the mountains. There is no station at this segment.

Alternative 4 would include a tunnel running from the southern terminus of the project to the north base of the Santa Monica Mountains. The depth of cover for the tunnel through the southern segment of Alternative 4 would vary from approximately 40 feet to 90 feet bgs. The depth of cover for the central segment of Alternative 4 would vary from approximately 470 feet as it passes under the Santa Monica Mountains to 70 feet near UCLA. The groundwater depth along the tunnel varies from 40 to 320 feet bgs. There is potential for groundwater to be encountered during tunnel boring activities in areas where the tunnel invert is below groundwater level; however, proposed tunnel boring activities would not be expected to require dewatering because tunnel boring would involve a closed mode machine that would operate under the water table, and a precast concrete tunnel liner (designed for full hydrostatic pressure) would be installed post-excavation. Both of these features would substantially reduce (if not eliminate) groundwater ingress during construction.

Volatile organic compounds such as TCE, PCE, petroleum compounds, chloroform, nitrate, sulfate, and heavy metals have been detected in groundwater of the San Fernando Valley Groundwater Basin (northern segment of Alternative 4). Although the groundwater quality in the remainder of the Project Study Area is not specifically known, it may contain elevated levels of constituents such as petroleum hydrocarbons and solvents resulting from commercial and industrial discharges, in addition to potentially elevated TDS and metals related to natural conditions. Uncontrolled discharge of groundwater carrying these potential pollutants would result in degradation of groundwater and surface water if it is not properly managed during construction activities. If groundwater containing contaminants such as VOCs, heavy metals, or petroleum hydrocarbons is encountered during dewatering activities, additional treatment or special disposal methods would be required to comply with applicable regulatory requirements and prevent contamination of receiving waters. BMPs would be implemented to ensure proper containment and disposal of grouting materials and wastewater, as well regular monitoring and adaptive management.

Alternative 4 would be required to comply with all applicable water quality protection laws and regulations at the federal, state, regional, and local levels, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Policies, NPDES Construction General Permit (CGP), the MS4 Permit, Caltrans NPDES Statewide Stormwater Permit, and the City of Los Angeles and County of Los Angeles LID Ordinance.

Alternative 4 would be required to comply with the CGP in effect at the time of construction. In accordance with the CGP, Alternative 4 would be required to prepare and submit a construction SWPPP, which must be submitted to the SWRCB prior to construction and adhered to during construction. Proper implementation of the construction SWPPP would avoid potential impacts to water quality. The construction SWPPP would identify the BMPs that would be in place to protect water quality prior to the start of construction activities and during construction. BMP categories would include erosion control, sediment control, tracking control, wind erosion, stormwater and non-stormwater management, and materials management with regular monitoring. Although specific temporary construction-related BMPs would be selected at the time of SWPPP preparation, potential BMPs would likely include fiber rolls, bonded-fiber matrix hydroseeding, soil furrowing, water bars, and check dams for erosion control, inlet protection (sand/gravel bags and geotextiles), silt fencing, sediment traps/basins for sediment controls, soil berming around disturbed areas, and phasing of soil disturbance during the wet season (i.e., limiting widespread grading) for effectively managing erosion and pollutant discharge during significant rainfall events.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to the violation of any water quality standards or WDRs or substantial degradation of surface or groundwater quality during construction activities of Alternative 4 would be less than significant.

8.3.1.3 Maintenance and Storage Facility

Maintenance of vehicles and equipment would occur at the MSF, which would include multiple buildings, including a multi-level maintenance-of-way building, track storage area, wash bays, ancillary storage buildings, and TPSS structure. The MSF would be constructed on parcels containing existing impervious surfaces. Therefore, the MSF would not increase the existing impervious surface area.

During operations, the MSF would require Industrial General Permit (IGP) coverage**.** An IGP SWPPP would be prepared and submitted to the SWRCB prior to operations. The IGP SWPPP would include discharge prohibitions, effluent limitations, and receiving water limitations that must be adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases. Other BMPs would also be employed, as appropriate, such as indoor/covered areas for maintenance, approved flammable/hazmat storage lockers for lubricants and other industrial liquids, drip/spill protection in maintenance areas and similar BMPs when conducting maintenance, dry clean-up practices, and dedicated enclosed areas for metal working, painting, and welding.

Construction activities such as demolition, excavation, and grading would temporarily expose bare soil, increasing the risk of erosion. Sediments (and their associated pollutants) from erosion if not properly managed would accumulate and block storm drain inlets in the vicinity of the MSF or indirectly be carried into the closest receiving water body (e.g., Pacoima Wash).

In addition to sediments, other pollutants including trash, concrete waste, and petroleum products, such as fuels, solvents, and lubricants, would degrade water quality and contribute to water pollution if not appropriately managed. The operation and construction of the MSF would result in spills of vehicle-related fluids that would contribute to water pollution. Improper handling, storage, or disposal of these materials or improper cleaning and maintenance of equipment would result in accidental spills and discharges that would contribute to water pollution.

Construction activities associated with foundations would involve general earthwork and concrete work to prepare the foundations. Excavations for foundations would be between 6 and 8 feet bgs, and piles would be expected to be installed shallower than the depth to groundwater. The groundwater depth increases progressively northward along the Project Study Area up to approximately 90 feet below grade, adjacent to the Southern California Regional Rail Authority Metrolink ROW where the MSF is located. As a result, the seepage of groundwater would be minimal. However, in the unlikely event of seepage, water removed from the boreholes would be containerized and analyzed to determine the proper disposal method or possible treatment and reuse on-site.

The construction of the MSF would be required to comply with the CGP in effect at the time of construction. In accordance with the CGP, the MSF would be required to prepare and submit a construction SWPPP, which must be submitted to the SWRCB prior to construction, and adhered to during construction of the MSF. Proper implementation of the construction SWPPP would avoid potential impacts to water quality. The construction SWPPP would identify the BMPs that would be in place to protect water quality prior to the start of construction activities and during construction of the MSF. BMP categories would include erosion control, sediment control, tracking control, wind erosion, stormwater and non-stormwater management, and materials management. Although specific temporary construction-related BMPs would be selected at the time of SWPPP preparation, potential BMPs would likely include fiber rolls, bonded-fiber matrix hydroseeding, soil furrowing, water bars, and check dams for erosion control, inlet protection (sand/gravel bags and geotextiles), silt fencing, sediment traps/basins for sediment controls, soil berming around disturbed areas, and phasing of soil disturbance during the wet season (i.e., limiting widespread grading) for effectively managing erosion and pollutant discharge during significant rainfall events.

The operation and construction of the MSF would be required to comply with all applicable water quality protection laws and regulations at the federal, state, regional, and local levels, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Policies, NPDES CGP, the MS4 Permit, and the City of Los Angeles and County of Los Angeles LID Ordinance.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to the violation of any water quality standards or WDRs or substantial degradation of surface or groundwater quality during construction and operation of the MSF would be less than significant.

8.3.2 Impact HWQ-2: 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?

8.3.2.1 Operational Impacts

During operation, Alternative 4 would result in a net decrease in impervious surfaces compared to existing conditions because most of the land surfaces in the Project Study Area are developed and covered by existing impervious surfaces.

Operation of underground stations and tunnels would not be expected to impact groundwater supplies or groundwater recharge. A precast concrete tunnel liner designed for full hydrostatic pressure would be installed post-excavation, which would substantially reduce (if not eliminate) groundwater ingress during operations. Groundwater intrusion into underground facilities is not anticipated.

Alternative 4 would be designed to incorporate several sustainability features, such as pervious pavement, native landscaping/soil improvements, landscaped stormwater conveyance, on-site retention, and other appropriate and applicable design features that would serve to capture, treat, and re-use stormwater in compliance with current LID requirements, promoting infiltration and groundwater recharge (after treatment). These measures and practices would be incorporated at applicable component sites along the Alternative 4 alignment. Alternative 4 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan, as well as commonly used industry standards.

Alternative 4 would comply with the Caltrans NPDES Statewide Stormwater Permit, the City of Los Angeles Municipal Code, the City of Los Angeles and County of Los Angeles LID Ordinance, an equivalent to the Metro Rail Design Criteria (MRDC), and all other applicable regulations for all operational activities, including adherence to an approved Alternative 4-specific LID Plan, which would identify the BMPs for Alternative 4 operations. The LID Plan would identify the BMPs for the Alternative 4 post-construction design (i.e., operational characteristics to control/treat runoff for the range of potential pollutants) in accordance with current LID requirements. As the intent of LID infrastructure is to offset creation of impermeable surfaces by directing surface water toward permeable surfaces for infiltration and groundwater recharge, Alternative 4 would include design elements (e.g., depressed landscape gardens for runoff retention and infiltration, permeable surfaces to reduce runoff volume, hardscape replacement with pervious or planted substitutions, bioswales or artistic water features that creatively convey runoff into planted or pervious areas, and roof downspout discharges to vegetated areas), which would promote groundwater recharge.

Additionally, operation of Alternative 4, including the underground stations, would not involve the extraction of any groundwater and would not be expected to impact groundwater supplies or groundwater recharge. Therefore, Alternative 4 would not be expected to result in a decrease in groundwater supplies or interfere substantially with groundwater recharge to the extent that Alternative 4 may impede sustainable groundwater management of the basin. Depending on final design features, exfiltration from LID/treatment BMPs is anticipated to improve groundwater recharge characteristics of the area. Additionally, natural treatment of infiltrated runoff would occur, thereby improving exfiltrated water from LID and water quality additions to the groundwater table.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to groundwater supply and recharge during operations of Alternative 4 would be less than significant.

8.3.2.2 Construction Impacts

Construction activities associated with foundations would include excavation and concrete work, installation of drilled piles, aerial guideway, and tunneling. As previously discussed, excavations for stations, piles, and other underground structures would be performed up to depths of 6 to 140 feet bgs, and the tunnel depth would range from 40 to 470 feet bgs.

The Alternative 4 alignment may encounter groundwater in shallower areas and would require the removal of nuisance water that seeps into boreholes during construction. Nuisance water and seepage encountered during construction would be removed from the boreholes, containerized, and analyzed consistent with existing applicable regulations to determine the proper disposal method or possible treatment and reuse on-site.

Alternative 4 would include two tunnel segments running from the southern terminus of the Alternative 4 alignment to the north base of the Santa Monica Mountains. The depth of cover for the tunnel through the southern segment of Alternative 4 would vary from approximately 40 feet to 90 feet bgs. The depth of cover for the central segment of Alternative 4 would vary from approximately 470 feet as it passes under the Santa Monica Mountains to 70 feet near UCLA. The groundwater depth along both segments of the tunnel varies from 40 to 320 feet bgs. There is potential for groundwater to be encountered during tunnel boring activities in areas where the tunnel invert is below groundwater level; however, proposed tunnel boring activities would not be expected to require dewatering because tunnel boring would involve a closed mode machine, which would operate under the water table, and a precast concrete tunnel liner (designed for full hydrostatic pressure) would be installed post-excavation. Both of these features would substantially reduce (if not eliminate) groundwater ingress during construction. Any dewatering would be limited to the construction phase only. The volume of groundwater extracted during construction would not be expected to decrease groundwater supplies. The volume of groundwater removed during construction would be monitored and documented.

Alternative 4 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Policies, NPDES CGP, the MS4 Permit, Caltrans NPDES Statewide Stormwater Permit, and the City of Los Angeles and County of Los Angeles LID Ordinance.

Due to the limited amount of nuisance seepage water anticipated to be encountered and because most of the existing surfaces at the Alternative 4 component sites are currently covered with impervious surfaces, construction activities are not anticipated to interfere substantially with groundwater recharge or groundwater resource supplies. Construction activities, including construction of underground structures, are not anticipated to decrease groundwater supplies such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to groundwater supply and recharge during construction of Alternative 4 would be less than significant.

8.3.2.3 Maintenance and Storage Facility

The MSF would be designed to incorporate several sustainability features in compliance with the LID Standards Manual, which would serve to promote infiltration and groundwater recharge. It would also comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan (LARWQCB, 2014), as well as commonly used industry standards.

The MSF would comply with an MRDC equivalent, City of Los Angeles Municipal Code, and all other applicable regulations for all operational activities, including adherence to an approved LID Plan, which would identify the BMPs for MSF operations. The LID Plan would identify the BMPs for the MSF post-construction design (i.e., operational characteristics to control/treat runoff). The MSF would include design elements (e.g., depressed landscape gardens for runoff retention and infiltration, permeable surfaces to reduce runoff volume, hardscape replacement with pervious or planted substitutions, bioswales or artistic water features that creatively convey runoff into planted or pervious areas, roof downspout discharges to vegetated areas, and rainwater cisterns and other onsite stormwater retention methods) that would serve to capture and infiltrate stormwater, promoting groundwater recharge, in accordance with current LID requirements. Additionally, operation of the MSF would not involve the extraction of any groundwater. Therefore, the MSF would not be expected to result in a decrease in groundwater supplies or interfere substantially with groundwater recharge to the extent that the MSF may impede sustainable groundwater management of the basin. Depending on final design features, exfiltration from LID BMPs is anticipated to improve groundwater recharge characteristics of the area.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to groundwater supply and recharge during construction and operation of the MSF would be less than significant.

8.3.3 Impact HWQ-3: 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, in a manner which would:

i) result in substantial erosion or siltation on- or off-site;

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?

8.3.3.1 Operational Impacts

Operation of Alternative 4 would result in a net decrease in impervious surfaces compared to existing conditions because the Alternative 4 alignment and components would generally be in the public ROW and partially underground, and other land surfaces in the Project Study Area are developed and covered by existing impervious surfaces, including the footprints of Alternative 4 components.

Components that may increase (based on initial estimates) the existing impervious surface area include the UCLA Gateway Plaza Station, Metro G Line Station, and the Van Nuys Metrolink Station. The actual footprint of Alternative 4 at the ground level would be less than the total amount of impervious surface area created by the Alternative 4 components. The footprints of the Alternative 4 components would be nominal when compared to the area of the watershed. Table 8-6 lists the existing impervious surface area, estimated amount of new/reconstructed impervious surfaces added by Alternative 4 components, and the net impervious surface area created.

Any increase in impervious surface area would potentially increase runoff rates, pollutant concentrations, and pollutant loading. Even though Alternative 4 would result in a net decrease in impervious area compared to existing conditions, LID features would be implemented to maintain existing drainage patterns, reduce runoff amounts, and minimize pollutant discharge. Alternative 4 design and LID BMPs would offset any increases in flow and changes to drainage patterns post-Alternative 4. Operation of Alternative 4 would not alter the course of any streams or rivers or impede or redirect flows. Existing drainage patterns would be maintained as much as possible.

As previously described, Alternative 4 would be designed to incorporate sustainability features and would be required to comply with the *Low Impact Development Standards Manual* (LADPW, 2014) and the City of Los Angeles *Planning and Land Development Handbook for Low Impact Development* (City of Los Angeles, 2016), which would serve to reduce impervious area, promote infiltration, and reduce runoff, thereby improving water quality. Alternative 4 would also comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control plans including the Basin Plan (LARWQCB, 2014) and the MS4 Permit, as well as commonly used industry standards.

Alternative 4 would comply with the Caltrans NPDES Statewide Stormwater Permit, the City of Los Angeles Municipal Code, the City of Los Angeles and County of Los Angeles LID Ordinance, and all other applicable regulations for all operational activities, including adherence to an approved Alternative 4-specific LID Plan, which would identify the best management practices (BMP) for Alternative 4 operations. The LID Plan would identify the BMPs for the Alternative 4 post-construction design (i.e., operational characteristics to control/treat runoff for the range of potential pollutants). Alternative 4 would include design elements that would serve to infiltrate, capture, and re-use stormwater in accordance with current LID requirements — thereby minimizing the potential for increased surface runoff, flooding, erosion and siltation, and pollutant discharge. LID design features would slow (detain or retain) stormwater, which would reduce the runoff volume discharged from Alternative 4 and would decrease the peak runoff discharge velocity for design storms — which would also ultimately reduce the amount of stormwater runoff burden into the city's stormwater conveyance systems. As a result, LID design would reduce flow to maintain pre-Alternative 4 conditions; therefore, less flow with fewer pollutants would be transported through the conveyance systems minimizing the potential for flooding and pollutant transport into surface receiving waters.

Alternative 4 is anticipated to require IGP coverage for maintenance facilities, fueling operations, equipment cleaning/washing operations, and TPSSs. As such, an IGP SWPPP would be prepared and submitted to the SWRCB prior to operations and adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases. Other BMPs may also be employed as appropriate, such as indoor/covered areas for cabin maintenance, approved flammable/hazmat storage lockers for lubricants and other industrial liquids, drip/spill protection in maintenance areas and similar BMPs when conducting tower maintenance, dry clean-up practices, and dedicated enclosed areas for metal working, painting, and welding.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff resulting in flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows during operation of Alternative 4 would be less than significant.

8.3.3.2 Construction Impacts

Construction activities such as demolition of existing site structures and excavation for foundations would temporarily expose bare soil, which would be at increased risk for erosion. Exposed or stockpiled soils would also be at increased risk for erosion. Sediments resulting from erosion might accumulate, blocking storm drain inlets and causing downstream sedimentation. Uncontrolled erosion and discharge of sediments and other potential pollutants would affect water quality in the Alternative 4 receiving waters if not appropriately managed by proper implementation of the construction SWPPP.

The construction of new impervious surfaces would increase the rate of runoff, pollutant concentrations, and pollutant loading from these new impervious surfaces. Construction activities would temporarily increase the potential for stormwater to contact other construction-related contaminants creating additional sources of pollutant runoff. Additionally, placement of construction equipment and materials may temporarily impact localized drainage patterns. To address these temporary impacts, Alternative 4 would implement runoff control measures and pollution prevention practices in compliance with the construction SWPPP to control runoff rates/amounts and the discharge of potential pollutants. Existing drainage systems would be modified where applicable and the existing drainage patterns would be maintained as much as possible and monitored throughout construction.

Alternative 4 would be located within the Los Angeles Watershed and the Santa Monica Bay Watershed in the Ballona Creek subwatershed. The vast majority of land in the Los Angeles Watershed (approximately 80 percent) is developed with urban uses. Most of the Ballona Creek subwatershed drainage network has been modified into storm drains, underground culverts, and open concrete channels. A few natural channels remain in the Santa Monica Mountains and Baldwin Hills. Construction activities associated with Alternative 4, such as excavation near the Santa Monica Mountains and Baldwin Hills, and tunneling through the Eastern Santa Monica Mountains, would temporarily impact the drainage course of these natural channels. However, any impacts to channels would be temporary and would be minimized with implementation of a SWPPP, which would help to maintain existing drainage patterns and control stormwater runoff from construction areas.

As previously discussed, Alternative 4 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Polices, NPDES CGP regulations, Caltrans NPDES Statewide Stormwater Permit, Basin Plan (LARWQCB, 2014), City of Los Angeles Municipal Code, the City of Los Angeles and County of Los Angeles LID Ordinance, and all other applicable regulations for all construction activities.

In accordance with the CGP, Alternative 4 would be required to prepare and submit a construction SWPPP, which must be submitted to the SWRCB prior to construction and adhered to during construction. Proper implementation of the construction SWPPP would avoid potential impacts to water quality. The construction SWPPP would identify the BMPs that would be in place to protect water quality prior to the start of construction activities and during construction. BMP categories would include erosion control, sediment control, non-stormwater management, and materials management BMPs. Although specific temporary construction-related BMPs would be selected at the time of SWPPP preparation, potential BMPs would likely include fiber rolls, bonded-fiber matrix hydroseeding, soil furrowing, water bars, and check dams for erosion control, inlet protection (sand/gravel bags and geotextiles), silt fencing, sediment traps/basins for sediment controls, soil berming around disturbed areas, and phasing of soil disturbance during the wet season (i.e., limiting widespread grading) for effectively managing erosion and pollutant discharge during significant rainfall events.

Construction activities would temporarily impact localized drainage patterns; however, these impacts would not substantially increase the rate or volume of stormwater flows. Construction activities would comply with all applicable federal and local floodplain regulations, including the Los Angeles County Comprehensive Floodplain Management Plan. Furthermore, implementation of runoff control measures and pollution prevention practices would control stormwater runoff from the Alternative 4 construction areas and would minimize construction-related flooding impacts, erosion, and pollutant discharge.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff resulting in flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows during construction of Alternative 4 would be less than significant.

8.3.3.3 Maintenance and Storage Facility

As described in Sections 8.3.3.1 and 8.3.3.2, the MSF would comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, as well as commonly used industry standards. The MSF would include design elements that would serve to capture and re-use stormwater in accordance with current LID requirements — thereby minimizing the potential for increased runoff rates/amounts, flooding, erosion and siltation, and pollutant runoff. LID design features would slow (detain or retain) stormwater, which would reduce the runoff volume discharged from the MSF and would decrease the peak runoff discharge velocity for design storms. As a result, MSF design and LID BMPs would offset any increases in flow and changes to drainage patterns post-MSF; therefore, less flow with fewer pollutants would be transported through the conveyance systems minimizing flooding and pollutant transport into surface receiving waters. In addition, existing drainage patterns would be maintained as much as possible and operation of the MSF would not alter the course of any streams or rivers or impede or redirect flows.

During operations, the MSF would be required to obtain IGP coverage. An IGP SWPPP would be prepared and submitted to the SWRCB prior to operations. The IGP SWPPP would include discharge prohibitions, effluent limitations, and receiving water limitations that must be adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases.

Construction activities would comply with all applicable federal and local floodplain regulations and any impacts to existing drainage patterns would be temporary. Implementation of runoff control measures and pollution prevention practices in compliance with the construction SWPPP would control stormwater runoff from the MSF construction areas to minimize construction-related flooding impacts, erosion, and the discharge of potential pollutants, including sedimentation/siltation.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff resulting in flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows during construction and operation of the MSF would be less than significant.

8.3.4 Impact HWQ-4: Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

8.3.4.1 Operational Impacts

The Alternative 4 alignment would be partially underground. Thus, there would be minimal potential for operations of the underground portion of Alternative 4 to release pollutants during inundation by flooding, tsunami, or seiche.

The majority of the aerial and underground portions of the Alternative 4 alignment would be constructed outside of the FEMA-designated 100-year floodplain and would be in an inland area that is not in proximity to the ocean; therefore, the risk of inundation by a tsunami is considered low. A small segment of Alternative 4, located at the ridgetop of the Santa Monica Mountains at Mulholland Drive, and open space areas, owned by Los Angeles County, are located in Zone D, which is an area of undetermined flood hazard. However, the Alternative 4 alignment at Mulholland Drive would be underground, and there would be low potential for inundation. The channelized limits of the Los Angeles River, where it crosses I-405 and Sepulveda Boulevard, is identified as Zone AE and other small portions within Alternative 4 east of Overland Avenue would be within Zones AO and AH and would be subject to inundation by a 1 percent annual chance of flooding. There are no 500-year flood plains within the Project Study Area.

Both Encino Reservoir and SCR are in the Santa Monica Mountains and are subject to Zones A and AE, respectively. These reservoirs have a risk of inundation with a 1 percent annual chance of flooding since they retain a significant amount of water. However, given the distance of Alternative 4 from the reservoirs, any oscillation and subsequent release of water in the reservoirs as part of a seiche would not inundate Alternative 4. Therefore, there would be low potential for risk of release of pollutants due to inundation by seiche.

The Los Angeles River and Ballona Creek are the major flood control measures for draining stormwater from the Project Study Area and directing it safely to the San Pedro Bay and Santa Monica Bay, respectively. The potential risk related to flooding would be considered low as Alternative 4would extend along well-developed areas that maintain storm drainage and water runoff control. In addition, as previously described, Alternative 4 would implement LID BMPs to offset any increases in runoff rates due to the creation of new impervious surface areas. LID design features would reduce the runoff volume discharged from Alternative 4, thereby minimizing the potential for flooding.

The Alternative 4 alignment would not result in impacts to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways. Alternative 4 would not alter the ability of floodways to convey the 100-year flows and there would be negligible change to the floodplain extents.

Alternative 4 would have no impacts related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during operations would be less than significant.

8.3.4.2 Construction Impacts

Impacts related to release of pollutants due to Alternative 4 inundation by flood, tsunami, or seiche during construction activities would be similar to operational impacts. Similar to operational impacts, the majority of the Alternative 4 alignment would be constructed outside of the FEMA-designated 100-

year floodplain and would be in an inland area that is not in proximity to the ocean; therefore, the risk of inundation by a tsunami is considered low.

Given the distance of Alternative 4 from Encino and Stone Canyon Reservoirs, any oscillation and subsequent release of water in the reservoirs as part of a seiche would not inundate Alternative 4. Therefore, there would be low potential for risk of release of pollutants due to inundation by seiche.

Los Angeles River and Ballona Creek are the major flood control measures for draining stormwater from the Project Study Area and directing it safely to the San Pedro Bay and Santa Monica Bay, respectively. The risk related to flooding would be considered low as Alternative 4 would extend along well-developed areas that maintain storm drainage and water runoff control.

The Alternative 4 alignment would not result in impacts to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways.

Alternative 4 would have no impacts related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during construction would be less than significant.

8.3.4.3 Maintenance and Storage Facility

Impacts related to release of pollutants due to inundation by flood, tsunami, or seiche during operational and construction activities of the MSF would be similar to the operational and construction activities of the rest of the Alternative 4 components. The MSF would be located outside of the FEMA-designated 100-year floodplain and would be in an inland area that is not in proximity to the ocean; therefore, the risk of inundation by a tsunami is considered low.

Given the distance of the MSF from Encino and Stone Canyon Reservoirs, any oscillation and subsequent release of water in the reservoirs as part of a seiche would not inundate the MSF. Therefore, there would be low potential for risk of release of pollutants due to inundation by seiche.

The Los Angeles River and Ballona Creek are the major flood control measures for draining stormwater from the Project Study Area and directing it safely to the San Pedro Bay and Santa Monica Bay, respectively. The risk related to flooding would be considered low as the MSF is within a well-developed area that maintains storm drainage and water runoff control.

The MSF would not result in impacts to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways.

The MSF would have no impacts related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during construction and operation of the MSF would be less than significant.

8.3.5 Impact HWQ-5: Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

8.3.5.1 Operational Impacts

Alternative 4 would require routine maintenance that would be performed by the system operator. Potential pollutants (e.g., petroleum products/lubricants, paints, solvents, and other Alternative 4-related products) used or generated during Alternative 4 operations and maintenance would contribute to water pollution. Uncontrolled discharge of runoff carrying these potential pollutants would result in significant impacts to water quality in receiving waters, which would violate federal, state, and local water quality standards and WDRs, if not appropriately managed. As previously discussed, Alternative 4 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan (LARWQCB, 2014), the Caltrans NPDES Statewide Stormwater Permit, *Ballona Creek Watershed Management Plan* (LADPW, 2004), and the *LA River Master Plan* (Los Angeles County and Los Angeles County Public Works, 2022), the MS4 Permit, and the City of Los Angeles and County of Los Angeles LID Ordinance, as well as commonly used industry standards.

The City of Los Angeles city ordinances related to stormwater control and LID requirements for sustainability contain compliance provisions for BMPs that must address water infiltration, treatment, and peak-flow discharge. The City of Los Angeles provides guidance to developers of newly developed projects for compliance with regulatory standards through the LID Standards Manual.

As previously described, Alternative 4 would comply with all applicable regulations for all operational activities, including adherence to an approved LID Plan that would identify the BMPs for Alternative 4 operations. Alternative 4 would incorporate into its design on-site drainage systems and sustainability features that would meet regulatory requirements of the applicable plans for the protection of water resources.

The LID Plan would identify the BMPs for the Alternative 4 post-construction design (i.e., operational characteristics to control/treat runoff for the range of potential pollutants). Alternative 4 would include design elements that would serve to infiltrate, capture, and re-use stormwater in accordance with current LID requirements — thereby minimizing the potential for increased runoff volumes/rates and pollutant transport. LID design features, such as depressed landscape gardens for runoff retention and infiltration, permeable surfaces to reduce runoff volume, hardscape replacement with pervious or planted substitutions, bioswales or artistic water features that creatively convey runoff into planted or pervious areas, roof downspout discharges to vegetated areas, and rainwater cisterns and other on-site stormwater retention methods, would slow (detain or retain) stormwater, which would reduce the runoff volume discharged from Alternative 4 and would decrease the peak runoff discharge velocity for design storms — which would also ultimately reduce the amount of stormwater runoff burden into the city’s stormwater conveyance systems. As a result, less flow with fewer pollutants would be transported through the conveyance systems, and ultimately into surface waters, including ancillary exfiltration to the groundwater table. Additionally, natural treatment of infiltrated runoff would occur, thereby improving exfiltrated water from LID and water quality additions to the groundwater table.

Additionally, operation of Alternative 4 would not involve the extraction of any groundwater. Therefore, Alternative 4 would not be expected to result in a decrease in groundwater supplies or interfere substantially with groundwater recharge to the extent that Alternative 4 may impede sustainable groundwater management of the basin. Depending on final design features, exfiltration from LID BMPs is anticipated to improve groundwater recharge characteristics of the area.

Alternative 4 is anticipated to require IGP coverage for maintenance facilities, fueling operations, equipment cleaning/washing operations, and TPSSs. As such, an IGP SWPPP would be prepared and submitted to the SWRCB prior to and adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases. Other BMPs may also be employed as appropriate, such as indoor/covered areas for maintenance, approved flammable/hazmat storage lockers for lubricants and other industrial liquids, drip/spill protection in maintenance areas and similar BMPs when conducting tower maintenance, dry clean-up practices, and dedicated enclosed areas for metal working, painting, and welding.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during operations of Alternative 4 would be less than significant.

8.3.5.2 Construction Impacts

Construction of the Alternative 4 components would be conducted in several phases, including site preparation and installation of foundations and columns; erection of stations, construction of tunnels; and construction of ancillary components, including replacement or restoration of paving, sidewalk, and landscaping.

Construction of Alternative 4 has the potential to impact water quality of downstream receiving waters if applicable and appropriate BMPs are not implemented. Construction activities such as demolition of existing site structures and excavation for foundations would temporarily expose bare soil and would temporarily increase erosion. Exposed or stockpiled soils would also be at increased risk for erosion. Uncontrolled erosion and discharge of sediments and other potential pollutants would affect water quality in Alternative 4 receiving waters (e.g., the Pacoima Wash, Tujunga Wash, and Los Angeles River) if not appropriately managed by proper implementation of the construction SWPPP.

In addition to sediments, other pollutants including trash, concrete waste, and petroleum products (e.g., heavy equipment fuels, solvents, and lubricants) would contribute to stormwater pollution if not appropriately managed. The use of construction equipment and other vehicles during Alternative 4 construction would result in spills of oil, brake fluid, grease, antifreeze, or other vehicle-related fluids, which would contribute to water quality impacts. Improper handling, storage, or disposal of fuels and vehicle-related fluids or improper cleaning and maintenance of equipment would result in accidental spills and discharges that would contribute to water pollution.

Nuisance groundwater may be encountered during installation of piles for each of the components, which may result in degradation of groundwater quality if not addressed properly. Additionally, potentially impacted groundwater may result in degradation of surface water if it is not properly managed during construction activities. Although construction activities are not anticipated to interfere substantially with groundwater recharge, groundwater resource supplies, or groundwater quality, any accidental interference would be handled in accordance with applicable federal, state, regional, and local laws and regulations, groundwater management plans, and WDRs for groundwater discharge.

As discussed previously, Alternative 4 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan (LARWQCB, 2014), as well as commonly used industry standards. Alternative 4 would comply with the Caltrans NPDES Statewide Stormwater Permit, the NPDES CGP, the MS4 Permit, the City of Los Angeles and County of Los Angeles LID Ordinance, the City of Los Angeles Municipal Code, and all other applicable regulations for all construction activities.

In accordance with the CGP, Alternative 4 would be required to implement a construction SWPPP, which must be submitted to the SWRCB prior to construction and adhered to during construction. Proper implementation of the construction SWPPP would avoid potential impacts to water quality. The construction SWPPP would identify the BMPs that would be in place to protect water quality prior to the start of construction activities and during construction. The BMP categories would include erosion control, sediment control, non-stormwater management, and materials management BMPs. Although specific temporary construction-related BMPs would be selected at the time of SWPPP preparation, potential BMPs would likely include fiber rolls, bonded-fiber matrix hydroseeding, soil furrowing, water bars, and check dams for erosion control, inlet protection (sand/gravel bags and geotextiles), silt fencing, sediment traps/basins for sediment controls, soil berming around disturbed areas, and phasing of soil disturbance during the wet season (i.e., limiting widespread grading) for effectively managing erosion and pollutant discharge during significant rainfall events.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during construction of Alternative 4 would be less than significant.

8.3.5.3 Maintenance and Storage Facility

As described in Sections 8.3.5.1 and 8.3.5.2, the MSF would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans. The MSF would incorporate into its design on-site drainage systems and sustainability features that would meet regulatory requirements of the applicable plans for the protection of water resources. The MSF would include design elements that would serve to capture, treat, and re-use stormwater in accordance with current LID requirements, promoting infiltration and groundwater recharge. The MSF would not be expected to result in a decrease in groundwater supplies or interfere substantially with groundwater recharge to the extent that the MSF may impede sustainable groundwater management of the basin. Dewatering would be limited to the construction phase only. Extracting large volumes of groundwater that would decrease groundwater supplies would not be expected during construction.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during construction and operation of the MSF would be less than significant.

8.4 Mitigation Measures

8.4.1 Operational Impacts

No mitigation measures are required.

8.4.2 Construction Impacts

No mitigation measures are required.

8.4.3 Impacts After Mitigation

No mitigation measures are required; impacts are less than significant.

9 ALTERNATIVE 5

9.1 Alternative Description

Alternative 5 consists of a heavy rail transit (HRT) system with a primarily underground guideway track configuration, including seven underground stations and one aerial station. This alternative would include five transfers to high-frequency fixed guideway transit and commuter rail lines, including the Los Angeles County Metropolitan Transportation Authority's (Metro) E, Metro D, and Metro G Lines, East San Fernando Valley Light Rail Transit Line, and the Metrolink Ventura County Line. The length of the alignment between the terminus stations would be approximately 13.8 miles, with 0.7 mile of aerial guideway and 13.1 miles of underground configuration.

The seven underground and one aerial HRT stations would be as follows:

1. Metro E Line Expo/Sepulveda Station (underground)
2. Santa Monica Boulevard Station (underground)
3. Wilshire Boulevard/Metro D Line Station (underground)
4. UCLA Gateway Plaza Station (underground)
5. Ventura Boulevard/Sepulveda Boulevard Station (underground)
6. Metro G Line Sepulveda Station (underground)
7. Sherman Way Station (underground)
8. Van Nuys Metrolink Station (aerial)

9.1.1 Operating Characteristics

9.1.1.1 Alignment

As shown on Figure 9-1, from its southern terminus station at the Metro E Line Expo/Sepulveda Station, the alignment of Alternative 5 would run underground north through the Westside of Los Angeles (Westside), the Santa Monica Mountains, and the San Fernando Valley (Valley) to a tunnel portal east of Sepulveda Boulevard and south of Raymer Street. As it approaches the tunnel portal, the alignment would curve eastward and begin to transition to an aerial guideway along the south side of the Los Angeles-San Diego-San Luis Obispo (LOSSAN) rail corridor that would continue to the northern terminus station adjacent to the Van Nuys Metrolink/Amtrak Station.

The proposed southern terminus station would be located underground east of Sepulveda Boulevard between the existing elevated Metro E Line tracks and Pico Boulevard. Tail tracks for vehicle storage would extend underground south of National Boulevard east of Sepulveda Boulevard. The alignment would continue north beneath Bentley Avenue before curving northwest to an underground station at the southeast corner of Santa Monica Boulevard and Sepulveda Boulevard. From the Santa Monica Boulevard Station, the alignment would continue and curve eastward to the Wilshire Boulevard/Metro D Line Station beneath the Metro D Line Westwood/UCLA Station, which is currently under construction as part of the Metro D Line Extension Project. From there, the underground alignment would curve slightly to the northeast and continue beneath Westwood Boulevard before reaching the UCLA Gateway Plaza Station.

Figure 9-1. Alternative 5: Alignment

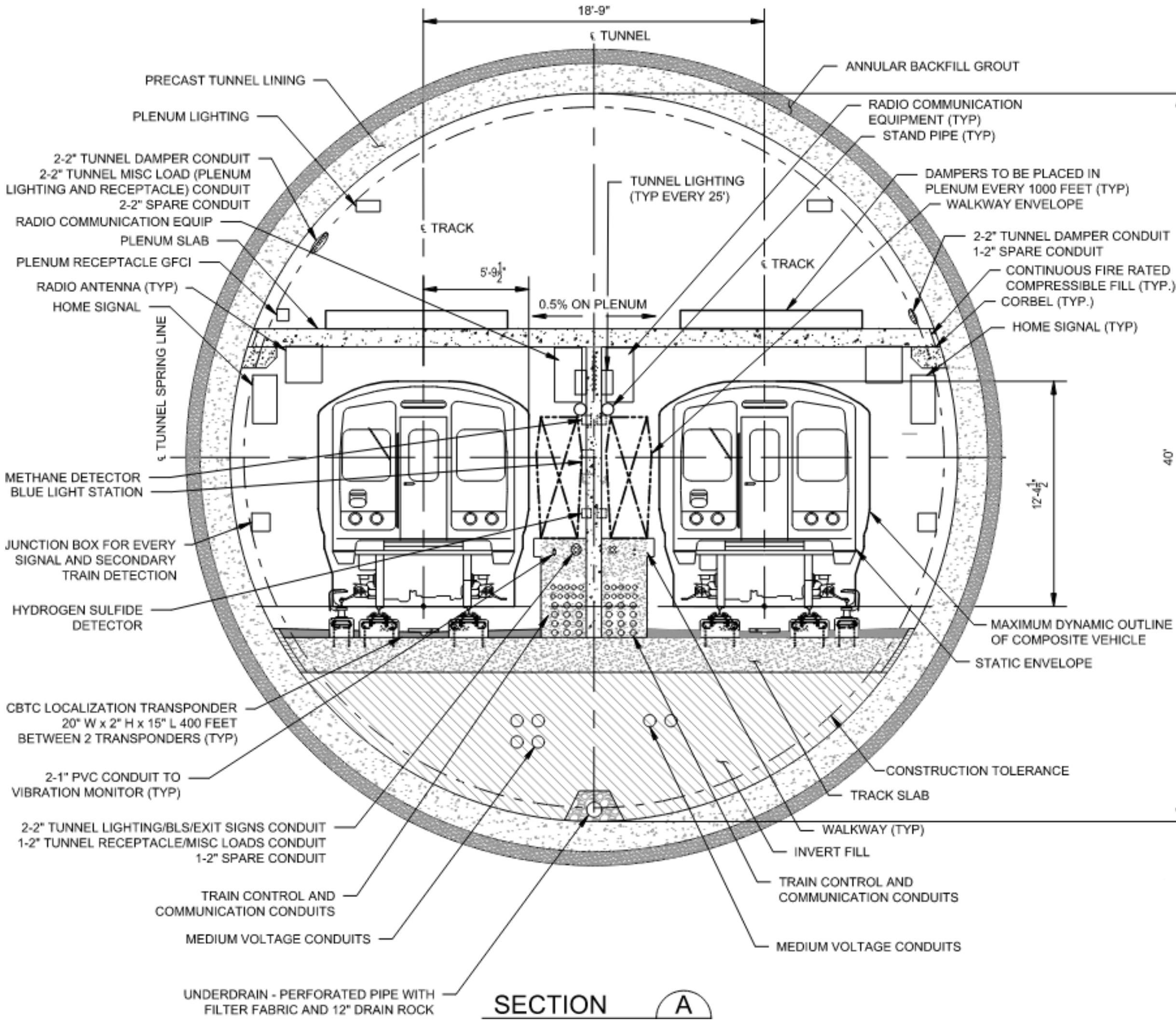
Source: STCP, 2024; HTA, 2024

From the UCLA Gateway Plaza Station, the alignment would turn to the northwest beneath the Santa Monica Mountains to the east of Interstate 405 (I-405). South of Mulholland Drive, the alignment would curve to the north, aligning with Saugus Avenue south of Valley Vista Boulevard. The Ventura Boulevard Station would be located under Saugus Avenue between Greenleaf Street and Dickens Street. The alignment would then continue north beneath Sepulveda Boulevard to the Metro G Line Sepulveda Station immediately south of the Metro G Line Busway. After leaving the Metro G Line Sepulveda Station, the alignment would continue beneath Sepulveda Boulevard to reach the Sherman Way Station, the final underground station along the alignment, immediately south of Sherman Way. From the Sherman Way Station, the alignment would continue north before curving slightly to the northeast to the tunnel portal south of Raymer Street. The alignment would then transition from an underground configuration to an aerial guideway structure after exiting the tunnel portal. East of the tunnel portal, the alignment would transition to a cut-and-cover U-structure segment followed by a trench segment before transitioning to an aerial guideway that would run east along the south side of the LOSSAN rail corridor. Parallel to the LOSSAN rail corridor, the guideway would conflict with the existing Willis Avenue Pedestrian Bridge which would be demolished. The alignment would follow the LOSSAN rail corridor before reaching the proposed northern terminus Van Nuys Metrolink Station located adjacent to the existing Metrolink/Amtrak Station. The tail tracks and yard lead tracks would descend to the proposed at-grade maintenance and storage facility (MSF) east of the proposed northern terminus station. Modifications to the existing pedestrian underpass to the Metrolink platforms to accommodate these tracks would result in reconfiguration of an existing rail spur serving City of Los Angeles Department of Water and Power (LADWP) property.

9.1.1.2 Guideway Characteristics

For underground sections, Alternative 5 would utilize a single-bore tunnel configuration with an outside diameter of approximately 43.5 feet. The tunnel would include two parallel tracks at 18.75-foot spacing in tangent sections separated by a continuous central dividing wall throughout the tunnel. Inner walkways would be constructed adjacent to the two tracks. Inner and outer walkways would be constructed within tunnel sections near the track crossovers. At the crown of tunnel, a dedicated air plenum would be provided by constructing a concrete slab above the railway corridor. The air plenum would allow for ventilation throughout the underground portion of the alignment. Figure 9-2 illustrates these components at a typical cross-section of the underground guideway.

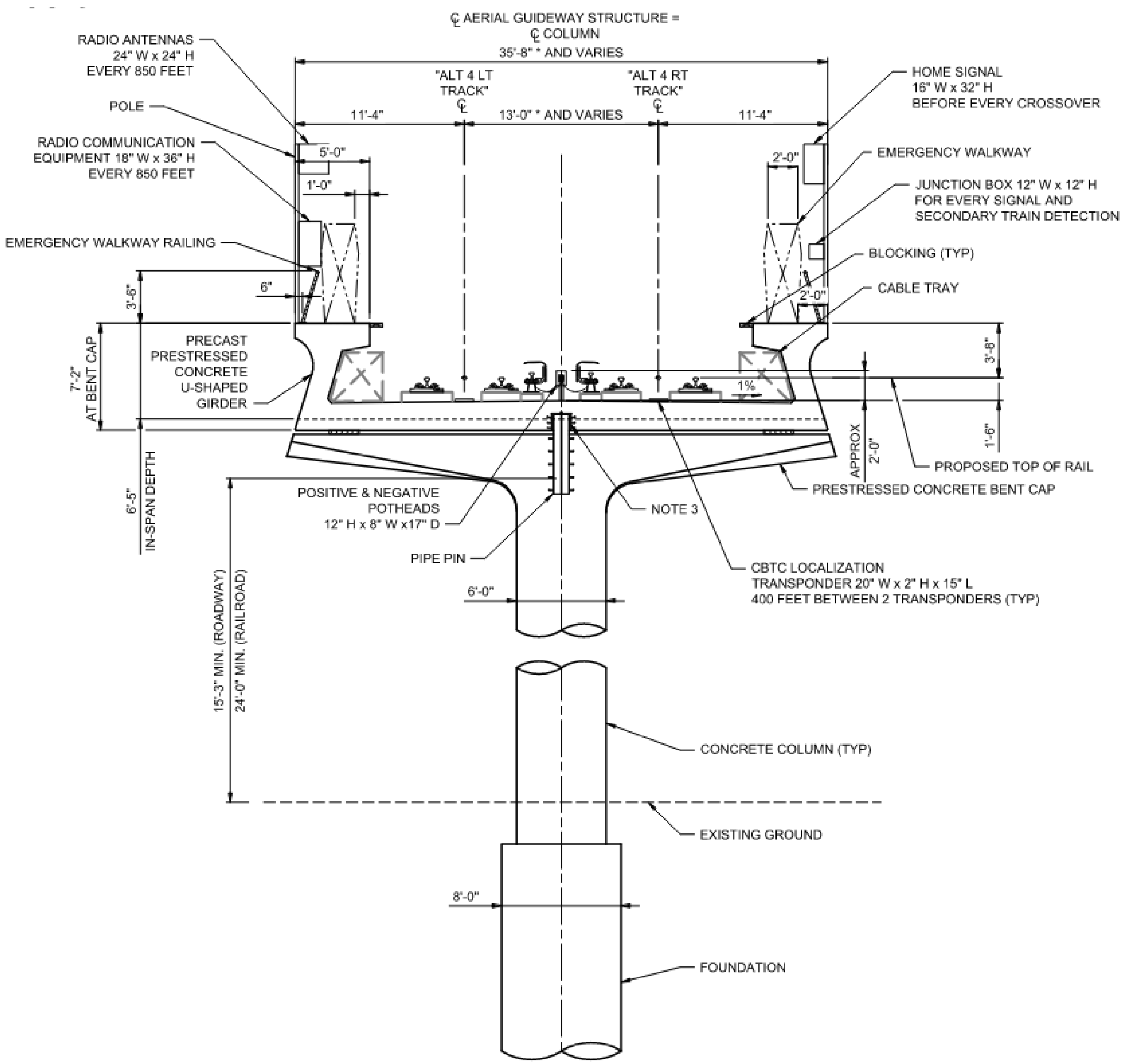
Figure 9-2. Typical Underground Guideway Cross-Section



Source: STCP, 2024

In aerial sections adjacent to Raymer Street and the LOSSAN rail corridor, the guideway would consist of single-column spans. The single-column spans would include a U-shaped concrete girder structure that supports the railway track atop a series of individual columns. The single-column aerial guideway would be approximately 36 feet wide. The track would be constructed on the concrete girders with direct fixation and would maintain a minimum of 13 feet between the two-track centerlines. On the outer side of the tracks, emergency walkways would be constructed with a minimum width of 2 feet. The single-column aerial guideway would be the primary aerial structure throughout the aerial portion of the alignment. Figure 9-3 shows a typical cross-section of the single-column aerial guideway.

Figure 9-3. Typical Aerial Guideway Cross-Section



Source: STCP, 2024

9.1.1.3 Vehicle Technology

Alternative 5 would utilize steel-wheel HRT trains, with automated train operations and planned peak-period headways of 2.5 minutes and off-peak-period headways ranging from 4 to 6 minutes. Each train could consist of three or four cars with open gangways between cars. The HRT vehicle would have a maximum operating speed of 70 miles per hour; actual operating speeds would depend on the design of the guideway and distance between stations. Train cars would be approximately 10 feet wide with three double doors on each side. Each car would be approximately 72 feet long with capacity for 170 passengers. Trains would be powered by a third rail.

9.1.1.4 Stations

Alternative 5 would include seven underground stations and one aerial station with station platforms measuring 280 feet long for both station configurations. The aerial station would be constructed a minimum of 15.25 feet above ground level, supported by rows of dual columns with 8-foot diameters. The southern terminus station would be adjacent to the Metro E Line Expo/Sepulveda Station, and the northern terminus station would be adjacent to the Van Nuys Metrolink/Amtrak Station.

All stations would be side-platform stations where passengers would select and travel up to station platforms depending on their direction of travel. All stations would include 20-foot-wide side platforms separated by 30 feet for side-by-side trains. Each underground station would include an upper and lower concourse level prior to reaching the train platforms. The Van Nuys Metrolink Station would include a mezzanine level prior to reaching the station platforms. Each station would have a minimum of two elevators, two escalators, and one stairway from ground level to the concourse or mezzanine.

Stations would include automatic, bi-parting fixed doors along the edges of station platforms. These platform screen doors would be integrated into the automatic train control system and would not open unless a train is stopped at the platform.

The following information describes each station, with relevant entrance, walkway, and transfer information. Bicycle parking would be provided at each station.

Metro E Line Expo/Sepulveda Station

- This underground station would be located just north of the existing Metro E Line Expo/Sepulveda Station, on the east side of Sepulveda Boulevard.
- A station entrance would be located on the east side of Sepulveda Boulevard north of the Metro E Line.
- A direct internal transfer to the Metro E Line would be provided at street level within the fare paid zone.
- A 126-space parking lot would be located immediately north of the station entrance, east of Sepulveda Boulevard. Passengers would also be able to park at the existing Metro E Line Expo/Sepulveda Station parking facility, which provides 260 parking spaces.

Santa Monica Boulevard Station

- This underground station would be located under the southeast corner of Santa Monica Boulevard and Sepulveda Boulevard.
- The station entrance would be located on the south side of Santa Monica Boulevard between Sepulveda Boulevard and Bentley Avenue.
- No dedicated station parking would be provided at this station.

Wilshire Boulevard/Metro D Line Station

- This underground station would be located beneath the Metro D Line tracks and platform under Gayley Avenue between Wilshire Boulevard and Lindbrook Drive.
- Station entrances would be provided on the northeast corner of Wilshire Boulevard and Gayley Avenue and on the northeast corner of Lindbrook Drive and Gayley Avenue. Passengers would also be able to use the Metro D Line Westwood/UCLA Station entrances to access the station platform.

- A direct internal station transfer to the Metro D Line would be provided at the south end of the station.
- No dedicated station parking would be provided at this station.

UCLA Gateway Plaza Station

- This underground station would be located underneath Gateway Plaza on the University of California, Los Angeles (UCLA) campus.
- Station entrances would be provided on the north side of Gateway Plaza and on the east side of Westwood Boulevard across from Strathmore Place.
- No dedicated station parking would be provided at this station.

Ventura Boulevard/Sepulveda Boulevard Station

- This underground station would be located under Saugus Avenue between Greenleaf Street and Dickens Street.
- A station entrance would be located on the southeast corner of Saugus Avenue and Dickens Street.
- Approximately 92 parking spaces would be supplied at this station west of Sepulveda Boulevard between Dickens Street and the U.S. Highway 101 (US-101) On-Ramp.

Metro G Line Sepulveda Station

- This underground station would be located under Sepulveda Boulevard immediately south of the Metro G Line Busway.
- A station entrance would be provided on the west side of Sepulveda Boulevard south of the Metro G Line Busway.
- Passengers would be able to park at the existing Metro G Line Sepulveda Station parking facility, which has a capacity of 1,205 parking spaces. Currently, only 260 parking spaces are currently used for transit parking. No new parking would be constructed.

Sherman Way Station

- This underground station would be located below Sepulveda Boulevard between Sherman Way and Gault Street.
- The station entrance would be located near the southwest corner of Sepulveda Boulevard and Sherman Way.
- Approximately 122 parking spaces would be supplied at this station on the west side of Sepulveda Boulevard with vehicle access from Sherman Way.

Van Nuys Metrolink Station

- This aerial station would span Van Nuys Boulevard, just south of the LOSSAN rail corridor.
- The primary station entrance would be located on the east side of Van Nuys Boulevard just south of the LOSSAN rail corridor. A secondary station entrance would be located between Raymer Street and Van Nuys Boulevard.
- An underground pedestrian walkway would connect the station plaza to the existing pedestrian underpass to the Metrolink/Amtrak platform outside the fare paid zone.

- Existing Metrolink Station parking would be reconfigured, maintaining approximately the same number of spaces, but 66 parking spaces would be relocated west of Van Nuys Boulevard. Metrolink parking would not be available to Metro transit riders.

9.1.1.5 Station-to-Station Travel Times

Table 9-1 presents the station-to-station distance and travel times at peak period for Alternative 5. The travel times include both run time and dwell time. Dwell time is 30 seconds for transfer stations and 20 seconds for other stations. Northbound and southbound travel times vary slightly because of grade differentials and operational considerations at end-of-line stations.

Table 9-1. Alternative 5: Station-to-Station Travel Times and Station Dwell Times

From Station	To Station	Distance (miles)	Northbound Station-to-Station Travel Time (seconds)	Southbound Station-to-Station Travel Time (seconds)	Dwell Time (seconds)
Metro E Line Station					*30*
Metro E Line	Santa Monica Boulevard	0.9	89	86	—
Santa Monica Boulevard Station					*20*
Santa Monica Boulevard	Wilshire/Metro D Line	0.9	91	92	—
Wilshire/Metro D Line Station					*30*
Wilshire/Metro D Line	UCLA Gateway Plaza	0.7	75	69	—
UCLA Gateway Plaza Station					*20*
UCLA Gateway Plaza	Ventura Boulevard	6.0	368	359	—
Ventura Boulevard Station					*20*
Ventura Boulevard	Metro G Line	2.0	137	138	—
Metro G Line Station					*30*
Metro G Line	Sherman Way	1.4	113	109	—
Sherman Way Station					*20*
Sherman Way	Van Nuys Metrolink	1.9	166	162	—
Van Nuys Metrolink Station					*30*

Source: STCP, 2024

— = no data

9.1.1.6 Special Trackwork

Alternative 5 would include 10 double crossovers throughout the alignment enabling trains to cross over to the parallel track. Each terminus station would include a double crossover immediately north and south of the station. Except for the Santa Monica Boulevard Station, each station would have a double crossover immediately south of the station. The remaining crossover would be located along the alignment midway between the UCLA Gateway Plaza Station and the Ventura Boulevard Station.

9.1.1.7 Maintenance and Storage Facility

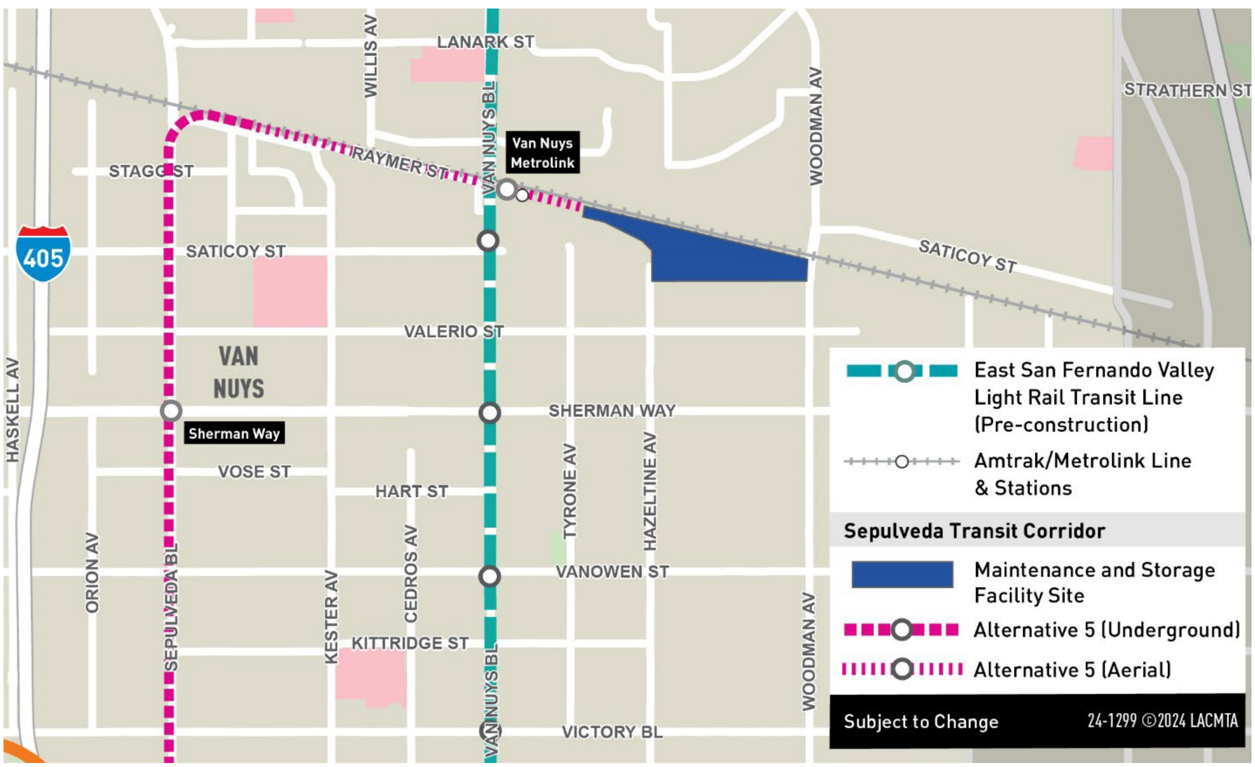
The MSF for Alternative 5 would be located east of the Van Nuys Metrolink Station and would encompass approximately 46 acres. The MSF would be designed to accommodate 184 rail cars and would be bounded by single-family residences to the south, the LOSSAN rail corridor to the north, Woodman Avenue on the east, and Hazeltine Avenue and industrial manufacturing enterprises to the west. Trains would access the site from the fixed guideway's tail tracks at the northwest corner of the site. Trains would then travel southeast to maintenance facilities and storage tracks.

The site would include the following facilities:

- Two entrance gates with guard shacks
- Main shop building
- Maintenance-of-way building
- Storage tracks
- Carwash building
- Cleaning and inspections platforms
- Material storage building
- Hazmat storage locker
- Traction power substation (TPSS) located on the west end of the MSF to serve the mainline
- TPSS located on the east end of the MSF to serve the yard and shops
- Parking area for employees
- Grade separated access roadway (over the HRT tracks at the east end of the facility) and necessary drainage

Figure 9-4 shows the location of the MSF site for Alternative 5.

Figure 9-4. Alternative 5: Maintenance and Storage Facility Site



Source: STCP, 2024; HTA, 2024

9.1.1.8 Traction Power Substations

TPSSs transform and convert high voltage alternating current supplied from power utility feeders into direct current suitable for transit operation. Twelve TPSS facilities would be located along the alignment and would be spaced approximately 0.5 to 2.5 miles apart. All TPSS facilities would be located within the stations, adjacent to the tunnel through the Santa Monica Mountains, or within the MSF. Table 9-2 lists the TPSS locations for Alternative 5.

Figure 9-5 shows the TPSS locations along the Alternative 5 alignment

Table 9-2. Alternative 5: Traction Power Substation Locations

TPSS No.	TPSS Location Description	Configuration
1	TPSS 1 would be located east of Sepulveda Boulevard and north of the Metro E Line.	Underground (within station)
2	TPSS 2 would be located south of Santa Monica Boulevard between Sepulveda Boulevard and Bentley Avenue.	Underground (within station)
3	TPSS 3 would be located at the southeast corner of UCLA Gateway Plaza.	Underground (within station)
4	TPSS 4 would be located south of Bellagio Road and west of Stone Canyon Road.	Underground (adjacent to tunnel)
5	TPSS 5 would be located west of Roscomare Road between Donella Circle and Linda Flora Drive.	Underground (adjacent to tunnel)
6	TPSS 6 would be located east of Loom Place between Longbow Drive and Vista Haven Road.	Underground (adjacent to tunnel)
7	TPSS 7 would be located west of Sepulveda Boulevard between the I-405 Northbound On-Ramp and Dickens Street.	Underground (within station)
8	TPSS 8 would be located west of Sepulveda Boulevard between the Metro G Line Busway and Oxnard Street.	Underground (within station)
9	TPSS 9 would be located at the southwest corner of Sepulveda Boulevard and Sherman Way.	Underground (within station)
10	TPSS 10 would be located south of the LOSSAN rail corridor and north of Raymer Street and Kester Avenue.	At-grade
11	TPSS 11 would be located south of the LOSSAN rail corridor and east of the Van Nuys Metrolink Station.	At-grade (within MSF)
12	TPSS 12 would be located south of the LOSSAN rail corridor and east of Hazeltine Avenue.	At-grade (within MSF)

Source: STCP, 2024; HTA, 2024

Note: Sepulveda Transit Corridor Partners (STCP) has stated that Alternative 5 TPSS locations are derived from and assumed to be similar to the Alternative 4 TPSS locations.

Figure 9-5. Alternative 5: Traction Power Substation Locations

Source: STCP, 2024; HTA, 2024

9.1.1.9 Roadway Configuration Changes

Table 9-3 lists the roadway changes necessary to accommodate the guideway of Alternative 5. Figure 9-6 shows the location of the roadway changes within the Sepulveda Transit Corridor Project (Project) Study Area. In addition to the changes made to accommodate the guideway, as listed in Table 9-3, roadways and sidewalks near stations would be reconstructed, resulting in modifications to curb ramps and driveways.

Table 9-3. Alternative 5: Roadway Changes

Location	From	To	Description of Change
Raymer Street	Kester Avenue	Keswick Street	Reconstruction resulting in narrowing of width and removal of parking on the westbound side of the street to accommodate aerial guideway columns.
Cabrito Road	Raymer Street	Marson Street	Closure of Cabrito Road at the LOSSAN rail corridor at-grade crossing. A new segment of Cabrito Road would be constructed from Noble Avenue and Marson Street to provide access to extra space storage from the north.

Source: STCP, 2024; HTA, 2024

Figure 9-6. Alternative 5: Roadway Changes

Source: STCP, 2024; HTA, 2024

9.1.1.10 Ventilation Facilities

For ventilation, a plenum within the crown of the tunnel would provide a separate compartment for air circulation and allow multiple trains to operate between stations. Each underground station would include a fan room with additional ventilation facilities. Alternative 5 would also include a stand-alone ventilation facility at the tunnel portal on the northern end of the tunnel segment, located east of Sepulveda Boulevard and south of Raymer Street. Within this facility, ventilation fan rooms would provide both emergency ventilation, in case of a tunnel fire, and regular ventilation, during non-revenue hours. The facility would also house sump pump rooms to collect water from various sources, including stormwater; wash-water (from tunnel cleaning); and water from a fire-fighting incident, system testing, or pipe leaks.

9.1.1.11 Fire/Life Safety – Emergency Egress

Within the tunnel segment, emergency walkways would be provided between the center dividing wall and each track. Sliding doors would be located in the central dividing wall at required intervals to connect the two sides of the railway with a continuous walkway to allow for safe egress to a point of safety (typically at a station) during an emergency. Similarly, the aerial guideway near the LOSSAN rail corridor would include two emergency walkways with safety railing located on the outer side of the tracks. Access to tunnel segments for first responders would be through stations and the portal.

9.1.2 Construction Activities

Temporary construction activities for Alternative 5 would include project work zones at permanent facility locations, construction staging and laydown areas, and construction office areas. Construction of the transit facilities through substantial completion is expected to have a duration of 8 ¼ years. Early works, such as site preparation, demolition, and utility relocation, could start in advance of construction of the transit facilities.

For the guideway, Alternative 5 would consist of a single-bore tunnel through the Westside, Valley, and Santa Monica Mountains. The tunnel would comprise three separate segments, one running north from the southern terminus to the UCLA Gateway Plaza Station (Westside segment), one running south from the Ventura Boulevard Station to the UCLA Gateway Plaza Station (Santa Monica Mountains segment), and one running north from the Ventura Boulevard Station to the portal near Raymer Street (Valley segment). Tunnel boring machines (TBM) with approximately 45-foot-diameter cutting faces would be used to construct the tunnel segments underground. For the Westside segment, the TBM would be launched from Staging Area No. 1 in Table 9-4 at Sepulveda Boulevard and National Boulevard. For the Santa Monica Mountains segment, the TBMs would be launched from the Ventura Boulevard Station. Both TBMs would be extracted from the UCLA Gateway Plaza Station Staging Area No. 3 in Table 9-4. For the Valley segment, the TBM would be launched from Staging Area No. 8 as shown in Table 9-4 and extracted from the Ventura Boulevard Station. Figure 9-7 shows the location of construction staging locations along the Alternative 5 alignment.

Table 9-4. Alternative 5: On-Site Construction Staging Locations

No.	Location Description
1	Commercial properties on southeast corner of Sepulveda Boulevard and National Boulevard
2	North side of Wilshire Boulevard between Veteran Avenue and Gayley Avenue
3	UCLA Gateway Plaza
4	Commercial property on southwest corner of Sepulveda Boulevard and Dickens Street
5	West of Sepulveda Boulevard between US-101 and Sherman Oaks Castle Park
6	Lot behind Los Angeles Fire Department Station 88
7	Property on the west side of Sepulveda Boulevard between Sherman Way and Gault Street
8	Industrial property on both sides of Raymer Street, west of Burnet Avenue
9	South of the LOSSAN rail corridor east of Van Nuys Metrolink Station, west of Woodman Avenue

Source: STCP, 2024; HTA, 2024

Figure 9-7 Alternative 5: On-Site Construction Staging Locations

Source: STCP, 2024; HTA, 2024

The distance from the surface to the top of the tunnel for the Westside tunnel would vary from approximately 40 feet to 90 feet depending on the depth needed to construct the underground stations. The depth of the Santa Monica Mountains tunnel segment varies greatly from approximately 470 feet as it passes under the Santa Monica Mountains to 50 feet near UCLA. The depth of the Valley segment would vary from approximately 40 feet near the Ventura Boulevard/Sepulveda Station and north of the Metro G Line Sepulveda Station to 150 feet near Weddington Street. The tunnel segments through the Westside and Valley would be excavated in soft ground while the tunnel through the Santa Monica Mountains would be excavated primarily in hard ground or rock as geotechnical conditions transition from soft to hard ground near the UCLA Gateway Plaza Station.

Construction work zones would also be co-located with future MSF and station locations. All work zones would comprise the permanent facility footprint with additional temporary construction easements from adjoining properties.

All underground stations would be constructed using a “cut-and-cover” method whereby the underground station structure would be constructed within a trench excavated from the surface with a portion or all being covered by a temporary deck and backfilled during the later stages of station construction. Traffic and pedestrian detours would be necessary during underground station excavation until decking is in place and the appropriate safety measures are taken to resume cross traffic.

In addition to work zones, Alternative 5 would include construction staging and laydown areas at multiple locations along the alignment as well as off-site staging areas. Construction staging areas would provide the necessary space for the following activities:

- Contractors’ equipment
- Receiving deliveries
- Testing of soils for minerals or hazards
- Storing materials
- Site offices
- Work zone for excavation
- Other construction activities (including parking and change facilities for workers, location of construction office trailers, storage, staging and delivery of construction materials and permanent plant equipment, and maintenance of construction equipment).

A larger, off-site staging area would be used for temporary storage of excavated material from both tunneling and station cut-and-cover excavation activities. Table 9-4 and Figure 9-7 present the potential construction staging areas along the alignment for Alternative 5. Table 9-5 and Figure 9-8 present candidate sites for off-site staging and laydown areas.

Table 9-5. Alternative 5: Potential Off-Site Construction Staging Locations

No.	Location Description
S1	East of Santa Monica Airport Runway
S2	Ralph’s Parking Lot in Westwood Village
N1	West of Sepulveda Basin Sports Complex, south of the Los Angeles River
N2	West of Sepulveda Basin Sports Complex, north of the Los Angeles River
N3	Metro G Line Sepulveda Station Park & Ride Lot
N4	North of Roscoe Boulevard and Hayvenhurst Avenue
N5	LADWP property south of the LOSSAN rail corridor, east of Van Nuys Metrolink Station

Source: STCP, 2024; HTA, 2024

Figure 9-8. Alternative 5: Potential Off-Site Construction Staging Locations

Source: STCP, 2024; HTA, 2024

Construction of the HRT guideway between the Van Nuys Metrolink Station and the MSF would require reconfiguration of an existing rail spur serving LADWP property. The new location of the rail spur would require modification to the existing pedestrian undercrossing at the Van Nuys Metrolink Station.

Alternative 5 would require construction of a concrete casting facility for tunnel lining segments because no existing commercial fabricator capable of producing tunnel lining segments for a large-diameter tunnel exists within a practical distance of the Project Study Area. The site of the MSF would initially be used for this casting facility. The casting facility would include casting beds and associated casting equipment, storage areas for cement and aggregate, and a field quality control facility, which would need to be constructed on-site. When a more detailed design of the facility is completed, the contractor would obtain all permits and approvals necessary from the City of Los Angeles, the South Coast Air Quality Management District, and other regulatory entities.

As areas of the MSF site begin to become available following completion of pre-casting operations, construction of permanent facilities for the MSF would begin, including construction of surface buildings such as maintenance shops, administrative offices, train control, traction power, and systems facilities. Some of the yard storage track would also be constructed at this time to allow delivery and inspection of passenger vehicles that would be fabricated elsewhere. Additional activities occurring at the MSF during the final phase of construction would include staging of trackwork and welding of guideway rail.

9.2 Existing Conditions

9.2.1 Water Resources Study Area

The water resources study area includes surface water and groundwater resources within the Project Study Area. A variety of creeks, rivers, human-made reservoirs, and canals exist within the Project Study Area (Figure 9-9). In the northern portion of the Project Study Area, the Pacoima Wash extends to Vanowen Street between Sepulveda Boulevard and Van Nuys Boulevard. North of the Santa Monica Mountains, the Los Angeles River crosses the Project Study Area north of US-101. Encino Creek is located southwest of the junction of I-405 and US-101. Located outside and south of the Project Study Area, Ballona Creek, the Centinela Creek Channel, and the Sepulveda Channel cross near State Route 90. South of the Project Study Area, the Sepulveda Channel runs along the westside of I-405 and collects water from various catch basins and transports the water to Ballona Creek. Water from Ballona Creek ultimately discharges at the Marina del Rey Harbor.

There are several reservoirs largely concentrated in the Santa Monica Mountains. The Stone Canyon Reservoir (SCR) is located to the east of I-405 in the Santa Monica Mountains, 13 miles northwest of downtown Los Angeles. This reservoir provides water to 400,000 people in Pacific Palisades, the Santa Monica Mountains, and West Los Angeles. The Encino Reservoir is located west of I-405 within the Santa Monica Mountains in the City of Los Angeles Community of Encino. The Sepulveda Dam Recreation Area is located north of the I-405/US-101 interchange in the Valley.

9.2.2 Watershed Setting and Local Surface Water Bodies

The Project Study Area is located within the Los Angeles Watershed (HUC8) in the Upper Los Angeles River Watershed (HUC10) and the Santa Monica Bay Watershed (HUC8) in the Ballona Creek Watershed (HUC10) and the Garapito Creek-Frontal Santa Monica Bay Watershed (HUC10) (Figure 9-9). The receiving waters within the Project Study Area include the Los Angeles River with its respective tributaries. The Los Angeles River crosses the Project Study Area roughly parallel to US-101.

Figure 9-9. Alternative 5: Watersheds in the Project Study Area

Source: USGS, 2023

9.2.2.1 Los Angeles Watershed

The Los Angeles Watershed covers an area of over 824 square miles from the eastern portions of the Santa Monica Mountains, Simi Hills, and the Santa Susana Mountains in the west to the San Gabriel Mountains in the east (LARWQCB, 2014). The Los Angeles River originates at the western end of the Valley at the confluence of Arroyo Calabasas and Bell Creek. The six major tributaries along the river

include Tujunga Wash, Burbank Western Storm Drain, Verdugo Wash, Arroyo Seco, Rio Hondo, and Compton Creek.

The Project Study Area is located in Reach 5 of the Los Angeles River where the river flows east for approximately 16 miles along the base of the Santa Monica Mountains. In the Valley, the river runs through low density residential neighborhoods. It continues through Reseda Park and Sepulveda Basin-a regional recreational facility with a lake, park, and wildlife area. Reach 5 of the Los Angeles River is mostly channelized with some soft-bottom stretches and acts as a transitional zone between the downstream concrete sections and the more natural and free-flowing upstream sections.

Topography throughout the coastal plain area is generally defined by gradually sloping land from the foothills of the San Gabriel Mountains to the Pacific Ocean. The coastal plain area of the Los Angeles Watershed extends from the foothills of the San Gabriel Mountains to the river mouth at the Port of Long Beach and includes communities within the Project Study Area, including Van Nuys, Encino, Bel-Air, Brentwood, and Westwood. Ground elevations range from 10,000 feet in the San Gabriel Mountains to mean sea level at the mouth of the Los Angeles River. The majority of the coastal plain is less than 1,000 feet in elevation, while the upper portion of the watershed is covered by forest and open space. Approximately 500 square miles of the watershed is highly developed with commercial, industrial, and residential uses (LARWQCB, 2014). The vast majority of land in the Los Angeles Watershed (approximately 80 percent) is developed with urban uses.

Despite extensive urbanization, the Los Angeles Watershed contains water features retaining varying degrees of natural characteristics, including Glendale Narrows, which features a rocky bottom with riprap sides, supporting riparian vegetation and recreational uses, and Compton Creek, which supports wetland habitat providing critical ecological value within the developed landscape. Both Glendale Narrows and Compton Creek are outside of the Project Study Area. In addition, the Sepulveda Flood Control Basin maintains semi-natural conditions supporting low-intensity habitat uses.

9.2.2.2 Santa Monica Bay Watershed

The Santa Monica Bay Watershed covers an area of over 414 square miles from the Santa Monica Mountains on the north from the Ventura-Los Angeles County line on the west and extending south across the Los Angeles plain to the Ballona Creek Watershed on the east (LARWQCB, 2014). South of Ballona Creek a narrow strip of wetlands between Playa del Rey and Palos Verdes drains to Santa Monica Bay. The Santa Monica Bay Watershed includes several smaller subwatershed areas, including Ballona Creek Watershed and Garapito Creek-Frontal Santa Monica Bay Watershed.

A majority of the northern portion of the Santa Monica Bay Watershed is rugged open space containing many canyons that carry runoff directly to Santa Monica Bay. Topanga and Malibu Creeks, the two largest watercourses in this area, are fed both by tributary creeks and by channelized storm drains in and near developed areas. Portions of Malibu, Agoura Hills, Westlake Village, and Los Angeles are located in the northern portion of the watershed. The mid- and southern portions of the Santa Monica Bay Watershed are more urban and contain portions of Los Angeles, Santa Monica, El Segundo, Manhattan Beach, Redondo Beach, the Palos Verdes Estates, and Rancho Palos Verdes. These areas are highly developed and contain a network of storm drains that carry runoff to the Santa Monica Bay.

Ballona Creek Watershed

The Ballona Creek Watershed is a subwatershed within the Santa Monica Bay Watershed that consists of Ballona Creek, a nine-mile-long flood protection channel that drains the Los Angeles Basin. The Ballona Creek Watershed covers approximately 130 square miles located in the western portion of the Los

Angeles Basin and is made up by the Culver City, Wilshire, and Hollywood sub watersheds. The headwaters of the watershed are located in the Santa Monica Mountains to the north and the Baldwin Hills to the south. Most of the Ballona Creek drainage network has been modified into storm drains, underground culverts, and open concrete channels. Ballona Creek flows in an open concrete channel for approximately 10 miles from mid-Los Angeles through Culver City, reaching the Pacific Ocean at Playa del Rey (Marina del Rey Harbor). The Estuary portion, from Centinela Avenue to its outlet, is soft-bottomed and includes the Ballona Wetlands. A few natural channels remain in the Santa Monica Mountains and Baldwin Hills. The Sepulveda Channel, which runs along I-405 outside of the Project Study Area, is a major concrete-lined tributary to the Ballona Creek Watershed.

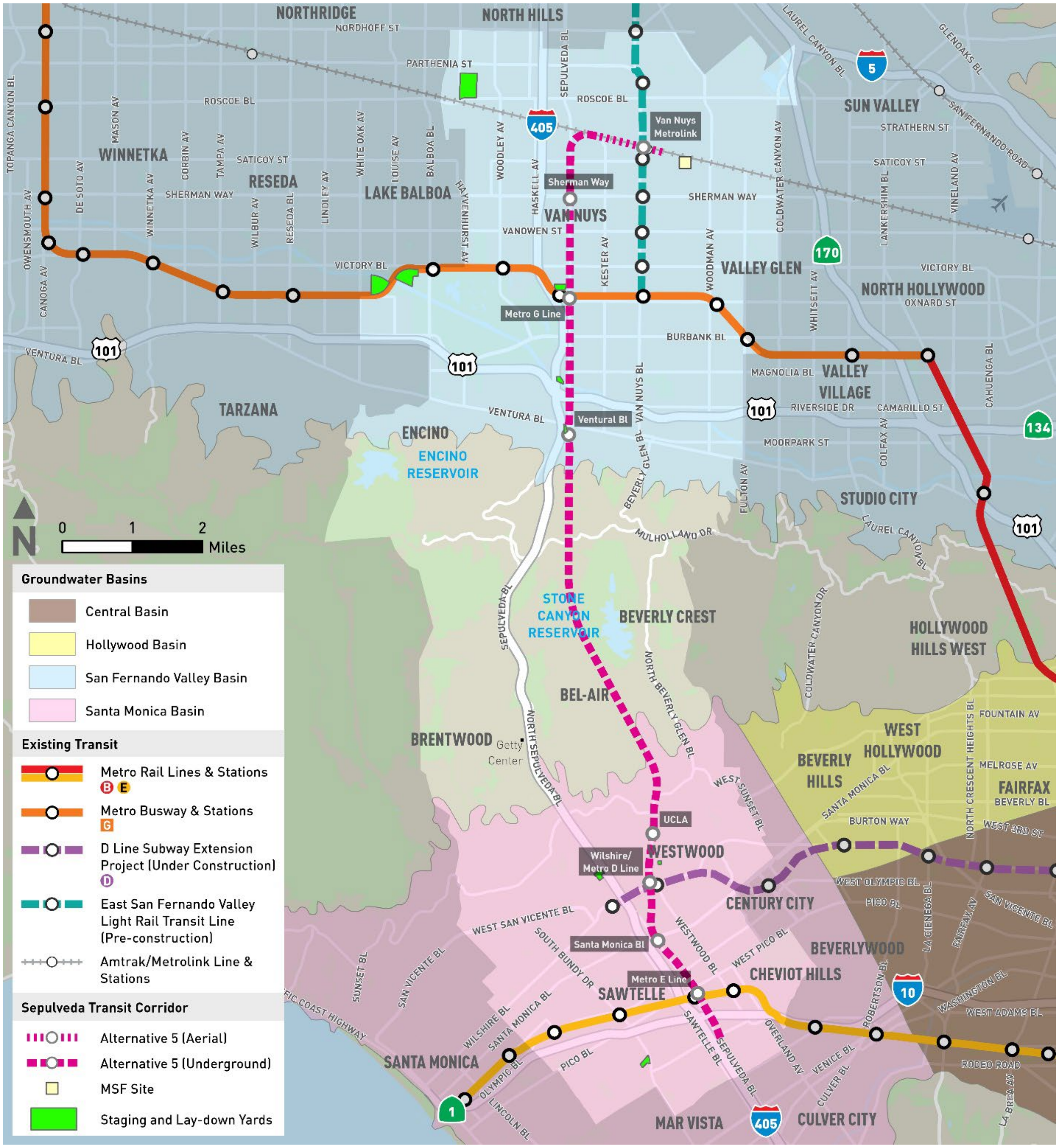
Garapito Creek-Frontal Santa Monica Bay Watershed

Garapito Creek-Frontal Santa Monica Bay Watershed is a subwatershed within the Santa Monica Bay Watershed and covers an area of approximately 130 square miles. The subwatershed is part of the Santa Monica Mountains and a majority of the subwatershed contains rugged mountainous terrain. This subwatershed includes Garapito Creek, which flows through Topanga State Park in the Santa Monica Mountains National Recreation Area. The Santa Monica Mountains are home to a diverse range of plant and animal species and provide critical habitats for wildlife, including several endangered species.

9.2.3 Groundwater

The Project Study Area is within the San Fernando Valley Groundwater Basin and the Santa Monica Subbasin within the Coastal Plain of Los Angeles (Figure 9-10). The Sustainable Groundwater Management Act designated the Santa Monica Subbasin as medium priority, and the San Fernando Valley Groundwater Basin as very low priority based on the basin prioritization (DWR, 2021). Sources of water supply in Los Angeles County include groundwater.

Figure 9-10. Alternative 5: Groundwater Basins Underlying the Project Study Area



Source: LA County Planning, 2020a

9.2.3.1 Coastal Plain of Los Angeles Groundwater Basin, Santa Monica Subbasin

The Santa Monica Subbasin underlies the northwestern part of the Coastal Plain of Los Angeles Groundwater Basin. The Los Angeles Groundwater Basin spans 32,100 acres (50.2 square miles). It is bounded by impermeable rocks of the Santa Monica Mountains on the north and by the Ballona escarpment on the south. The Santa Monica Subbasin extends from the Pacific Ocean on the west to the

Inglewood fault on the east. Ballona Creek is the dominant hydrologic feature and drains surface waters to the Pacific Ocean.

Replenishment of groundwater in the Santa Monica Subbasin is mainly by percolation of precipitation and surface runoff onto the subbasin from the Santa Monica Mountains. The Inglewood fault appears to inhibit replenishment by underflow from the Central Basin to the east, though some inflow may occur at its northern end. Total storage capacity of the Santa Monica Subbasin is estimated to be about 1,100,000 acres-feet (DWR, 2020a). The groundwater storage in the subbasin and groundwater budget is unknown.

9.2.3.2 San Fernando Valley Groundwater Basin

The San Fernando Valley Groundwater Basin surface area covers over 145,000 acres (226 square miles) and includes the water-bearing sediments beneath the San Fernando Valley, Tujunga Valley, Browns Canyon, and the alluvial areas surrounding the Verdugo Mountains near La Crescenta and Eagle Rock (DWR, 2020b). The basin is bounded on the north and northwest by the Santa Susana Mountains, on the north and northeast by the San Gabriel Mountains, on the east by the San Rafael Hills, on the south by the Santa Monica Mountains and Chalk Hills, and on the west by the Simi Hills. The Valley is drained by the Los Angeles River and its tributaries. Precipitation in the Valley ranges from 15 to 23 inches per year and averages about 17 inches.

Hydrographs show variations in water levels of 5 feet to 40 feet in the western part of the basin, a variation of about 40 feet in the southern and northern parts of the basin, and a variation of about 80 feet in the eastern part of the basin. The total storage capacity of the San Fernando Valley Groundwater Basin is 3,670,000 acres-feet. The groundwater in storage in 1998 is calculated at 3,049,000 acres-feet with an additional 621,000 acres-feet of storage space available. Though the San Fernando Valley Groundwater Basin is managed by adjudication, not enough data exists to compile a complete groundwater budget. A total of about 108,500 acres-feet of groundwater was extracted from the San Fernando Valley Groundwater Basin during the 1997-1998 water year. In addition, subsurface outflow of about 300 acres-feet to the Raymond Groundwater Basin and 404 acres-feet to the Central Subbasin of the Los Angeles Coastal Plain Groundwater Basin is estimated. To balance the extraction, a total of 61,119 acres-feet of native runoff water was diverted to spreading grounds for infiltration.

9.2.4 Water Quality

9.2.4.1 Los Angeles Watershed

Surface water beneficial uses for Reach 5 of the Los Angeles River include municipal and domestic supply, industrial service supply, groundwater recharge, recreation, and water that supports various habitats and ecosystems.

According to the California State Water Resources Control Board (SWRCB) 2020-2022 303(d) list of impaired water bodies, Reach 5 of the Los Angeles River and its tributaries are listed as impaired for ammonia, benthic community effect, copper, lead, nutrients (algae), oil, toxicity, and trash (SWRCB, 2022c).

Elevated bacteria indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use at the 303(d) listed waterbodies within the Los Angeles Watershed. Recreating in waters with elevated bacteria indicator densities has been associated with adverse health effects. Specifically, local and national epidemiological studies demonstrate a causal relationship between adverse health effects and recreational water quality, as measured by bacteria indicator densities.

9.2.4.2 Ballona Creek Watershed

Surface water beneficial uses for Reach 1 of the Ballona Creek include municipal and domestic supply, industrial service supply, groundwater recharge, recreation, and water that supports various habitats and ecosystems.

Ballona Creek and Ballona Creek Estuary are on the CWA Section 303(d) list of impaired waterbodies for copper, lead, zinc, silver, cyanide, indicator bacteria, toxicity, trash, cadmium, chlordane, dichloro-diphenyl-trichloroethane (DDT), polychlorinated biphenyl (PCB), polycyclic aromatic hydrocarbons (PAH) and toxicity. Sepulveda Channel is included on the 303(d) list for copper, lead, zinc, selenium, and indicator bacteria (SWRCB, 2022c).

Elevated bacterial indicator densities are causing impairment of the REC-1 beneficial use designated for Ballona Estuary and Sepulveda Channel, limited water contact recreation designated for Ballona Creek Reach 2, and non-contact water recreation (REC-2) beneficial uses of Ballona Creek Reach 1. Recreating in waters with elevated bacterial indicator densities has long been associated with adverse human health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.

9.2.4.3 San Fernando Valley Groundwater Basin

Groundwater beneficial uses for the San Fernando Valley Groundwater Basin include water supply for municipal, domestic, industrial process, and agricultural uses. Nitrite pollution in the groundwater of the Sunland-Tujunga area within the San Fernando Valley Groundwater Basin currently precludes direct municipal uses. Since the groundwater in this area can be treated or blended (or both), it retains the municipal designation.

In the western part of the basin, calcium sulfate-bicarbonate character is dominant, and in the eastern part of the basin, calcium bicarbonate character dominates (DWR, 2020b). Total dissolved solids (TDS) range from 326 to 615 milligrams per liter (mg/L), and electrical conductivity ranges from 540 to 996 micromhos. Data from 125 public supply wells shows an average TDS content of 499 mg/L and a range from 176 to 1,160 mg/L.

A number of investigations have determined contamination of volatile organic compounds such as trichloroethylene (TCE), perchloroethylene (PCE), petroleum compounds, chloroform, nitrate, sulfate, and heavy metals. TCE, PCE, and nitrate contamination occurs in the eastern part of the basin and elevated sulfate concentration occurs in the western part of the basin.

9.2.4.4 Coastal Plain of Los Angeles Groundwater Basin, Santa Monica Subbasin

Beneficial uses for Santa Monica Subbasin within the Coastal Plain of Los Angeles include water supply for municipal, domestic, industrial process, and agricultural uses.

Impairments to the Santa Monica Subbasin is unknown to the California Department of Water Resources (DWR) (DWR, 2020a). Analyses of water from seven public supply wells indicate an average TDS content of 916 mg/L and a range of 729 to 1,156 mg/L.

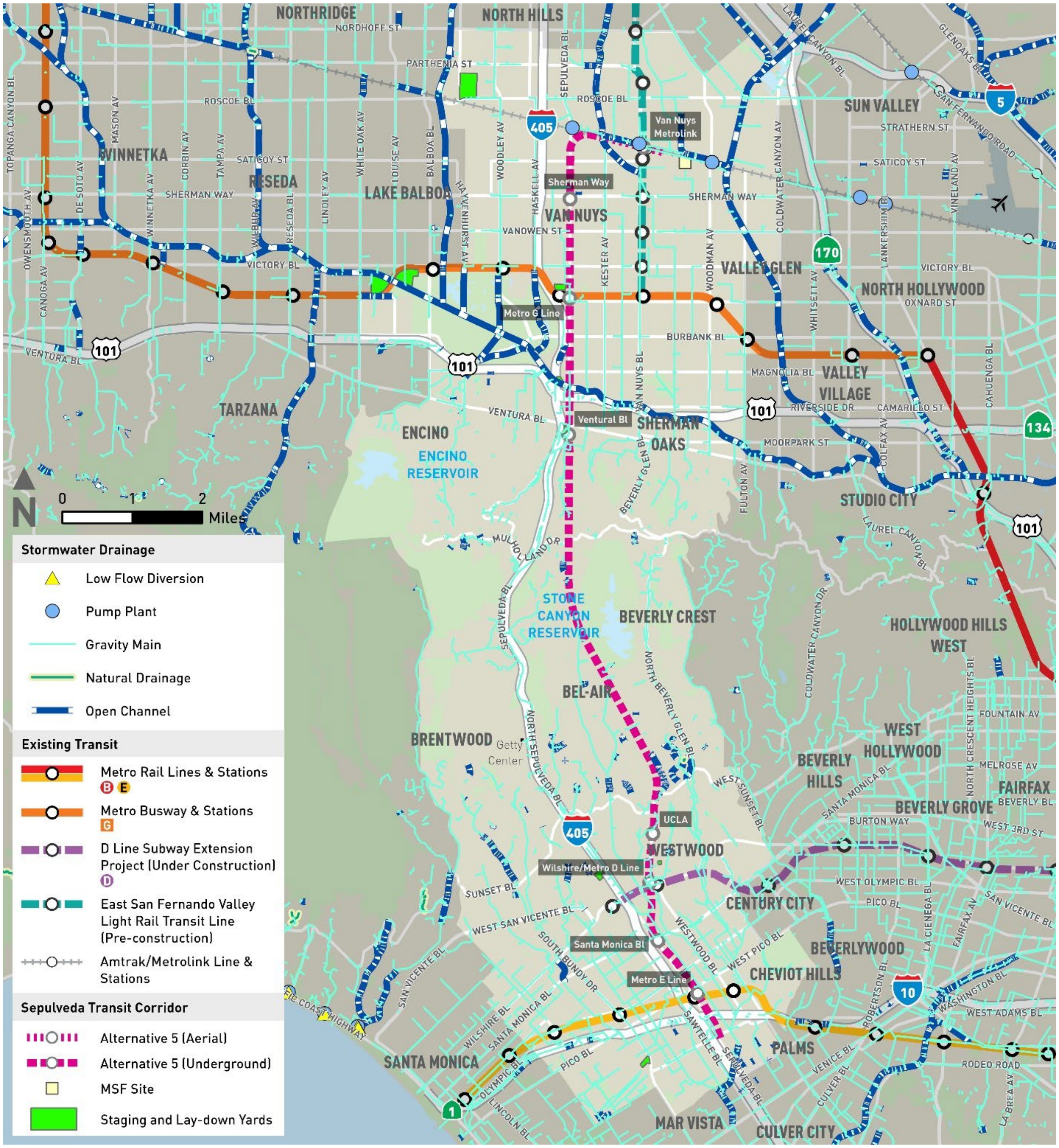
9.2.5 Drainage

Land in the county and cities within the Project Study Area is urbanized and largely covered with impervious surfaces associated with areas of asphalt, concrete, buildings, and other land uses that concentrate storm runoff. Stormwater and other surface water runoff are conveyed to municipal storm drains and culverts (Figure 9-11). Most local drainage networks are controlled by structural flood control measures. There is a large portion of the Project Study Area that is undeveloped, pervious lands in the open space area of the Santa Monica Mountains.

The general stormwater drainage pattern in the southern portion of the Project Study Area (from Metro E Line Expo/Sepulveda Station along I-405 to the upper reach of the Ballona Creek Watershed) is from north to south. The majority of stormwater runoff within the Project Study Area drains into the Los Angeles County Flood Control District (LACFCD) Sepulveda Channel, which starts at the upper reach of the Ballona Creek Watershed as a large diameter storm drain pipe that crosses under I-405 several times. This storm drain then transitions into a large drainage box culvert; further south of the Project Study Area, it becomes an open channel before confluencing with Ballona Creek, an LACFCD flood control channel.

The general stormwater drainage pattern in the northern portion of the Project Study Area in the Upper Los Angeles River Watershed is from south to north in developed storm drain systems. From the ridge of the Sepulveda Pass going north, the majority of Project stormwater drains to a California Department of Transportation (Caltrans) storm drain main that connects to an LACFCD large drainage box culvert that discharges to the Los Angeles River, an LACFCD flood control channel.

Figure 9-11. Alternative 5: Existing Stormwater Drainage Infrastructure



Source: LACPW, 2024

9.2.6 Flooding and Inundation

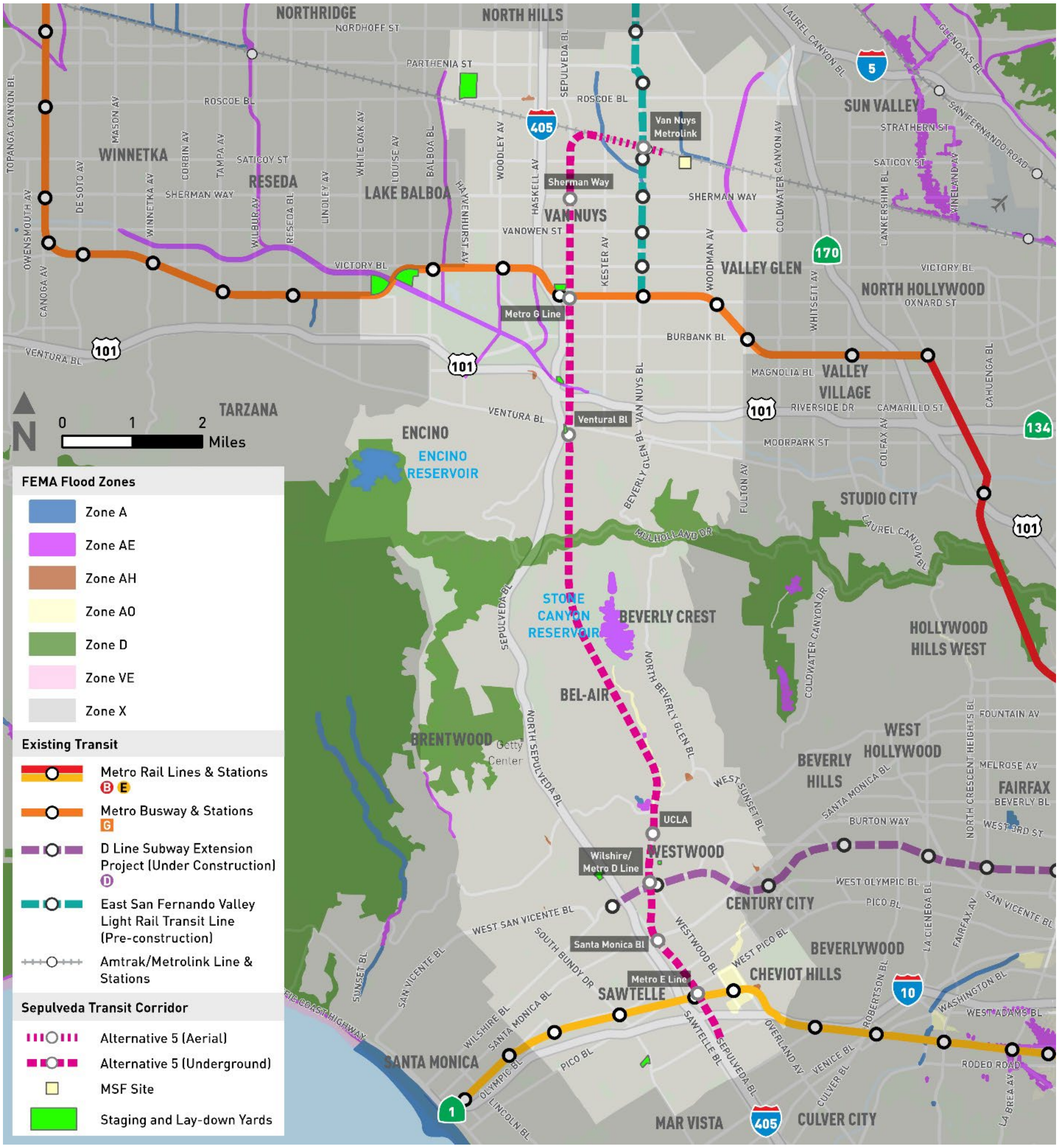
The Federal Emergency Management Agency's (FEMA) Flood Map Service Center (FEMA, 2023) was used to identify flood hazard zones within the Project Study Area. Figure 9-12 illustrates all flood hazard zones within the Project Study Area. Portions of the Project Study Area are subjected to a risk of flooding under FEMA's categorizations. The ridgetop of Santa Monica Mountains, located at Mulholland

Drive, and open space areas owned by Los Angeles County are located in Zone D. Zone D indicates that there is a risk of flooding, with unknown levels of risk. The Encino Reservoir and the SCR, located in the Santa Monica Mountains, are subject to Zones A and AE, respectively, and experience a risk of inundation with a 1 percent annual chance of flooding, alternatively known as a 100-year floodplain, since they each retain a significant amount of water. The channelized limits of the Los Angeles River, where it crosses I-405 and Sepulveda Boulevard, is also identified as Zone AE. Other small portions within the Project Study Area east of Overland Avenue are within Zone AO and AH and are subject to inundation by a 1 percent annual chance of shallow flooding. Approximately 0.31 percent of the Project Study Area is within the 100-year floodplain.

Seiches are a temporary disturbance or oscillation in the water level of an enclosed body of water, usually caused by changes in atmospheric pressure. The Encino Reservoir is located approximately 2.1 miles west of the proposed alignment and the I-405 median, and the SCR is located approximately 0.5 mile east of the proposed alignment and the I-405 median.

Tsunamis are large ocean waves caused by major seismic events with the potential of causing flooding in low lying coastal areas.

Figure 9-12. Alternative 5: FEMA Flood Zones



Source: LA County Planning, 2020b

9.2.7 Municipal Water Supply

Within Los Angeles County, the water supply comprises a complex system made up of state agencies and local water districts operating aqueducts, reservoirs, and groundwater basins. Approximately 33 percent of the water in the county comes from local supply sources, while the remaining supply is imported from outside of the county. Due to the county's dependence on imported water supply sources and its vulnerability to drought, the county is constantly working to develop a diverse range of water resources (LA County Planning, 2015).

Local water supply sources include surface water from mountain runoff, groundwater, and recycled water. Imported sources of water supply include the Colorado River, the Bay-Delta in Northern California via the State Water Project, and the Owens Valley via the Los Angeles Aqueduct. Major water distributors of imported water used in the unincorporated county include the Metropolitan Water District of Southern California (MWD), Santa Clarita Valley Water Agency, Antelope Valley-East Kern Water Agency, Littlerock Creek Irrigation District, and the Palmdale Water District (LA County Planning, 2015).

The Los Angeles County Department of Public Works maintains a database of groundwater supply wells (LADPW, 2019). According to this database, the majority of groundwater wells are in the Valley with three active wells underlying Van Nuys Boulevard.

The LADWP is responsible for supplying, treating, and distributing water for domestic and industrial uses in a portion of the detailed Project Study Area. The LADWP serves an area of approximately 473 square miles with over 681,000 water service connections. LADWP draws its water from three main sources: the Los Angeles Aqueduct (from Eastern Sierra Nevada) (29 percent), the MWD (57 percent), groundwater (12 percent), and recycled water (2 percent) (LADWP, 2013).

9.3 Impacts Evaluation

9.3.1 Impact HWQ-1: Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

9.3.1.1 Operational Impacts

Alternative 5 shares all of the same components previously described for Alternative 4 and, therefore, information pertaining to regulatory compliance to address site runoff would be the same as what is presented for Alternative 4. The operational impacts discussion for Alternative 4 presents the regulatory requirements to address stormwater discharges. Table 9-6 presents the initial estimates of existing and new impervious surface areas and the estimated net impervious surface area created at each of the Alternative 5 component sites. Alternative 5 differs from Alternative 4 because the majority of the Alternative 5 alignment and associated stations (seven stations) would be underground. Aboveground components would include one aerial station, in addition to three TPSSs and parking lots.

Table 9-6. Alternative 5: New Impervious Surface Area

Stations	Existing Impervious Surface Area at Component Site (square feet)	New and Reconstructed Impervious Surface Area at Component Site (square feet)	Net Impervious Area Created by Component (square feet)
Metro E Line Station	88,293	80,682	-7,611
Santa Monica Boulevard Station	45,946	44,014	-1,932

Stations	Existing Impervious Surface Area at Component Site (square feet)	New and Reconstructed Impervious Surface Area at Component Site (square feet)	Net Impervious Area Created by Component (square feet)
Wilshire/Metro D Line Station	41,799	41,769	-30
UCLA Gateway Plaza Station	35,568	37,444	1,876
Ventura Boulevard Station	45,045	37,808	-7,237
Metro G Line Station	57,850	57,467	-383
Sherman Way Station	76,183	67,358	-8,825
Van Nuys Metrolink Station	39,991	41,585	1,594
Totals	**430,675**	**408,127**	**-22,548**

Source: STCP, 2024

As previously discussed, Alternative 5 would comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the *Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan) (LARWQCB, 2014) and the Municipal Separate Storm Sewer Systems (MS4) Permit, as well as commonly used industry standards.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to the violation of any water quality standards or WDRs or substantial degradation of surface or groundwater quality during operations of Alternative 5 would be less than significant.

9.3.1.2 Construction Impacts

Construction of Alternative 5 would involve underground, at-grade, and aerial activities. Underground activities would include relocation of existing utilities, tunnel guideway construction, and station construction. At-grade activities would involve site clearing and excavation, utility relocation, foundation construction, installation of support columns and beams for aerial guideway, erection of stations, towers, and junctions, as well as construction of maintenance and storage facilities, replacement or restoration of paving, sidewalks, parking, and landscaping. Temporary components of Alternative 5 would include construction staging and laydown areas, office areas, and work zones at permanent facilities.

Construction activities such as demolition, excavation, and grading, would temporarily expose bare soil, increasing the risk of erosion. Uncontrolled erosion and discharge of sediments and other potential pollutants, including the discharge of fill material, would affect water quality in Alternative 5 receiving waters (e.g., the Pacoima Wash, Encino Creek, and Los Angeles River) if not appropriately managed by proper implementation of the construction SWPPP.

In addition to sediments, other pollutants including trash, concrete waste, and petroleum products, such as fuels, solvents, and lubricants, would degrade water quality and contribute to water pollution if not appropriately managed. The use of construction equipment and vehicles during Alternative 5 would result in spills of vehicle-related fluids that would contribute to water pollution if not appropriately managed. Improper handling, storage, or disposal of these materials or improper cleaning and maintenance of equipment would result in accidental spills and discharges that would contribute to water pollution.

Alternative 5 would be located within the Los Angeles Watershed and the Santa Monica Bay Watershed in the Ballona Creek subwatershed. The vast majority of land in the Los Angeles Watershed (approximately 80 percent) is developed with urban uses. Most of the Ballona Creek subwatershed drainage network has been modified into storm drains, underground culverts, and open concrete channels. A few natural channels remain in the Santa Monica Mountains. Construction activities such as excavation near Santa Monica Mountains would have the potential to temporarily impact these natural channels by contributing increased sediment/pollutants if not appropriately managed.

Construction activities for elevated guideway foundations involve general earthwork and concrete work to prepare the foundations. Excavations for foundations would be between 6 and 12 feet below ground surface (bgs), with piles installed up to a maximum of approximately 125 feet bgs. In the vicinity of the Sherman Way Station, groundwater levels are approximately 55 feet bgs. Since the average proposed excavation depth for the foundations at the aerial stations would be lower than the depth of groundwater, removal of nuisance water that seeps into boreholes during construction would be required.

Construction activities within the San Fernando Valley (north) segment of Alternative 5 would include three underground stations, one aerial station, limited elevated guideway, and at-grade alignment leading into the MSF. Underground stations located in this segment include Ventura Boulevard/Sepulveda Boulevard Station, Metro G Line Sepulveda Station, and the Sherman Way Station. These stations would be constructed using the cut-and-cover method. At the Ventura Boulevard/Sepulveda Boulevard Station, the depth of excavation would be approximately 110 feet and the groundwater table would be 25 feet bgs. The excavation depth of the Metro G Line Sepulveda Station would be approximately 100 feet, and groundwater would be encountered 20 feet bgs. The excavation depth of the Sherman Way Station would be approximately 100 feet, and groundwater would be encountered approximately 55 feet bgs. There is potential for groundwater to be encountered during excavation activities for all of these stations; therefore, dewatering would be required.

The construction activities within the South Westside Basin (south) segment of Alternative 5 would mainly be conducted underground in the dense urban area from west of Los Angeles to the southern base of Santa Monica Mountains. This includes constructing an underground track guideway/tunnel and four underground stations. Underground stations located in the segment include the Metro E Line Station, Santa Monica Boulevard Station, Wilshire Boulevard/Metro D Line Station, and the UCLA Gateway Plaza Station. The stations would be constructed using the cut-and-cover method. At the Metro E Line Station, the depth of excavation would be up to approximately 100 feet bgs, with the groundwater table in the vicinity of the station approximately 40 feet bgs. At the Santa Monica Boulevard Station, the depth of excavation would be approximately 100 feet bgs and the groundwater table would be 30 feet below the ground surface. The excavation depth of the Wilshire Boulevard/Metro D Line Station would be approximately 150 feet, and groundwater would be encountered approximately 25 feet bgs in the vicinity of the station. The excavation depth of the UCLA Gateway Plaza Station would be approximately 130 feet, and groundwater would be encountered around 45 feet bgs. Since there is potential for groundwater to be encountered during excavation activities for all of these stations, dewatering would be required.

If dewatering is required, dewatering activities would be conducted in compliance with the Los Angeles Regional Water Quality Control Board's NPDES dewatering permits, *Waste Discharge Requirements for Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties* (Order R4-2018-0125) and *Waste Discharge Requirements for Specified Discharges to Groundwater in the Santa Clara River and Los Angeles River Basins* (Order No. 93-010), as applicable. The watertight systems (e.g., secant pile, slurry wall) to be employed during station construction would minimize groundwater intrusion, and any residual impacts would be managed under the established regulatory framework. In such cases, temporary pumps and filtration systems would be used in compliance with the applicable NPDES permits. The temporary system would be required to comply with all relevant NPDES requirements related to construction and discharges from dewatering operations. Water removed from the boreholes would be containerized and analyzed to determine the proper disposal method or possible treatment and reuse on-site. The treatment and disposal of the dewatered water would occur in accordance with the requirements of NPDES Order R4-2018-0125 and Order No. 93-010, as applicable. The WDR requires that waste be analyzed prior to being discharged in order to determine if it contains pollutants in excess of the applicable Basin Plan water quality objectives. Or if possible, the dewatered water would potentially be treated and reused on-site (e.g., for dust control or cleaning equipment) rather than being disposed.

The construction activities within the Central-Santa Monica Mountains (central) segment of Alternative 5 would mainly be conducted underground to construct a track guideway/tunnel with the exception of the tunnel north portal at the northern base of the Santa Monica Mountains and an LADWP substation, which may need to be constructed at the southern base of the mountains. There would be no station at this segment.

Alternative 5 would consist of a single-bore tunnel through the Westside, Valley, and Santa Monica Mountains. The tunnel would comprise three separate tunnel segments, one running north from the southern terminus to the UCLA Gateway Plaza Station, one running south from the Ventura Boulevard Station to the UCLA Gateway Plaza Station, and one running north from the Ventura Boulevard Station to the portal near Raymer Street. The depth of cover for the tunnel through the Westside would vary from approximately 40 feet to 90 feet. The depth of cover for the second segment varies greatly from approximately 470 feet as it passes under the Santa Monica Mountains to 70 feet near UCLA. The depth of cover for the tunnel through the Valley would vary from approximately 40 feet near the Ventura Boulevard/Sepulveda Station and north of the Metro G Line Sepulveda Station to 150 feet near Weddington Street. The groundwater depth along segments of the tunnel varies from 40 to 320 feet bgs.

There is potential for groundwater to be encountered during tunnel boring activities in areas where the tunnel invert is below groundwater level; however, proposed tunnel boring activities would not be expected to require dewatering because tunnel boring would involve a closed mode machine that would operate under the water table, and a precast concrete tunnel liner (designed for full hydrostatic pressure) would be installed post-excavation. Both of these features would substantially reduce (if not eliminate) groundwater ingress during construction.

Volatile organic compounds such as TCE, PCE, petroleum compounds, chloroform, nitrate, sulfate, and heavy metals have been detected in groundwater of the San Fernando Valley groundwater basin (northern segment of Alternative 5). Although the groundwater quality in the remainder of the Project Study Area is not specifically known, it may contain elevated levels of constituents such as petroleum hydrocarbons and solvents resulting from commercial and industrial discharges, in addition to potentially elevated TDS and metals related to natural conditions. Uncontrolled discharge of groundwater carrying these potential pollutants would result in degradation of groundwater and surface water if it is not properly managed during construction activities. If groundwater containing contaminants such as VOCs, heavy metals, or petroleum hydrocarbons is encountered during dewatering activities, additional treatment or special disposal methods would be required to comply with applicable regulatory requirements and prevent contamination of receiving waters. BMPs would be implemented to ensure proper containment and disposal of grouting materials and wastewater, as well regular monitoring and adaptive management.

Alternative 5 would be required to comply with all applicable water quality protection laws and regulations at the federal, state, regional, and local levels, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Policies, NPDES Construction General Permit (CGP), the MS4 Permit, Caltrans NPDES Statewide Stormwater Permit, and the City of Los Angeles and County of Los Angeles LID Ordinance.

Alternative 5 would be required to comply with the CGP in effect at the time of construction. In accordance with the CGP, Alternative 5 would be required to prepare and submit a construction SWPPP, which must be submitted to the SWRCB prior to construction and adhered to during construction. Proper implementation of the construction SWPPP would avoid potential impacts to water quality. The construction SWPPP would identify the BMPs that would be in place to protect water quality prior to the start of construction activities and during construction. BMP categories would include erosion control, sediment control, tracking control, wind erosion, stormwater and non-stormwater management, and materials management with regular monitoring. Although specific temporary construction-related BMPs would be selected at the time of SWPPP preparation, potential BMPs would likely include fiber rolls, bonded-fiber matrix hydroseeding, soil furrowing, water bars, and check dams for erosion control, inlet protection (sand/gravel bags and geotextiles), silt fencing, sediment traps/basins for sediment controls, soil berming around disturbed areas, and phasing of soil disturbance during the wet season (i.e., limiting widespread grading) for effectively managing erosion and pollutant discharge during significant rainfall events.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to the violation of any water quality standards or WDRs or substantial degradation of surface or groundwater quality during construction activities of Alternative 5 would be less than significant.

9.3.1.3 Maintenance and Storage Facility

Maintenance of vehicles and equipment would occur at the MSF, which would include multiple buildings, including a multi-level maintenance-of-way building, track storage area, wash bays, ancillary storage buildings, and TPSS structure. The MSF would be constructed on parcels containing existing impervious surfaces. Therefore, the MSF would not increase the existing impervious surface area. Potential impacts associated with the MSF would be the same as that previously described for the rest of the Alternative 5 components.

The operation and construction of the MSF would be required to comply with all applicable water quality protection laws and regulations at the federal, state, regional, and local levels, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Policies, NPDES CGP requirements, the MS4 Permit, and the City of Los Angeles and County of Los Angeles LID Ordinance.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to the violation of any water quality standards or WDRs or substantial degradation of surface or groundwater quality during construction and operation of the MSF would be less than significant.

9.3.2 Impact HWQ-2: 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?

9.3.2.1 Operational Impacts

Alternative 5 shares similar components as Alternative 4 and would not result in groundwater extraction or use of groundwater supply. The operational impacts discussion for Alternative 4 presents the regulatory design requirements for addressing groundwater impacts.

Operation of Alternative 5, including the underground stations, would not involve the extraction of any groundwater and would not be expected to impact groundwater supplies or groundwater recharge. A precast concrete tunnel liner designed for full hydrostatic pressure would be installed post-excavation, which would substantially reduce (if not eliminate) groundwater ingress during operations. Groundwater intrusion into underground facilities is not anticipated. Therefore, Alternative 5 would not be expected to result in a decrease in groundwater supplies or interfere substantially with groundwater recharge to the extent that Alternative 5 may impede sustainable groundwater management of the basin. Depending on final design features, exfiltration from LID/treatment BMPs is anticipated to improve groundwater recharge characteristics of the area. Additionally, natural treatment of infiltrated runoff would occur, thereby improving exfiltrated water from LID and water quality additions to the groundwater table.

Alternative 5 would be designed to incorporate several sustainability features, such as pervious pavement, native landscaping/soil improvements, and on-site retention, that would serve to capture, treat, and re-use stormwater in accordance with current LID requirements, promoting infiltration and groundwater recharge (after treatment). These measures and practices would be incorporated at applicable component sites along the Alternative 5 alignment. Alternative 5 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the *Basin Plan* (LARWQCB, 2014), as well as commonly used industry standards. With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to groundwater supply and recharge during operations of Alternative 5 would be less than significant.

9.3.2.2 Construction Impacts

Construction activities associated with foundations would include excavation and concrete work, installation of drilled piles, aerial guideway, and tunneling. As previously discussed, excavations for stations, piles, and other underground structures would occur at depths ranging between 6 to 140 feet bgs and tunnel depth would range from 40 feet to 470 feet deep.

The Alternative 5 alignment may encounter groundwater in shallower areas and would require the removal of nuisance water that seeps into boreholes during construction. Nuisance water and seepage encountered during construction would be removed from the boreholes, containerized, and analyzed consistent with existing applicable regulations to determine the proper disposal method or possible treatment and reuse on-site.

Alternative 5 would include a tunnel comprising three separate tunnel segments, one running north from the southern terminus to the UCLA Gateway Plaza Station, one running south from the Ventura Boulevard Station to the UCLA Gateway Plaza Station, and one running north from the Ventura Boulevard Station to the portal near Raymer Street. The depth of cover for the tunnel through the

Westside would vary from approximately 40 feet to 90 feet. The depth of cover for the second segment would vary greatly from approximately 470 feet as it passes under the Santa Monica Mountains to 70 feet near UCLA. The depth of cover for the tunnel through the Valley would vary from approximately 40 feet near the Ventura Boulevard/Sepulveda Station and north of the Metro G Line Sepulveda Station to 150 feet near Weddington Street. The groundwater depth along segments of the tunnel varies from 40 to 320 feet bgs.

There is potential for groundwater to be encountered during tunnel boring activities in areas where the tunnel invert is below groundwater level; however, proposed tunnel boring activities would not be expected to require dewatering because tunnel boring would involve a closed mode machine that would operate under the water table, and a precast concrete tunnel liner (designed for full hydrostatic pressure) would be installed post-excavation. Both of these features would substantially reduce (if not eliminate) groundwater ingress during construction. Any dewatering would be limited to the construction phase only. The volume of groundwater extracted during construction would not be expected to decrease groundwater supplies. The volume of groundwater removed during construction would be monitored and documented.

Alternative 5 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Policies, NPDES CGP requirements, the MS4 Permit, Caltrans NPDES Statewide Stormwater Permit, and the City of Los Angeles and County of Los Angeles LID Ordinance.

Due to the limited amount of nuisance seepage water anticipated to be encountered and because most of the existing surfaces at the Alternative 5 alignment component sites are currently covered with impervious surfaces, construction activities are not anticipated to interfere substantially with groundwater recharge or groundwater resource supplies. Construction activities, including construction of underground structures, are not anticipated to decrease groundwater supplies such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to groundwater supply and recharge during construction of Alternative 5 would be less than significant.

9.3.2.3 Maintenance and Storage Facility

Potential impacts associated with the MSF would be the same as that previously described for the rest of the Alternative 5 components. The MSF would be designed to incorporate several sustainability features in compliance with the LID Standards Manual, which would serve to promote infiltration and groundwater recharge. The MSF would also comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan (LARWQCB, 2014), as well as commonly used industry standards.

The MSF would comply with an MRDC equivalent, City of Los Angeles Municipal Code, and all other applicable regulations for all operational activities, including adherence to an approved LID Plan, which would identify the BMPs for MSF operations. The LID Plan would identify the BMPs for the MSF post-construction design (i.e., operational characteristics to control/treat runoff). The MSF would include design elements, such as depressed landscape gardens for runoff retention and infiltration, permeable surfaces to reduce runoff volume, hardscape replacement with pervious or planted substitutions, bioswales or artistic water features that creatively convey runoff into planted or pervious areas, roof downspout discharges to vegetated areas, and rainwater cisterns and other on-site stormwater retention methods, that would serve to capture and re-use stormwater in accordance with current LID requirements. These measures and practices would be incorporated within the MSF. Additionally, operation of the MSF would not involve the extraction of any groundwater. Therefore, the MSF would not be expected to result in a decrease in groundwater supplies or interfere substantially with groundwater recharge to the extent that the proposed MSF may impede sustainable groundwater management of the basin. Depending on final design features, exfiltration from LID BMPs is anticipated to improve groundwater recharge characteristics of the area.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to groundwater supply and recharge during construction and operation of the MSF would be less than significant.

9.3.3 Impact HWQ-3: 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, in a manner which would:

- **i) result in substantial erosion or siltation on- or off-site;**
- **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?**

9.3.3.1 Operational Impacts

Alternative 5 shares all of the same components described for Alternative 4 and therefore, information on regulatory compliance to address site runoff and drainage would be the same as Alternative 4. The operational impacts discussion for Alternative 4 presents the regulatory requirements to address drainage. As previously described, Alternative 5 would be designed to incorporate several sustainability features and would be required to comply with the *Low Impact Development Standards Manual* (LADPW, 2014) and the City of Los Angeles *Planning and Land Development Handbook for Low Impact Development* (City of Los Angeles, 2016), which would serve to reduce impervious area, promote infiltration, and reduce runoff, thereby improving water quality. Alternative 5 would also comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control plans including the Basin Plan (LARWQCB, 2014) and the MS4 Permit, as well as commonly used industry standards.

Operation of Alternative 5 would not result in substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff that would cause flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff resulting in flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows during operation of Alternative 5 would be less than significant.

9.3.3.2 Construction Impacts

Construction activities associated with Alternative 5 would be the same as those previously described for Alternative 4 components, and information on regulatory compliance to address site runoff and drainage would be the same as Alternative 4. The construction impacts discussion for Alternative 4 presents the regulatory requirements to address drainage.

As previously discussed, Alternative 5 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, as well as commonly used industry standards. These would include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Polices, NPDES CGP regulations, Caltrans NPDES Statewide Stormwater Permit, Basin Plan (LARWQCB, 2014), City of Los Angeles Municipal Code, the City of Los Angeles and County of Los Angeles LID Ordinance, and all other applicable regulations for all construction activities.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff resulting in flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows during construction of Alternative 5 would be less than significant.

9.3.3.3 Maintenance and Storage Facility

Potential impacts associated with the MSF would be the same as that previously described for the rest of the Alternative 5 components. As described in Sections 9.3.3.1 and 9.3.3.2, the MSF would comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, as well as commonly used industry standards. The MSF would include design elements that would serve to capture and re-use stormwater in accordance with current LID requirements — thereby minimizing the potential for increased runoff rates/amounts, flooding, erosion and siltation, and pollutant runoff. LID design features would slow (detain or retain) stormwater, which would reduce the runoff volume discharged from the MSF and would decrease the peak runoff discharge velocity for design storms. As a result, MSF design and LID BMPs would offset any increases in flow and changes to drainage patterns post-MSF; therefore, less flow with fewer pollutants would be transported through the conveyance systems minimizing flooding and pollutant discharge to surface receiving waters. In addition, existing drainage patterns would be maintained as much as possible and operation of the MSF would not alter the course of any streams or rivers or impede or redirect flows.

During operations, the MSF would be required to obtain IGP coverage. An IGP SWPPP would be prepared and submitted to the SWRCB prior to operations. The IGP SWPPP would include discharge prohibitions, effluent limitations, and receiving water limitations that must be adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases.

Construction activities would comply with all applicable federal and local floodplain regulations and any impacts to existing drainage patterns would be temporary. Implementation of runoff control measures and pollution prevention practices in compliance with the construction SWPPP would control stormwater runoff from the MSF construction areas to minimize construction-related flooding impacts, erosion, and the discharge of potential pollutants, including sedimentation/siltation.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff resulting in flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows during construction and operation of the MSF would be less than significant.

9.3.4 Impact HWQ-4: Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

9.3.4.1 Operational Impacts

The alignment of Alternative 5 would be mostly underground. Thus, there would be minimal potential for operations of the underground portion of Alternative 5 to release pollutants during inundation by flooding, tsunami, or seiche.

The majority of the aerial and underground portions of the Alternative 5 alignment would be constructed outside of the FEMA-designated 100-year floodplain and would be in an inland area that is not in proximity to the ocean; therefore, the risk of inundation by a tsunami is considered low.

A small segment of Alternative 5, located at the ridgetop of the Santa Monica Mountains at Mulholland Drive, and open space areas, owned by Los Angeles County, are located in Zone D, which is an area of undetermined flood hazard. However, the Alternative 5 alignment at Mulholland Drive would be underground and there would be low potential for inundation. The channelized limits of the Los Angeles River, where it crosses I-405 and Sepulveda Boulevard, is identified as Zone AE and other small portions within Alternative 5 east of Overland Avenue are within Zones AO and AH and are subject to inundation by a 1 percent annual chance of flooding. There are no 500-year flood plains within the Project Study Area.

Both Encino Reservoir and SCR are in the Santa Monica Mountains and are subject to Zones A and AE, respectively. These reservoirs have a risk of inundation with a 1 percent annual chance of flooding since they retain a significant amount of water. However, given the distance of Alternative 5 from the reservoirs, any oscillation and subsequent release of water in the reservoirs as part of a seiche would not inundate Alternative 5. Therefore, there would be low potential for risk of release of pollutants due to inundation by seiche.

The Los Angeles River and Ballona Creek are the major flood control measures for draining stormwater from the Project Study Area and directing it safely to the San Pedro Bay and Santa Monica Bay, respectively. The potential risk related to flooding would be considered low as Alternative 5would extend along well-developed areas that maintain storm drainage and water runoff control. In addition, as previously described, Alternative 5 would implement LID BMPs to offset any increases in runoff rates due to the creation of new impervious surface areas. LID design features would reduce the runoff volume discharged from Alternative 5, thereby minimizing the potential for flooding.

The Alternative 5 alignment would not result in impacts to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways. Alternative 5 would not alter the ability of floodways to convey the 100-year flows and there would be negligible change to the floodplain extents.

Alternative 5 would have no impacts related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during operations would be less than significant.

9.3.4.2 Construction Impacts

Impacts related to release of pollutants due to Alternative 5 inundation by flood, tsunami, or seiche during construction activities would be similar to operational impacts. Similar to operational impacts, the majority of the Alternative 5 alignment would be constructed outside of the FEMA-designated 100-year floodplain and would be in an inland area that is not in proximity to the ocean; therefore, the risk of inundation by a tsunami is considered low.

Given the distance of Alternative 5 from Encino and Stone Canyon Reservoirs, any oscillation and subsequent release of water in the reservoirs as part of a seiche would not inundate Alternative 5. Therefore, there would be low potential for risk of release of pollutants due to inundation by seiche.

The Los Angeles River and Ballona Creek are the major flood control measures for draining stormwater from the Project Study Area and directing it safely to the San Pedro Bay and Santa Monica Bay, respectively. The risk related to flooding would be considered low as Alternative 5 would extend along well-developed areas that maintain storm drainage and water runoff control.

The Alternative 5 alignment would not result in impacts to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways.

Alternative 5 would have no impacts related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during construction would be less than significant.

9.3.4.3 Maintenance and Storage Facility

Impacts related to release of pollutants due to inundation by flood, tsunami, or seiche during operational and construction activities of the MSF would be similar to the operational and construction activities of the rest of the Alternative 5 components. The MSF would be located outside of the FEMA-designated 100-year floodplain and would be in an inland area that is not in proximity to the ocean; therefore, the risk of inundation by a tsunami is considered low.

Given the distance of the MSF from Encino and Stone Canyon Reservoirs, any oscillation and subsequent release of water in the reservoirs as part of a seiche would not inundate the MSF. Therefore, there would be low potential for risk of release of pollutants due to inundation by seiche.

The Los Angeles River and Ballona Creek are the major flood control measures for draining stormwater from the Project Study Area and directing it safely to the San Pedro Bay and Santa Monica Bay, respectively. The risk related to flooding would be considered low as the MSF is within a well-developed area that maintains storm drainage and water runoff control.

The MSF would not result in impacts to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways.

The MSF would have no impacts related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during construction or operation of the MSF would be less than significant.

9.3.5 Impact HWQ-5: Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

9.3.5.1 Operational Impacts

Alternative 5 would require routine maintenance that would be performed by the system operator. Potential pollutants (e.g., petroleum products/lubricants, paints, solvents, and other Alternative 5-

related products) used or generated during Alternative 5 operations and maintenance would contribute to water pollution. Uncontrolled discharge of runoff carrying these potential pollutants would result in significant impacts to water quality in receiving waters, which would violate federal, state, and local water quality standards and WDRs, if not appropriately managed. As previously discussed, Alternative 5 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan (LARWQCB, 2014), *Ballona Creek Watershed Management Plan* (LADPW, 2004), and the *LA River Master Plan* (Los Angeles County and Los Angeles County Public Works, 2022), the MS4 Permit, Caltrans NPDES Statewide Stormwater Permit, and the City of Los Angeles and County of Los Angeles LID Ordinance, as well as commonly used industry standards.

The City of Los Angeles city ordinances related to stormwater control and LID requirements for sustainability contain compliance provisions for BMPs that must address water infiltration, treatment, and peak-flow discharge. The City of Los Angeles provides guidance to developers of newly developed projects for compliance with regulatory standards through the LID Standards Manual.

As previously described, Alternative 5 would comply with all applicable regulations for all operational activities, including adherence to an approved LID Plan that would identify the BMPs for Alternative 5 operations. Alternative 5 would incorporate into its design on-site drainage systems and sustainability features that would meet regulatory requirements of the applicable plans for the protection of water resources.

The LID Plan would identify the BMPs for the Alternative 5 post-construction design (i.e., operational characteristics to control/treat runoff for the range of potential pollutants). Alternative 5 would include design elements that would serve to infiltrate, capture, and re-use stormwater in accordance with current LID requirements — thereby minimizing the potential for increased runoff volumes/rates and pollutant transport. LID design features, such as depressed landscape gardens for runoff retention and infiltration, permeable surfaces to reduce runoff volume, hardscape replacement with pervious or planted substitutions, bioswales or artistic water features that creatively convey runoff into planted or pervious areas, roof downspout discharges to vegetated areas, and rainwater cisterns and other on-site stormwater retention methods, would slow (detain or retain) stormwater, which would reduce the runoff volume discharged from Alternative 5 and would decrease the peak runoff discharge velocity for design storms — which would also ultimately reduce the amount of stormwater runoff burden into the city's stormwater conveyance systems. As a result, less flow with fewer pollutants would be transported through the conveyance systems, and ultimately into surface waters, including ancillary exfiltration to the groundwater table. Additionally, natural treatment of infiltrated runoff would occur, thereby improving exfiltrated water from LID and water quality additions to the groundwater table.

Additionally, operation of Alternative 5 would not involve the extraction of any groundwater. Therefore, Alternative 5 would not be expected to result in a decrease in groundwater supplies or interfere substantially with groundwater recharge to the extent that Alternative 5 may impede sustainable groundwater management of the basin. Depending on final design features, exfiltration from LID BMPs is anticipated to improve groundwater recharge characteristics of the area.

Alternative 5 is anticipated to require IGP coverage for maintenance facilities, fueling operations, equipment cleaning/washing operations, and TPSSs. As such, an IGP SWPPP would be prepared and submitted to the SWRCB prior to and adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases. Other BMPs may also be employed as appropriate, such as indoor/covered areas for maintenance, approved flammable/hazmat storage lockers for lubricants and other industrial liquids, drip/spill protection in maintenance areas and similar BMPs when conducting tower maintenance, dry clean-up practices, and dedicated enclosed areas for metal working, painting, and welding.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during operations of Alternative 5 would be less than significant.

9.3.5.2 Construction Impacts

Construction of the Alternative 5 components would be conducted in several phases, including site preparation and installation of foundations and columns; erection of stations; construction of tunnels; and construction of ancillary components, including replacement or restoration of paving, sidewalk, and landscaping.

Construction of Alternative 5 has the potential to impact the water quality of downstream receiving waters if applicable and appropriate BMPs are not implemented. Construction activities such as demolition of existing site structures and excavation for foundations would temporarily expose bare soil and would temporarily increase erosion. Exposed or stockpiled soils would also be at increased risk for erosion. Uncontrolled erosion and discharge of sediments and other potential pollutants would affect water quality in Alternative 5 receiving waters (e.g., the Pacoima Wash, Tujunga Wash, and Los Angeles River) if not appropriately managed by proper implementation of the construction SWPPP.

In addition to sediments, other pollutants including trash, concrete waste, and petroleum products (e.g., heavy equipment fuels, solvents, and lubricants) would contribute to stormwater pollution if not appropriately managed. The use of construction equipment and other vehicles during Alternative 5 construction would result in spills of oil, brake fluid, grease, antifreeze, or other vehicle-related fluids, which would contribute to water quality impacts. Improper handling, storage, or disposal of fuels and vehicle-related fluids or improper cleaning and maintenance of equipment would result in accidental spills and discharges that would contribute to water pollution.

Nuisance groundwater may be encountered during installation of piles for each of the components, which may result in degradation of groundwater quality if not addressed properly. Additionally, potentially impacted groundwater may result in degradation of surface water if it is not properly managed during construction activities. Although construction activities are not anticipated to interfere substantially with groundwater recharge, groundwater resource supplies, or groundwater quality, any accidental interference would be handled in accordance with applicable federal, state, regional, and local laws and regulations, groundwater management plans, and WDRs for groundwater discharge.

As discussed previously, Alternative 5 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan (LARWQCB, 2014), as well as commonly used industry standards. Alternative 5 would comply with the Caltrans NPDES Statewide Stormwater Permit, the NPDES CGP, the MS4 Permit, the City of Los Angeles and County of Los Angeles LID Ordinance, the City of Los Angeles Municipal Code, and all other applicable regulations for all construction activities.

In accordance with the CGP, Alternative 5 would be required to implement a construction SWPPP, which must be submitted to the SWRCB prior to construction and adhered to during construction. Proper implementation of the construction SWPPP would avoid potential impacts to water quality. The construction SWPPP would identify the BMPs that would be in place to protect water quality prior to the start of construction activities and during construction. The BMP categories would include erosion control, sediment control, non-stormwater management, and materials management BMPs. Although specific temporary construction-related BMPs would be selected at the time of SWPPP preparation, potential BMPs would likely include fiber rolls, bonded-fiber matrix hydroseeding, soil furrowing, water bars, and check dams for erosion control, inlet protection (sand/gravel bags and geotextiles), silt fencing, sediment traps/basins for sediment controls, soil berming around disturbed areas, and phasing of soil disturbance during the wet season (i.e., limiting widespread grading) for effectively managing erosion and pollutant discharge during significant rainfall events.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during construction of Alternative 5 would be less than significant.

9.3.5.3 Maintenance and Storage Facility

Potential impacts associated with the MSF would be the same as that previously described for the rest of the Alternative 5 components. As described in Sections 9.3.5.1 and 9.3.5.2, the MSF would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans. The MSF would incorporate into its design on-site drainage systems and sustainability features that would meet regulatory requirements of the applicable plans for the protection of water resources. The MSF would include design elements that would serve to capture, treat, and re-use stormwater in accordance with current LID requirements, promoting infiltration and groundwater recharge. The MSF would not be expected to result in a decrease in groundwater supplies or interfere substantially with groundwater recharge to the extent that the MSF may impede sustainable groundwater management of the basin. Dewatering would be limited to the construction phase only. Extracting large volumes of groundwater that would decrease groundwater supplies would not be expected during construction.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during construction and operation of the MSF would be less than significant.

9.4 Mitigation Measures

9.4.1 Operational Impacts

No mitigation measures are required.

9.4.2 Construction Impacts

No mitigation measures are required.

9.4.3 Impacts After Mitigation

No mitigation measures are required; impacts are less than significant.

10 ALTERNATIVE 6

10.1 Alternative Description

Alternative 6 is a heavy rail transit (HRT) system with an underground track configuration. This alternative would provide transfers to five high-frequency fixed guideway transit and commuter rail lines, including the Los Angeles County Metropolitan Transportation Authority's (Metro) E, Metro D, and Metro G Lines, East San Fernando Valley Light Rail Transit Line, and the Metrolink Ventura County Line. The length of the alignment between the terminus stations would be approximately 12.9 miles.

The seven underground HRT stations would be as follows:

1. Metro E Line Expo/Bundy Station (underground)
2. Santa Monica Boulevard Station (underground)
3. Wilshire Boulevard/Metro D Line Station (underground)
4. UCLA Gateway Plaza Station (underground)
5. Ventura Boulevard/Van Nuys Boulevard Station (underground)
6. Metro G Line Van Nuys Station (underground)
7. Van Nuys Metrolink Station (underground)

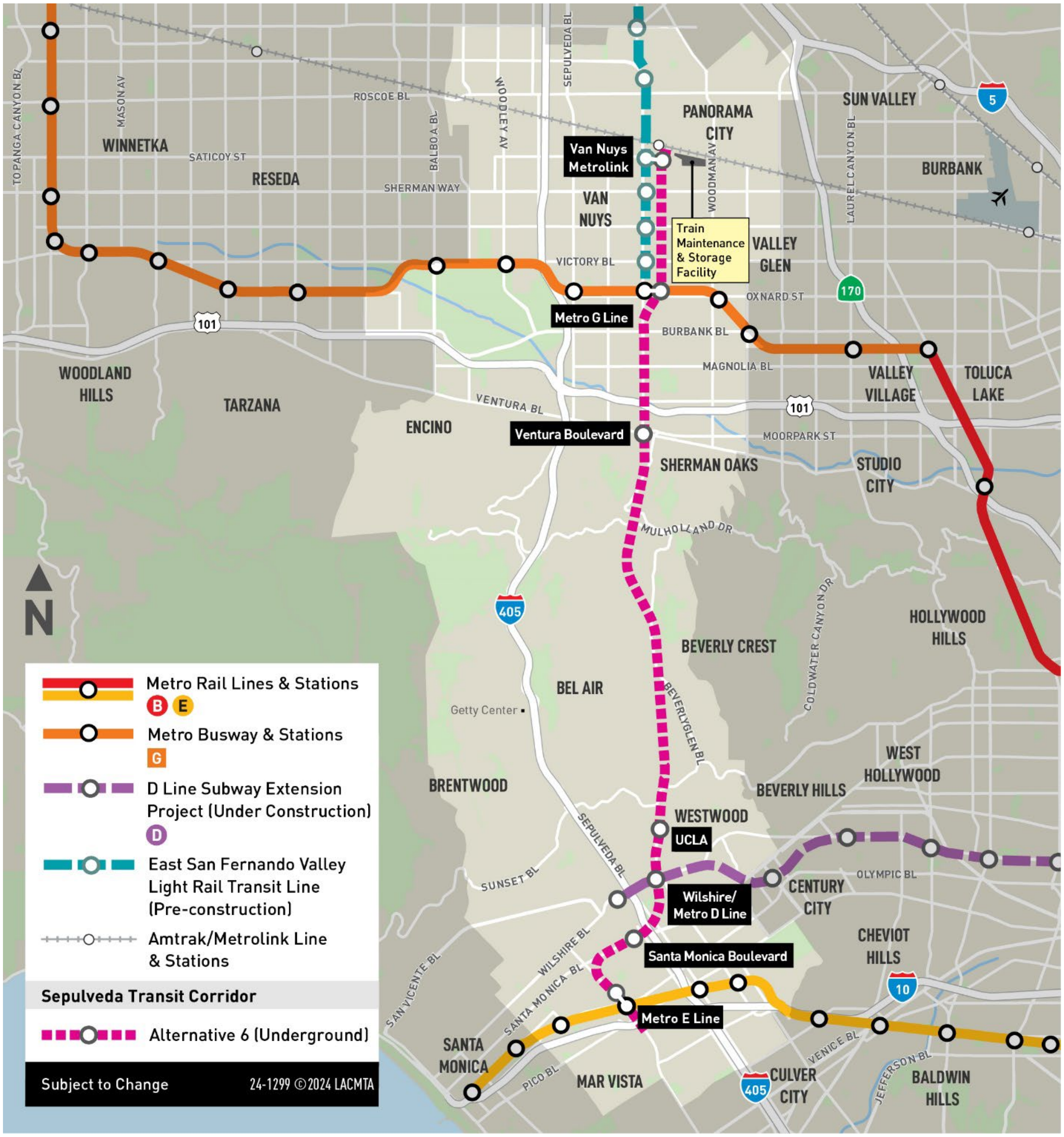
10.1.1 Operating Characteristics

10.1.1.1 Alignment

As shown on Figure 10-1, from its southern terminus station at the Metro E Line Expo/Bundy Station, the alignment of Alternative 6 would run underground through the Westside of Los Angeles (Westside), the Santa Monica Mountains, and the San Fernando Valley (Valley) to the alignment's northern terminus adjacent to the Van Nuys Metrolink/Amtrak Station.

The proposed southern terminus station would be located beneath the Bundy Drive and Olympic Boulevard intersection. Tail tracks for vehicle storage would extend underground south of the station along Bundy Drive for approximately 1,500 feet, terminating just north of Pearl Street. The alignment would continue north beneath Bundy Drive before turning to the east near Iowa Avenue to run beneath Santa Monica Boulevard. The Santa Monica Boulevard Station would be located between Barrington Avenue and Federal Avenue. After leaving the Santa Monica Boulevard Station, the alignment would turn to the northeast and pass under Interstate 405 (I-405) before reaching the Wilshire Boulevard/Metro D Line Station beneath the Metro D Line Westwood/UCLA Station, which is currently under construction as part of the Metro D Line Extension Project. From there, the underground alignment would curve slightly to the northeast and continue beneath Westwood Boulevard before reaching the UCLA Gateway Plaza Station.

Figure 10-1. Alternative 6: Alignment



Source: HTA, 2024

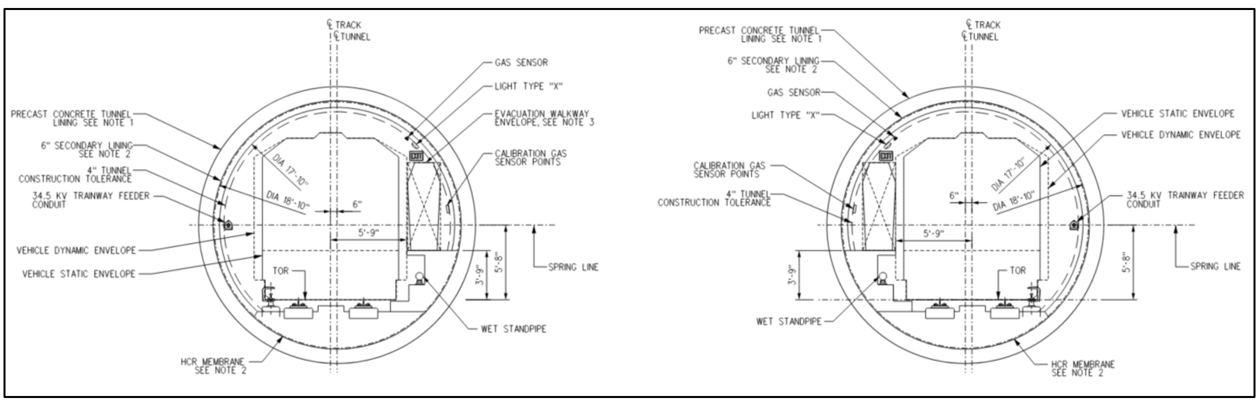
After leaving the UCLA Gateway Plaza Station, the alignment would continue to the north and travel under the Santa Monica Mountains. While still under the mountains, the alignment would shift slightly to the west to travel under the City of Los Angeles Department of Water and Power (LADWP) Stone Canyon Reservoir property to facilitate placement of a ventilation shaft on that property east of the reservoir. The alignment would then continue to the northeast to align with Van Nuys Boulevard at Ventura Boulevard as it enters the San Fernando Valley. The Ventura Boulevard Station would be beneath Van Nuys Boulevard at Moorpark Street. The alignment would then continue under Van Nuys

Boulevard before reaching the Metro G Line Van Nuys Station just south of Oxnard Street. North of the Metro G Line Van Nuys Station, the alignment would continue under Van Nuys Boulevard until reaching Sherman Way, where it would shift slightly to the east and run parallel to Van Nuys Boulevard before entering the Van Nuys Metrolink Station. The Van Nuys Metrolink Station would serve as the northern terminus station and would be located between Saticoy Street and Keswick Street. North of the station, a yard lead would turn sharply to the southeast and transition to an at-grade configuration and continue to the proposed maintenance and storage facility (MSF) east of the Van Nuys Metrolink Station.

10.1.1.2 Guideway Characteristics

The alignment of Alternative 6 would be underground using Metro's standard twin-bore tunnel design. Figure 10-2 shows a typical cross-section of the underground guideway. Cross-passages would be constructed at regular intervals in accordance with Metro Rail Design Criteria (MRDC). Each of the tunnels would have a diameter of 19 feet (not including the thickness of wall). Each tunnel would include an emergency walkway that measures a minimum of 2.5 feet wide for evacuation.

Figure 10-2. Typical Underground Guideway Cross-Section



Source: HTA, 2024

10.1.1.3 Vehicle Technology

Alternative 6 would utilize driver-operated steel-wheel HRT trains, as used on the Metro B and D Lines, with planned peak headways of 4 minutes and off-peak-period headways ranging from 8 to 20 minutes. Trains would consist of four or six cars and are expected to consist of six cars during the peak period. The HRT vehicle would have a maximum operating speed of 67 miles per hour; actual operating speeds would depend on the design of the guideway and distance between stations. Train cars would be 10.3 feet wide with three double doors on each side. Each car would be approximately 75 feet long with capacity for 133 passengers. Trains would be powered by a third rail.

10.1.1.4 Stations

Alternative 6 would include seven underground stations with station platforms measuring 450 feet long. The southern terminus underground station would be adjacent to the existing Metro E Line Expo/Bundy Station, and the northern terminus underground station would be located south of the existing Van Nuys Metrolink/Amtrak Station. Except for the Wilshire Boulevard/Metro D Line, UCLA Gateway Plaza, and Metro G Line Van Nuys Stations, all stations would have a 30-foot-wide center platform. The Wilshire/Metro D Line Station would have a 32-foot-wide platform to accommodate the anticipated passenger transfer volumes, and the UCLA Gateway Plaza Station would have a 28-foot-wide platform because of the width constraint between the existing buildings. At the Metro G Line Van Nuys Station, the track separation would increase significantly in order to straddle the future East San Fernando Valley Light Rail Transit Line Station piles. The platform width at this station would increase to 58 feet.

The following information describes each station, with relevant entrance, walkway, and transfer information. Bicycle parking would be provided at each station.

Metro E Line Expo/Bundy Station

- This underground station would be located under Bundy Drive at Olympic Boulevard.
- Station entrances would be located on either side of Bundy Drive between the Metro E Line and Olympic Boulevard, as well as on the northeast corner of Bundy Drive and Mississippi Avenue.
- At the existing Metro E Line Expo/Bundy Station, escalators from the plaza to the platform level would be added to improve inter-station transfers.
- An 80-space parking lot would be constructed east of Bundy Drive and north of Mississippi Avenue. Passengers would also be able to park at the existing Metro E Line Expo/Bundy Station parking facility, which provides 217 parking spaces.

Santa Monica Boulevard Station

- This underground station would be located under Santa Monica Boulevard between Barrington Avenue and Federal Avenue.
- Station entrances would be located on the southwest corner of Santa Monica Boulevard and Barrington Avenue and on the southeast corner of Santa Monica Boulevard and Federal Avenue.
- No dedicated station parking would be provided at this station.

Wilshire Boulevard/Metro D Line Station

- This underground station would be located under Gayley Avenue between Wilshire Boulevard and Lindbrook Drive.
- A station entrance would be provided on the northwest corner of Midvale Avenue and Ashton Avenue. Passengers would also be able to use the Metro D Line Westwood/UCLA Station entrances to access the station platform.
- Direct internal station transfers to the Metro D Line would be provided at the south end of the station.
- No dedicated station parking would be provided at this station.

UCLA Gateway Plaza Station

- This underground station would be located underneath Gateway Plaza on the University of California, Los Angeles (UCLA) campus.
- Station entrances would be provided on the north side of Gateway Plaza, north of the Luskin Conference Center, and on the east side of Westwood Boulevard across from Strathmore Place.
- No dedicated station parking would be provided at this station.

Ventura Boulevard/Van Nuys Boulevard Station

- This underground station would be located under Van Nuys Boulevard at Moorpark Street.
- The station entrance would be located on the northwest corner of Van Nuys Boulevard and Ventura Boulevard.
- Two parking lots with a total of 185 parking spaces would be provided on the west side of Van Nuys Boulevard between Ventura Boulevard and Moorpark Street.

Metro G Line Van Nuys Station

- This underground station would be located under Van Nuys Boulevard south of Oxnard Street.
- The station entrance would be located on the southeast corner of Van Nuys Boulevard and Oxnard Street.
- Passengers would be able to park at the existing Metro G Line Van Nuys Station parking facility, which provides 307 parking spaces. No additional automobile parking would be provided at the proposed station.

Van Nuys Metrolink Station

- This underground station would be located immediately east of Van Nuys Boulevard between Saticoy Street and Keswick Street.
- Station entrances would be located on the northeast corner of Van Nuys Boulevard and Saticoy Street and on the east side of Van Nuys Boulevard just south of the Los Angeles-San Diego-San Luis Obispo (LOSSAN) rail corridor.
- Existing Metrolink Station parking would be reconfigured, maintaining approximately the same number of spaces. Metrolink parking would not be available to Metro transit riders.

10.1.1.5 Station-to-Station Travel Times

Table 10-1 presents the station-to-station distance and travel times for Alternative 6. The travel times include both run time and dwell time. Dwell time is 30 seconds for stations anticipated to have higher passenger volumes and 20 seconds for other stations. Northbound and southbound travel times vary slightly because of grade differentials and operational considerations at end-of-line stations.

Table 10-1. Alternative 6: Station-to-Station Travel Times and Station Dwell Times

From Station	To Station	Distance (miles)	Northbound Station-to-Station Travel Time (seconds)	Southbound Station-to-Station Travel Time (seconds)	Dwell Time (seconds)
Metro E Line Station					*20*
Metro E Line	Santa Monica Boulevard	1.1	111	121	—
Santa Monica Boulevard Station					*20*
Santa Monica Boulevard	Wilshire/Metro D Line	1.3	103	108	—
Wilshire/Metro D Line Station					*30*
Wilshire/Metro D Line	UCLA Gateway Plaza	0.7	69	71	—
UCLA Gateway Plaza Station					*30*
UCLA Gateway Plaza	Ventura Boulevard	5.9	358	358	—
Ventura Boulevard Station					*20*
Ventura Boulevard	Metro G Line	1.8	135	131	—
Metro G Line Station					*30*
Metro G Line	Van Nuys Metrolink	2.1	211	164	—
Van Nuys Metrolink Station					*30*

Source: HTA, 2024

— = no data

10.1.1.6 Special Trackwork

Alternative 6 would include seven double crossovers within the revenue service alignment, enabling trains to cross over to the parallel track with terminal stations having an additional double crossover beyond the end of the platform.

10.1.1.7 Maintenance and Storage Facility

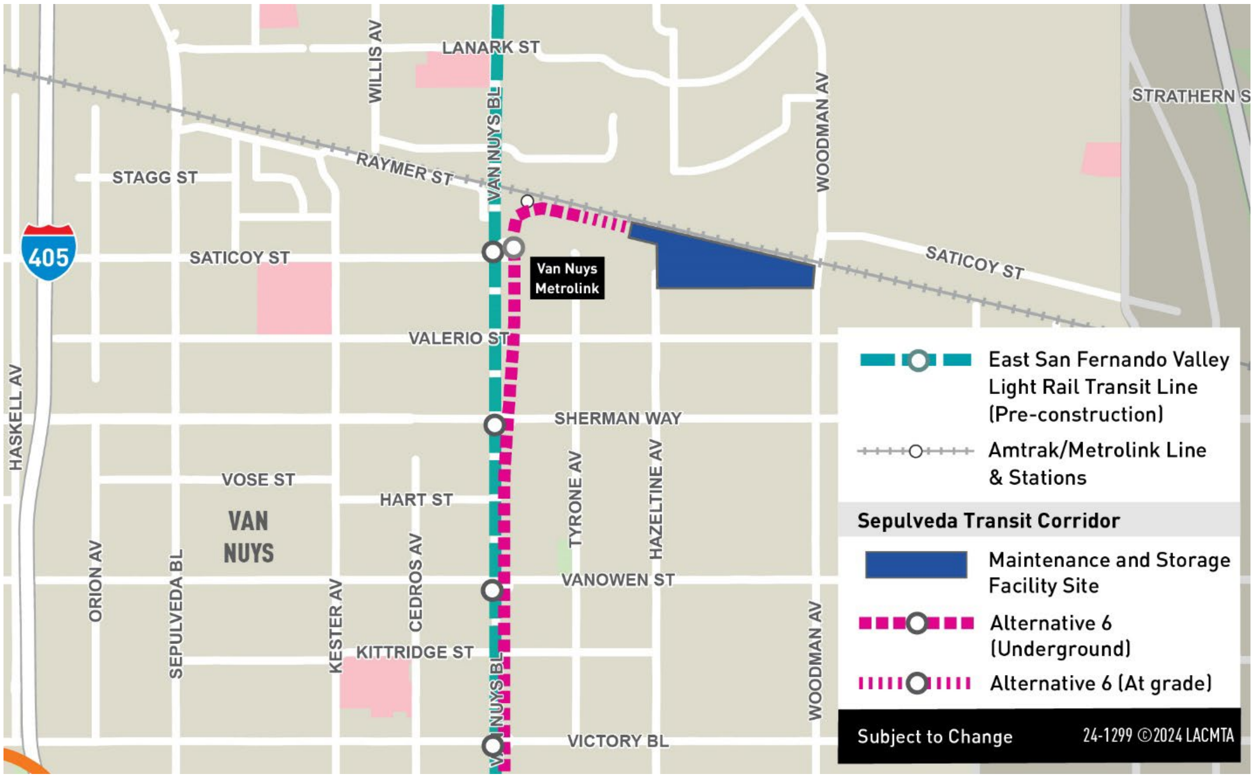
The MSF for Alternative 6 would be located east of the Van Nuys Metrolink Station and would encompass approximately 41 acres. The MSF would be designed to accommodate 94 vehicles and would be bounded by single-family residences to the south, the LOSSAN rail corridor to the north, Woodman Avenue to the east, and Hazeltine Avenue and industrial manufacturing enterprises to the west. Heavy rail trains would transition from underground to an at-grade configuration near the MSF, the northwest corner of the site. Trains would then travel southeast to maintenance facilities and storage tracks.

The site would include the following facilities:

- Two entrance gates with guard shacks
- Maintenance facility building
- Maintenance-of-way facility
- Storage tracks
- Carwash
- Cleaning platform
- Administrative offices
- Pedestrian bridge connecting the administrative offices to employee parking
- Two traction power substations (TPSS)

Figure 10-3 shows the location of the MSF for Alternative 6.

Figure 10-3. Alternative 6: Maintenance and Storage Facility Site



Source: HTA, 2024

10.1.1.8 Traction Power Substations

TPSSs transform and convert high voltage alternating current supplied from power utility feeders into direct current suitable for transit operation. Twenty-two TPSS facilities would be located along the alignment and would be spaced approximately 1 mile apart except within the Santa Monica Mountains. Each at-grade TPSS along the alignment would be approximately 5,000 square feet. Table 10-2 lists the TPSS locations for Alternative 6.

Figure 10-4 shows the TPSS locations along the Alternative 6 alignment.

Table 10-2. Alternative 6: Traction Power Substation Locations

TPSS No.	TPSS Location Description	Configuration
1 and 2	TPSSs 1 and 2 would be located immediately north of the Bundy Drive and Mississippi Avenue intersection.	Underground (within station)
3 and 4	TPSSs 3 and 4 would be located east of the Santa Monica Boulevard and Stoner Avenue intersection.	Underground (within station)
5 and 6	TPSSs 5 and 6 would be located southeast of the Kinross Avenue and Gayley Avenue intersection.	Underground (within station)
7 and 8	TPSSs 7 and 8 would be located at the north end of the UCLA Gateway Plaza Station.	Underground (within station)
9 and 10	TPSSs 9 and 10 would be located east of Stone Canyon Reservoir on LADWP property.	At-grade
11 and 12	TPSSs 11 and 12 would be located at the Van Nuys Boulevard and Ventura Boulevard intersection.	Underground (within station)
13 and 14	TPSSs 13 and 14 would be located immediately south of Magnolia Boulevard and west of Van Nuys Boulevard.	At-grade
15 and 16	TPSSs 15 and 16 would be located along Van Nuys Boulevard between Emelita Street and Califa Street.	Underground (within station)
17 and 18	TPSSs 17 and 18 would be located east of Van Nuys Boulevard and immediately north of Vanowen Street.	At-grade
19 and 20	TPSSs 19 and 20 would be located east of Van Nuys Boulevard between Saticoy Street and Keswick Street.	Underground (within station)
21 and 22	TPSSs 21 and 22 would be located south of the Metrolink tracks and east of Hazeltine Avenue.	At-grade (within MSF)

Source: HTA, 2024

Figure 10-4. Alternative 6: Traction Power Substation Locations

Source: HTA, 2024

10.1.1.9 Roadway Configuration Changes

In addition to the access road described in the following section, Alternative 6 would require reconstruction of roadways and sidewalks near stations.

10.1.1.10 Ventilation Facilities

Tunnel ventilation for Alternative 6 would be similar to existing Metro ventilation systems for light and heavy rail underground subways. In case of emergency, smoke would be directed away from trains and extracted through the use of emergency ventilation fans installed at underground stations and crossover locations adjacent to the stations. In addition, a mid-mountain facility located on LADWP property east of Stone Canyon Reservoir in the Santa Monica Mountains would include a ventilation shaft for the extraction of air, along with two TPSSs. An access road from the Stone Canyon Reservoir access road would be constructed to the location of the shaft, requiring grading of the hillside along its route.

10.1.1.11 Fire/Life Safety – Emergency Egress

Each tunnel would include an emergency walkway that measures a minimum of 2.5 feet wide for evacuation. Cross-passages would be provided at regular intervals to connect the two tunnels to allow for safe egress to a point of safety (typically at a station) during an emergency. Access to tunnel segments for first responders would be through stations.

10.1.2 Construction Activities

Temporary construction activities for Alternative 6 would include construction of ancillary facilities, as well as guideway and station construction and construction staging and laydown areas, which would be co-located with future MSF and station locations. Construction of the transit facilities through substantial completion is expected to have a duration of 7½ years. Early works, such as site preparation, demolition, and utility relocation, could start in advance of construction of the transit facilities.

For the guideway, twin-bore tunnels would be constructed using two tunnel boring machines (TBM). The tunnel alignment would be constructed over three segments—including the Westside, Santa Monica Mountains, and Valley—using a different pair of TBMs for each segment. For the Westside segment, the TBMs would be launched from the Metro E Line Station and retrieved at the UCLA Gateway Plaza Station. For the Santa Monica Mountains segment, the TBMs would operate from the Ventura Boulevard Station in a southerly direction for retrieval from UCLA Gateway Plaza Station. In the Valley, TBMs would be launched from the Van Nuys Metrolink Station and retrieved at the Ventura Boulevard Station.

The distance from the surface to the top of the tunnels would vary from approximately 50 feet to 130 feet in the Westside, between 120 feet and 730 feet in the Santa Monica Mountains, and between 40 feet and 75 feet in the Valley.

Construction work zones would also be co-located with future MSF and station locations. All work zones would comprise the permanent facility footprint with additional temporary construction easements from adjoining properties. In addition to permanent facility locations, TBM launch at the Metro E Line Station would require the closure of I-10 westbound off-ramps at Bundy Drive for the duration of the Sepulveda Transit Corridor Project (Project) construction.

Alternative 6 would include seven underground stations. All stations would be constructed using a “cut-and-cover” method whereby the station structure would be constructed within a trench excavated from the surface that is covered by a temporary deck and backfilled during the later stages of station construction. Traffic and pedestrian detours would be necessary during underground station excavation until decking is in place and the appropriate safety measures have been taken to resume cross traffic. In addition, portions of the Wilshire Boulevard/Metro D Line Station crossing underneath the Metro D Line Westwood/UCLA Station and underneath a mixed-use building at the north end of the station would be constructed using sequential excavation method as it would not be possible to excavate the station from the surface.

Construction of the MSF site would begin with demolition of existing structures, followed by earthwork and grading. Building foundations and structures would be constructed, followed by yard improvements and trackwork, including paving, parking lots, walkways, fencing, landscaping, lighting, and security systems. Finally, building mechanical, electrical, and plumbing systems, finishes, and equipment would be installed. The MSF site would also be used as a staging site.

Station and MSF sites would be used for construction staging areas. A construction staging area, shown on Figure 10-5, would also be located off Stone Canyon Road northeast of the Upper Stone Canyon Reservoir. In addition, temporary construction easements outside of the station and MSF footprints would be required along Bundy Drive, Santa Monica Boulevard, Wilshire Boulevard, and Van Nuys Boulevard. The westbound to southbound loop off-ramp of the I-10 interchange at Bundy Drive would also be used as a staging area and would require extended ramp closure. Construction staging areas would provide the necessary space for the following activities:

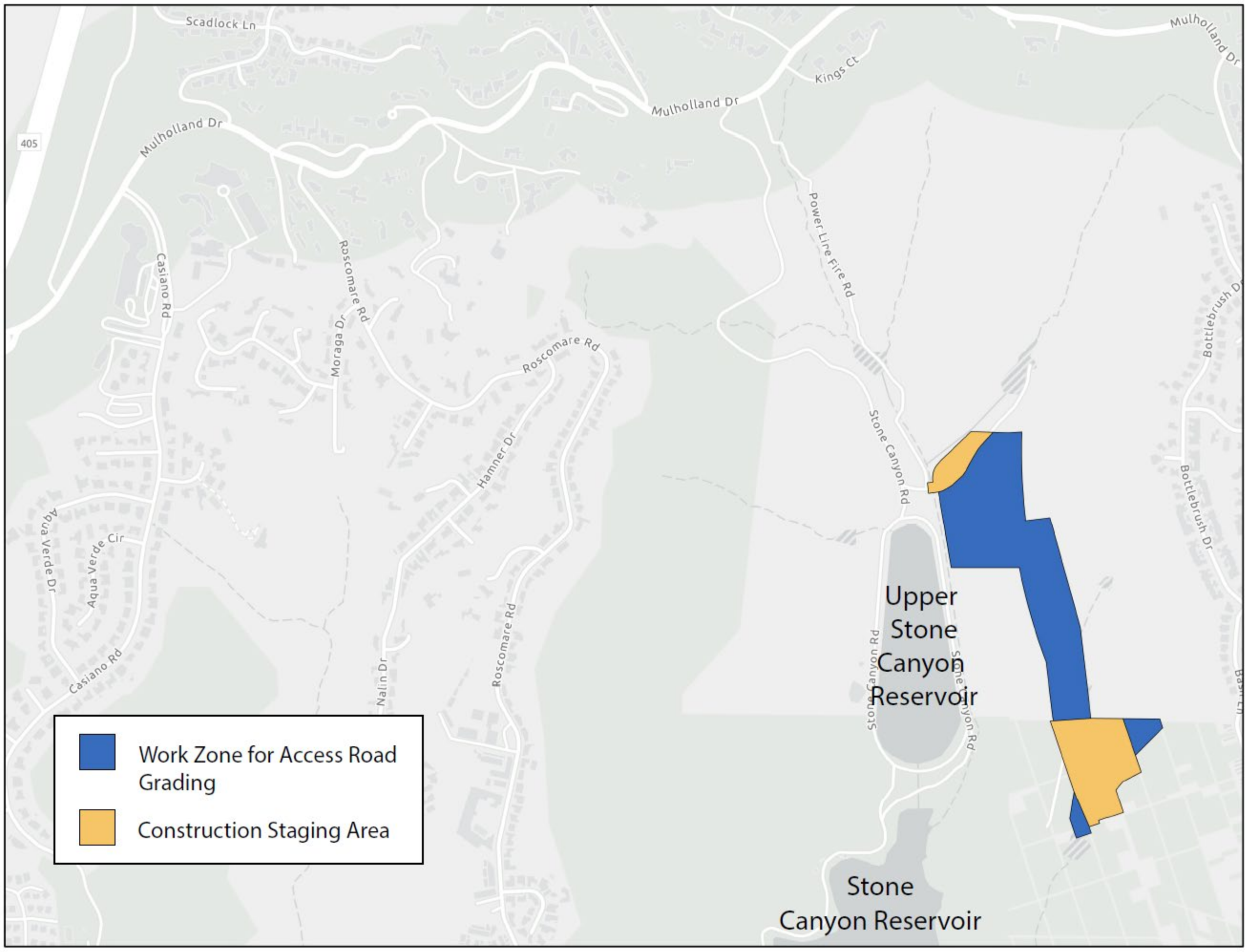
- Contractors' equipment
- Receiving deliveries
- Testing of soils for minerals or hazards
- Storing materials
- Site offices
- Work zone for excavation
- Other construction activities (including parking and change facilities for workers, location of construction office trailers, storage, staging and delivery of construction materials and permanent plant equipment, and maintenance of construction equipment)

The size of proposed construction staging areas for each station would depend on the level of work to be performed for a specific station and considerations for tunneling, such as TBM launch or extraction. Staging areas required for TBM launching would include areas for launch and access shafts, cranes, material and equipment, precast concrete segmental liner storage, truck wash areas, mechanical and electrical shops, temporary services, temporary power, ventilation, cooling tower, plants, temporary construction driveways, storage for spoils, and space for field offices.

Alternative 6 would also include several ancillary facilities and structures, including TPSS structures, a deep vent shaft structure at Stone Canyon Reservoir, as well as additional vent shafts at stations and crossovers. TPSSs would be co-located with MSF and station locations, except for two TPSSs at the Stone Canyon Reservoir vent shaft and four along Van Nuys Boulevard in the Valley. The Stone Canyon Reservoir vent shaft would be constructed using a vertical shaft sinking machine that uses mechanized shaft sinking equipment to bore a vertical hole down into the ground. Operation of the machine would be controlled and monitored from the surface. The ventilation shaft and two TPSSs in the Santa Monica Mountains would require an access road within the LADWP property at Stone Canyon Reservoir. Construction of the access road would require grading east of the reservoir. Construction of all mid-mountain facilities would take place within the footprint shown on Figure 10-5.

Additional vent shafts would be located at each station with one potential intermediate vent shaft where stations are spaced apart. These vent shafts would be constructed using the typical cut-and-cover method, with lateral bracing as the excavation proceeds. During station construction, the shafts would likely be used for construction crew, material, and equipment access.

Figure 10-5. Alternative 6: Mid-Mountain Construction Staging Site



Source: HTA, 2024

Alternative 6 would utilize precast tunnel lining segments in the construction of the transit tunnels. These tunnel lining segments would be similar to those used in recent Metro underground transit projects. Therefore, it is expected that the tunnel lining segments would be obtained from an existing casting facility in Los Angeles County and no additional permits or approvals would be necessary specific to the facility.

10.2 Existing Conditions

10.2.1 Water Resources Study Area

The water resources study area includes surface water and groundwater resources within the Project Study Area. A variety of creeks, rivers, human-made reservoirs, and canals exist within the Project Study Area (Figure 10-6). In the northern portion of the Project Study Area, the Pacoima Wash extends to Vanowen Street between Sepulveda Boulevard and Van Nuys Boulevard. North of the Santa Monica Mountains, the Los Angeles River crosses the Project Study Area north of U.S. Highway 101 (US-101). Encino Creek is located southwest of the junction of I-405 and US-101. Located outside and south of the Project Study Area, Ballona Creek, the Centinela Creek Channel, and the Sepulveda Channel cross near State Route 90. South of the Project Study Area, the Sepulveda Channel runs along the westside of I-405 and collects water from various catch basins and transports the water to Ballona Creek. Water from Ballona Creek ultimately discharges at the Marina del Rey Harbor.

There are several reservoirs largely concentrated in the Santa Monica Mountains. The Stone Canyon Reservoir is located to the east of I-405 in the Santa Monica Mountains, 13 miles northwest of downtown Los Angeles. This reservoir provides water to 400,000 people in Pacific Palisades, the Santa Monica Mountains, and West Los Angeles. The Encino Reservoir is located west of I-405 within the Santa Monica Mountains in the City of Los Angeles Community of Encino. The Sepulveda Dam Recreation Area is located north of the I-405/US-101 interchange in the Valley.

10.2.2 Watershed Setting and Local Surface Water Bodies

The Project Study Area is located within the Los Angeles Watershed (HUC8) in the Upper Los Angeles River Watershed (HUC10) and the Santa Monica Bay Watershed (HUC8) in the Ballona Creek Watershed (HUC10) and the Garapito Creek-Frontal Santa Monica Bay Watershed (HUC10) (Figure 10-6). The receiving waters within the Project Study Area include Los Angeles River with its respective tributaries. The Los Angeles River crosses the Project Study Area roughly parallel to US-101.

Figure 10-6. Alternative 6: Watersheds in the Project Study Area

Source: USGS, 2023

10.2.2.1 Los Angeles Watershed

The Los Angeles Watershed covers an area of over 824 square miles from the eastern portions of the Santa Monica Mountains, Simi Hills, and the Santa Susana Mountains in the west to the San Gabriel Mountains in the east (LARWQCB, 2014). The Los Angeles River originates at the western end of the Valley at the confluence of Arroyo Calabasas and Bell Creek. The six major tributaries along the river

include Tujunga Wash, Burbank Western Storm Drain, Verdugo Wash, Arroyo Seco, Rio Hondo, and Compton Creek.

The Project Study Area is located in Reach 5 of the Los Angeles River where the river flows east for approximately 16 miles along the base of the Santa Monica Mountains. In the Valley, the river runs through low density residential neighborhoods. It continues through Reseda Park and Sepulveda Basin-a regional recreational facility with a lake, park, and wildlife area. Reach 5 of the Los Angeles River is mostly channelized with some soft-bottom stretches and acts as a transitional zone between the downstream concrete sections and the more natural and free-flowing upstream sections.

Topography throughout the coastal plain area is generally defined by gradually sloping land from the foothills of the San Gabriel Mountains to the Pacific Ocean. The coastal plain area of the Los Angeles Watershed extends from the foothills of the San Gabriel Mountains to the river mouth at the Port of Long Beach and includes communities within the Project Study Area, including Van Nuys, Encino, Bel-Air, Brentwood, and Westwood. Ground elevations range from 10,000 feet in the San Gabriel Mountains to mean sea level at the mouth of the Los Angeles River. The majority of the coastal plain is less than 1,000 feet in elevation, while the upper portion of the watershed is covered by forest and open space. Approximately 500 square miles of the watershed is highly developed with commercial, industrial, and residential uses (LARWQCB, 2014). The vast majority of land in the Los Angeles Watershed (approximately 80 percent) is developed with urban uses.

Despite extensive urbanization, the Los Angeles Watershed contains water features retaining varying degrees of natural characteristics, including Glendale Narrows, which features a rocky bottom with riprap sides, supporting riparian vegetation and recreational uses, and Compton Creek, which supports wetland habitat providing critical ecological value within the developed landscape. Both Glendale Narrows and Compton Creek are outside of the Project Study Area. In addition, the Sepulveda Flood Control Basin maintains semi-natural conditions supporting low-intensity habitat uses.

10.2.2.2 Santa Monica Bay Watershed

The Santa Monica Bay Watershed covers an area of over 414 square miles from the Santa Monica Mountains on the north from the Ventura-Los Angeles County line on the west and extending south across the Los Angeles plain to the Ballona Creek Watershed on the east (LARWQCB, 2014). South of Ballona Creek a narrow strip of wetlands between Playa del Rey and Palos Verdes drains to Santa Monica Bay. The Santa Monica Bay Watershed includes several smaller subwatershed areas, including Ballona Creek Watershed and Garapito Creek-Frontal Santa Monica Bay Watershed.

A majority of the northern portion of the Santa Monica Bay Watershed is rugged open space containing many canyons that carry runoff directly to Santa Monica Bay. Topanga and Malibu Creeks, the two largest watercourses in this area, are fed both by tributary creeks and by channelized storm drains in and near developed areas. Portions of Malibu, Agoura Hills, Westlake Village, and Los Angeles are located in the northern portion of the watershed. The mid- and southern portions of the Santa Monica Bay Watershed are more urban and contain portions of Los Angeles, Santa Monica, El Segundo, Manhattan Beach, Redondo Beach, the Palos Verdes Estates, and Rancho Palos Verdes. These areas are highly developed and contain a network of storm drains that carry runoff to the Santa Monica Bay.

Ballona Creek Watershed

The Ballona Creek Watershed is a subwatershed within the Santa Monica Bay Watershed that consists of Ballona Creek, a nine-mile-long flood protection channel that drains the Los Angeles Basin. The Ballona Creek Watershed covers approximately 130 square miles located in the western portion of the Los

Angeles Basin and is made up by the Culver City, Wilshire, and Hollywood sub watersheds. The headwaters of the watershed are located in the Santa Monica Mountains to the north and the Baldwin Hills to the south. Most of the Ballona Creek drainage network has been modified into storm drains, underground culverts, and open concrete channels. Ballona Creek flows in an open concrete channel for approximately 10 miles from mid-Los Angeles through Culver City, reaching the Pacific Ocean at Playa del Rey (Marina del Rey Harbor). The Estuary portion, from Centinela Avenue to its outlet, is soft-bottomed and includes the Ballona Wetlands. A few natural channels remain in the Santa Monica Mountains and Baldwin Hills. The Sepulveda Channel, which runs along I-405 outside of the Project Study Area, is a major tributary to the Ballona Creek Watershed.

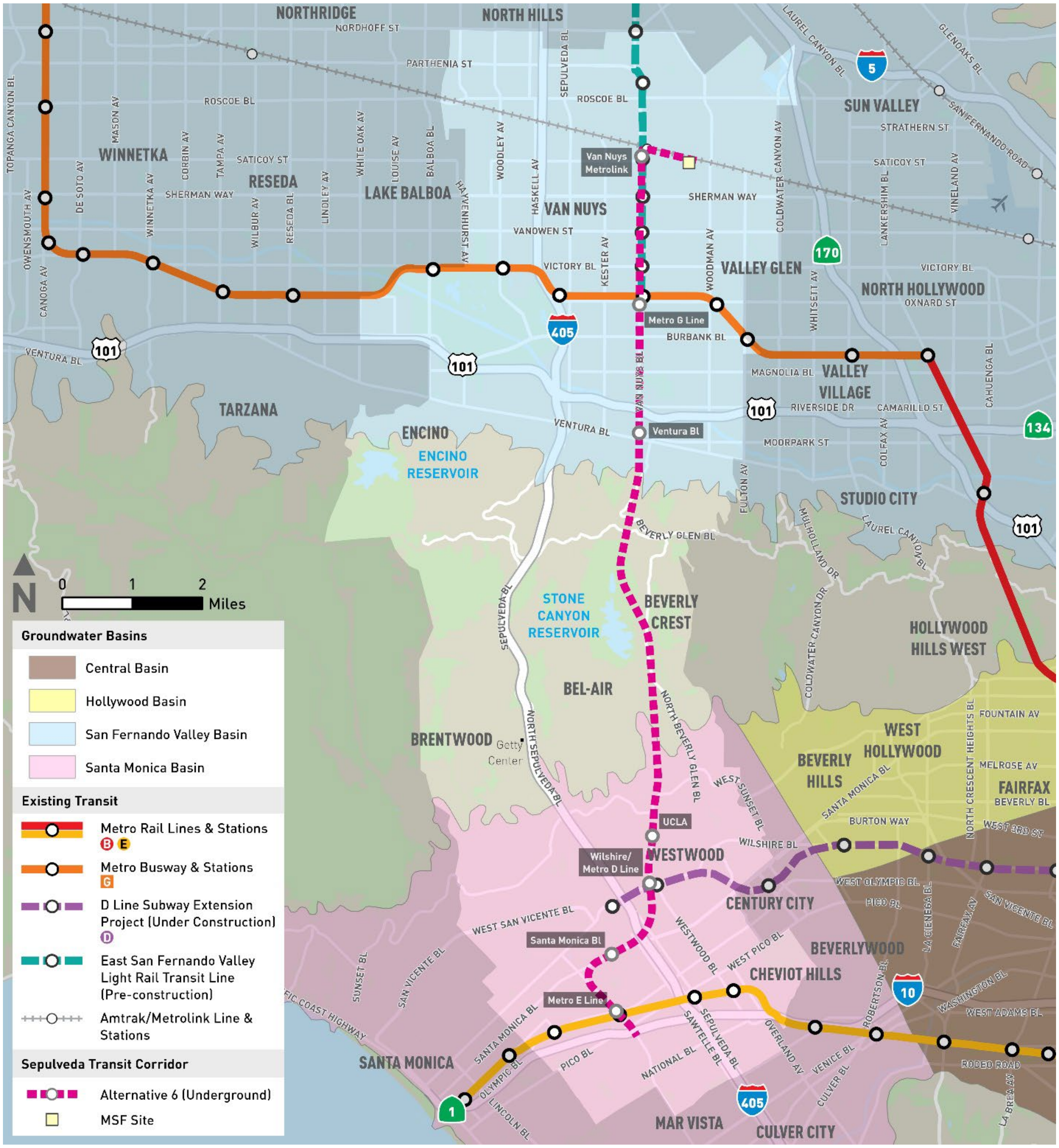
Garapito Creek-Frontal Santa Monica Bay Watershed

Garapito Creek-Frontal Santa Monica Bay Watershed is a subwatershed within the Santa Monica Bay Watershed and covers an area of approximately 130 square miles. The subwatershed is part of the Santa Monica Mountains and a majority of the subwatershed contains rugged mountainous terrain. This subwatershed includes Garapito Creek, which flows through Topanga State Park in the Santa Monica Mountains National Recreation Area. The Santa Monica Mountains are home to a diverse range of plant and animal species and provide critical habitats for wildlife, including several endangered species.

10.2.3 Groundwater

The Project Study Area is within the San Fernando Valley Groundwater Basin and the Santa Monica Subbasin within the Coastal Plain of Los Angeles (Figure 10-7). The Sustainable Groundwater Management Act designated the Santa Monica Subbasin as medium priority, and the San Fernando Valley Groundwater Basin as very low priority based on the basin prioritization (DWR, 2021). Sources of water supply in Los Angeles County include groundwater.

Figure 10-7. Alternative 6: Groundwater Basins Underlying the Project Study Area



Source: LA County Planning, 2020a

10.2.3.1 Coastal Plain of Los Angeles Groundwater Basin, Santa Monica Subbasin

The Santa Monica Subbasin underlies the northwestern part of the Coastal Plain of Los Angeles Groundwater Basin. The Los Angeles Groundwater Basin spans 32,100 acres (50.2 square miles). It is bounded by impermeable rocks of the Santa Monica Mountains on the north and by the Ballona escarpment on the south. The Santa Monica Subbasin extends from the Pacific Ocean on the west to the Inglewood fault on the east. Ballona Creek is the dominant hydrologic feature and drains surface waters to the Pacific Ocean.

Replenishment of groundwater in the Santa Monica Subbasin is mainly by percolation of precipitation and surface runoff onto the subbasin from the Santa Monica Mountains. The Inglewood fault appears to inhibit replenishment by underflow from the Central Basin to the east, though some inflow may occur at its northern end. Total storage capacity of the Santa Monica Subbasin is estimated to be about 1,100,000 acres-feet (DWR, 2020a). The groundwater storage in the subbasin and groundwater budget is unknown.

10.2.3.2 San Fernando Valley Groundwater Basin

The San Fernando Valley Groundwater Basin surface area covers over 145,000 acres (226 square miles) and includes the water-bearing sediments beneath the San Fernando Valley, Tujunga Valley, Browns Canyon, and the alluvial areas surrounding the Verdugo Mountains near La Crescenta and Eagle Rock (DWR, 2020b). The basin is bounded on the north and northwest by the Santa Susana Mountains, on the north and northeast by the San Gabriel Mountains, on the east by the San Rafael Hills, on the south by the Santa Monica Mountains and Chalk Hills, and on the west by the Simi Hills. The Valley is drained by the Los Angeles River and its tributaries. Precipitation in the Valley ranges from 15 to 23 inches per year and averages about 17 inches.

Hydrographs show variations in water levels of 5 feet to 40 feet in the western part of the basin, a variation of about 40 feet in the southern and northern parts of the basin, and a variation of about 80 feet in the eastern part of the basin. The total storage capacity of the San Fernando Valley Groundwater Basin is 3,670,000 acres-feet. The groundwater in storage in 1998 is calculated at 3,049,000 acres-feet with an additional 621,000 acres-feet of storage space available. Though the San Fernando Valley Groundwater Basin is managed by adjudication, not enough data exists to compile a complete groundwater budget. A total of about 108,500 acres-feet of groundwater was extracted from the San Fernando Valley Groundwater Basin during the 1997-1998 water year. In addition, subsurface outflow of about 300 acres-feet to the Raymond Groundwater Basin and 404 acres-feet to the Central Subbasin of the Los Angeles Coastal Plain Groundwater Basin is estimated. To balance the extraction, a total of 61,119 acres-feet of native runoff water was diverted to spreading grounds for infiltration.

10.2.4 Water Quality

10.2.4.1 Los Angeles Watershed

Surface water beneficial uses for Reach 5 of the Los Angeles River include municipal and domestic supply, industrial service supply, groundwater recharge, recreation, and water that supports various habitats and ecosystems.

According to the California State Water Resources Control Board (SWRCB) 2020-2022 303(d) list of impaired water bodies, Reach 5 of the Los Angeles River and its tributaries are listed as impaired for ammonia, benthic community effect, copper, lead, nutrients (algae), oil, toxicity, and trash (SWRCB, 2022c).

Elevated bacteria indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use at the 303(d) listed waterbodies within the Los Angeles Watershed. Recreating in waters with elevated bacteria indicator densities has been associated with adverse health effects. Specifically, local and national epidemiological studies demonstrate a causal relationship between adverse health effects and recreational water quality, as measured by bacteria indicator densities.

10.2.4.2 Ballona Creek Watershed

Surface water beneficial uses for Reach 1 of the Ballona Creek include municipal and domestic supply, industrial service supply, groundwater recharge, recreation, and water that supports various habitats and ecosystems.

Ballona Creek and Ballona Creek Estuary are on the CWA Section 303(d) list of impaired waterbodies for copper, lead, zinc, silver, cyanide, indicator bacteria, toxicity, trash, cadmium, chlordane, dichloro-diphenyl-trichloroethane (DDT), polychlorinated biphenyl (PCB), polycyclic aromatic hydrocarbons (PAH) and toxicity. Sepulveda Channel is included on the 303(d) list for copper, lead, zinc, selenium, and indicator bacteria (SWRCB, 2022c).

Elevated bacterial indicator densities are causing impairment of the REC-1 beneficial use designated for Ballona Estuary and Sepulveda Channel, limited water contact recreation designated for Ballona Creek Reach 2, and non-contact water recreation (REC-2) beneficial uses of Ballona Creek Reach 1. Recreating in waters with elevated bacterial indicator densities has long been associated with adverse human health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.

10.2.4.3 San Fernando Valley Groundwater Basin

Groundwater beneficial uses for the San Fernando Valley Groundwater Basin include water supply for municipal, domestic, industrial process, and agricultural uses. Nitrite pollution in the groundwater of the Sunland-Tujunga area within the San Fernando Valley Groundwater Basin currently precludes direct municipal uses. Since the groundwater in this area can be treated or blended (or both), it retains the municipal designation.

In the western part of the basin, calcium sulfate-bicarbonate character is dominant, and in the eastern part of the basin, calcium bicarbonate character dominates (DWR, 2020b). Total dissolved solids (TDS) range from 326 to 615 milligrams per liter (mg/L), and electrical conductivity ranges from 540 to 996 micromhos. Data from 125 public supply wells shows an average TDS content of 499 mg/L and a range from 176 to 1,160 mg/L.

A number of investigations have determined contamination of volatile organic compounds such as trichloroethylene (TCE), perchloroethylene (PCE), petroleum compounds, chloroform, nitrate, sulfate, and heavy metals. TCE, PCE, and nitrate contamination occurs in the eastern part of the basin and elevated sulfate concentration occurs in the western part of the basin.

10.2.4.4 Coastal Plain of Los Angeles Groundwater Basin, Santa Monica Subbasin

Beneficial uses for Santa Monica Subbasin within the Coastal Plain of Los Angeles include water supply for municipal, domestic, industrial process, and agricultural uses.

Impairments to the Santa Monica Subbasin is unknown to the California Department of Water Resources (DWR, 2020a). Analyses of water from seven public supply wells indicate an average TDS content of 916 mg/L and a range of 729 to 1,156 mg/L.

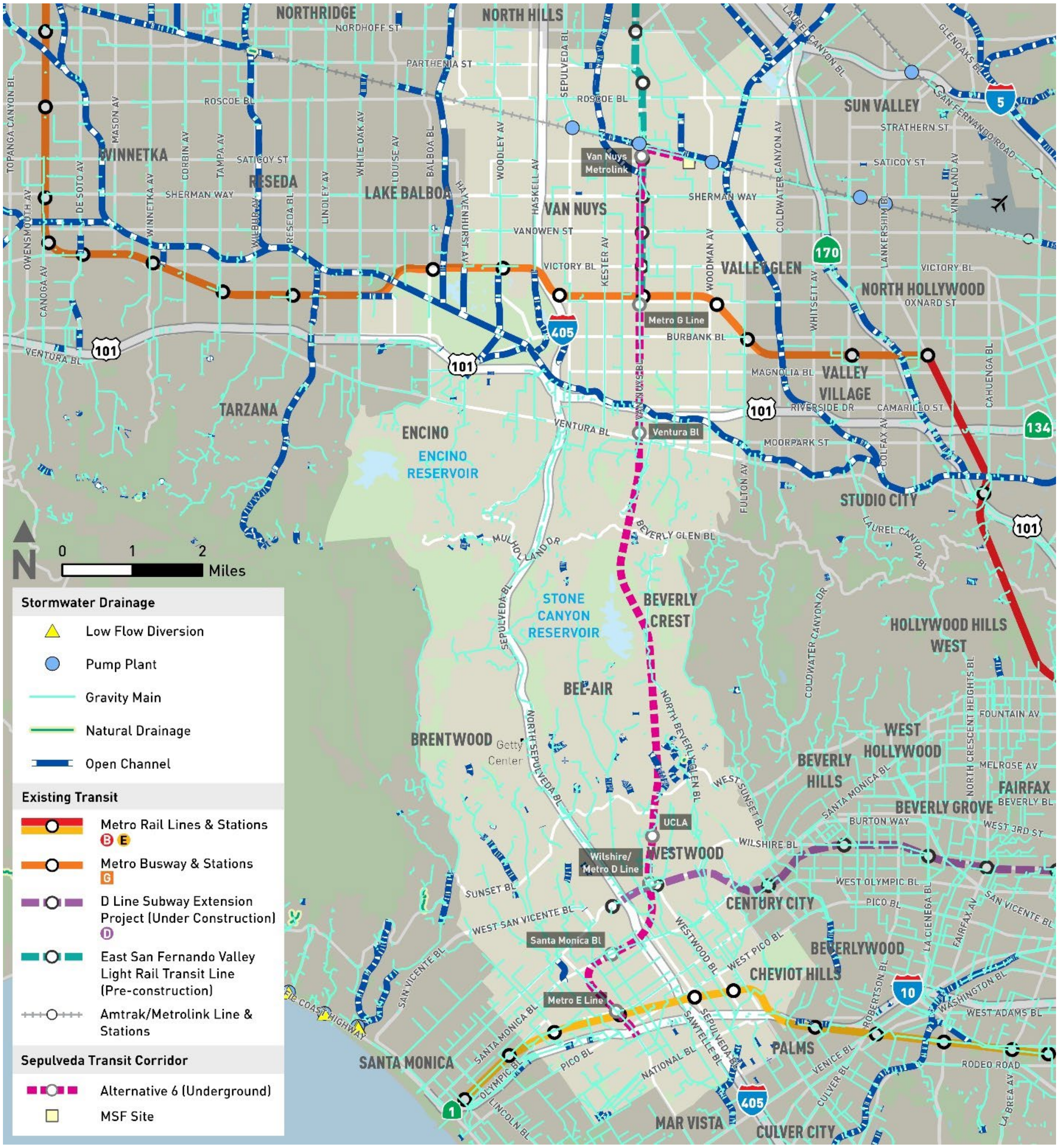
10.2.5 Drainage

Land in the county and cities within the Project Study Area is urbanized and largely covered with impervious surfaces associated with areas of asphalt, concrete, buildings, and other land uses that concentrate storm runoff. Stormwater and other surface water runoff are conveyed to municipal storm drains and culverts (Figure 10-8). Most local drainage networks are controlled by structural flood control measures. There is a large portion of the Project Study Area that is undeveloped, with pervious lands in the open space area of the Santa Monica Mountains.

The general stormwater drainage pattern in the southern portion of the Project Study Area (from Metro E Line Expo/Sepulveda Station along I-405 to the upper reach of the Ballona Creek Watershed) is from north to south. The majority of stormwater runoff within the Project Study Area drains into the Los Angeles County Flood Control District (LACFCD) Sepulveda Channel, which starts at the upper reach of the Ballona Creek Watershed as a large diameter storm drain pipe that crosses under I-405 several times. This storm drain then transitions into a large drainage box culvert; further south of the Project Study Area, it becomes an open channel before confluencing with Ballona Creek, an LACFCD flood control channel.

The general stormwater drainage pattern in the northern portion of the Project Study Area in the Upper Los Angeles River Watershed is from south to north in developed storm drain systems. From the ridge of the Sepulveda Pass going north, the majority of Project Study Area stormwater drains to a California Department of Transportation (Caltrans) storm drain main that connects to an LACFCD large drainage box culvert that discharges to the Los Angeles River, an LACFCD flood control channel.

Figure 10-8. Alternative 6: Existing Stormwater Drainage Infrastructure



Source: LACPW, 2024

10.2.6 Flooding and Inundation

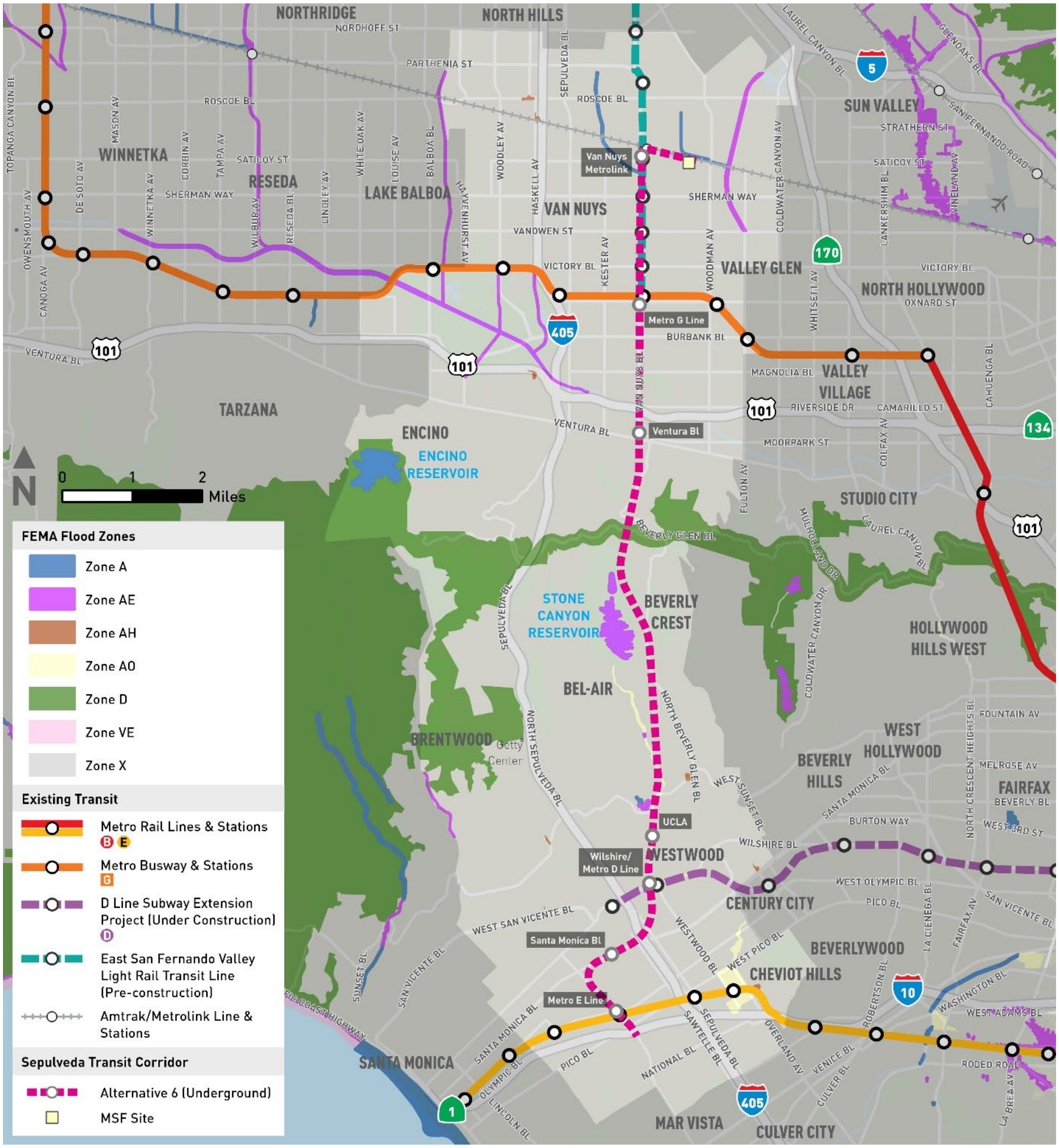
The Federal Emergency Management Agency's (FEMA) Flood Map Service Center (FEMA, 2023) was used to identify flood hazard zones within the Project Study Area. Figure 10-9 illustrates all flood hazard zones within the Project Study Area. Portions of the Project Study Area are subjected to a risk of flooding under FEMA's categorizations. The ridgetop of Santa Monica Mountains, located at Mulholland

Drive, and open space areas owned by Los Angeles County are located in Zone D. Zone D indicates that there is a risk of flooding, with unknown levels of risk. The Encino Reservoir and the SCR, located in the Santa Monica Mountains, are subject to Zones A and AE, respectively, and experience a risk of inundation with a 1 percent annual chance of flooding, alternatively known as a 100-year floodplain, since they each retain a significant amount of water. The channelized limits of the Los Angeles River, where it crosses I-405 and Sepulveda Boulevard, is also identified as Zone AE. Other small portions within the Project Study Area east of Overland Avenue are within Zone AO and AH and are subject to inundation by a 1 percent annual chance of shallow flooding. Approximately 0.63 percent of the Project Study Area is within the 100-year floodplain.

Seiches are a temporary disturbance or oscillation in the water level of an enclosed body of water, usually caused by changes in atmospheric pressure. The Encino Reservoir and the SCR are located approximately 3 miles and 0.5 mile, respectively, west of the proposed alignment.

Tsunamis are large ocean waves caused by major seismic events with the potential of causing flooding in low lying coastal areas.

Figure 10-9. Alternative 6: FEMA Flood Zones



Source: LA County Planning, 2020b

10.2.7 Municipal Water Supply

Within Los Angeles County, the water supply comprises a complex system made up of state agencies and local water districts operating aqueducts, reservoirs, and groundwater basins. Approximately 33 percent of the water in the county comes from local supply sources, while the remaining supply is imported from outside of the county. Due to the county's dependence on imported water supply

sources and its vulnerability to drought, the county is constantly working to develop a diverse range of water resources (LA County Planning, 2015).

Local water supply sources include surface water from mountain runoff, groundwater, and recycled water. Imported sources of water supply include the Colorado River, the Bay-Delta in Northern California via the State Water Project, and the Owens Valley via the Los Angeles Aqueduct. Major water distributors of imported water used in the unincorporated county include the Metropolitan Water District of Southern California (MWD), Santa Clarita Valley Water Agency, Antelope Valley-East Kern Water Agency, Littlerock Creek Irrigation District, and the Palmdale Water District (LA County Planning, 2015).

The Los Angeles County Department of Public Works maintains a database of groundwater supply wells (LADPW, 2019). According to this database, the majority of groundwater wells are in the Valley with three active wells underlying Van Nuys Boulevard.

The LADWP is responsible for supplying, treating, and distributing water for domestic and industrial uses in a portion of the detailed Project Study Area. The LADWP serves an area of approximately 473 square miles with over 681,000 water service connections. LADWP draws its water from three main sources: the Los Angeles Aqueduct (from Eastern Sierra Nevada) (29 percent), the MWD (57 percent), groundwater (12 percent), and recycled water (2 percent) (LADWP, 2013).

10.3 Impacts Evaluation

10.3.1 Impact HWQ-1: Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

10.3.1.1 Operational Impacts

During operations, Alternative 6 would not increase impervious surfaces compared to existing conditions because most of Alternative 6 would be underground, and land surfaces with the proposed stations and other ancillary facilities in the Project Study Area are developed and covered by existing impervious surfaces. All seven stations would be underground, underneath existing impervious areas and would not require the creation of new impervious surfaces. The maintenance and storage facility (MSF) would be constructed on existing impervious surfaces. Components that would slightly increase the existing impervious surface area include the mountain shaft facility, TPSS structures, and the access road. Alternative 6 is estimated to create approximately 146,596 square feet of impervious area. However, new pervious surface (approximately 542,135 square feet) would be created on existing impervious surface. Therefore, Alternative 6 would result in a net increase of approximately 395,539 square feet of pervious area compared to existing conditions (Table 10-3).

Table 10-3. Alternative 6: New Pervious and Impervious Surface Area

Component	New Pervious Surface Area at Component Site (square feet)	New Impervious Surface Area at Component Site (square feet)	Net Pervious Area Created by Component (square feet)
Mountain Shaft Access Road	0	78,534	-78,534
Mountain Shaft Facility/TPSS	0	68,062	-68,062
MSF	542,135	0	542,135
Totals	**542,135**	**146,596**	**395,539**

Source: HTA, 2024

Maintenance activities associated with the transit system operation, such as train car maintenance and lubrication, would occur at the proposed MSF. Potential pollutants (e.g., petroleum products/lubricants, paints, solvents, and other Alternative 6-related products) used or generated during Alternative 6 operations and maintenance would contribute to water pollution if not properly dispensed, stored, or disposed. If not appropriately managed, uncontrolled discharge of runoff carrying these potential pollutants would result in significant impacts to water quality in receiving waters, which would violate federal, state, and local water quality standards and Waste Discharge Requirements (WDR).

Storage and disposal of hazardous materials and waste would be conducted in accordance with all applicable federal and state regulatory requirements. As described in the *Sepulveda Transit Corridor Project Hazards and Hazardous Materials Technical Report* (Metro, 2025), Alternative 6 would be required to reduce the potential effects of the use and storage of hazardous materials at MSF and TPSSs through the implementation of hazardous materials monitoring plans, including a hazardous materials business plan developed in accordance with California Health and Safety Code requirements.

As previously discussed, Alternative 6 would comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the *Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan) (LARWQCB, 2014) and the Municipal Separate Storm Sewer Systems (MS4) Permit, as well as commonly used industry standards.

Alternative 6 would be designed to incorporate several sustainability features, such as native landscaping, rainwater cisterns for capture and reuse, permeable surfaces, soil improvements, increased vegetation, and on-site retention, in compliance with the *Low Impact Development Standards Manual* (LADPW, 2014) and the City of Los Angeles *Planning and Land Development Handbook for Low Impact Development* (City of Los Angeles, 2016), which would serve to reduce impervious area and promote infiltration, thereby improving water quality. Alternative 6 would comply with the Caltrans National Pollutant Discharge Elimination System (NPDES) Statewide Stormwater Permit, City of Los Angeles Municipal Code, the City of Los Angeles and County of Los Angeles LID Ordinance, and all other applicable regulations for all operational activities, including adherence to an approved Alternative 6-specific Low Impact Development (LID) Plan, which would identify the best management practices (BMP) for Alternative 6 operations. The types of LID BMP designs to be incorporated would be determined during the design phase. Although final design would dictate actual stormwater management aspects of Alternative 6, potential BMPs would include depressed landscape gardens for runoff retention and infiltration, permeable surfaces to reduce runoff volume, hardscape replacement with pervious or planted substitutions, bioswales or artistic water features that creatively convey runoff into planted or pervious areas, roof downspout discharges to vegetated areas, and rainwater cisterns and other on-site stormwater retention methods. These measures and practices would be incorporated at applicable component sites and would serve to promote infiltration.

The Alternative 6-specific LID Plan would identify the BMPs for the Alternative 6 post-construction design (i.e., operational characteristics to control/treat runoff for the range of potential pollutants). Alternative 6 would include design elements that would serve to infiltrate, capture, and re-use stormwater in accordance with current LID requirements — thereby minimizing the potential for increased runoff rates and pollutant discharge. LID design features would slow (detain or retain) stormwater, which would reduce the runoff volume discharged from Alternative 6 and would decrease the peak runoff discharge velocity for design storms. Implementation of LID BMPs would offset any increases in runoff rates due to the creation of new impervious surface areas. As a result, less flow with fewer pollutants would be transported through the conveyance systems, and ultimately into surface waters, including ancillary exfiltration to the groundwater table. Additionally, natural treatment of infiltrated runoff would occur, thereby improving exfiltrated water from LID and water quality additions to the groundwater table, including treatment for potential pollutants (e.g., petroleum products/lubricants, metals, paints, solvents, and other Alternative 6-related products) used or generated during Alternative 6 operations.

Alternative 6 is anticipated to require Industrial General Permit (IGP) coverage for maintenance facilities, fueling operations, equipment cleaning/washing operations, and TPSSs. As such, an IGP Stormwater Pollution Prevention Plan (SWPPP) would be prepared and submitted to the SWRCB prior to operations. The IGP includes discharge prohibitions, effluent limitations, and receiving water limitations that must be adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases. Other BMPs may also be employed, as appropriate, such as indoor/covered areas for maintenance, approved flammable/hazmat storage lockers for lubricants and other industrial liquids, drip/spill protection in maintenance areas and similar BMPs when conducting maintenance, dry clean-up practices, and dedicated enclosed areas for metal working, painting, and welding.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to the violation of any water quality standards or WDRs or the degradation of surface or groundwater quality during operations of Alternative 6 would be less than significant.

10.3.1.2 Construction Impacts

Construction of Alternative 6 would involve underground and at-grade activities. Underground activities would include relocation of existing utilities, tunnel guideway construction, and station construction. At-grade activities would involve relocation of existing utilities, building maintenance and storage facilities, parking lots, and reconstruction of roadways with appropriate pedestrian and cyclist access. Temporary components of Alternative 6 would include construction staging areas, office areas, and work zones at permanent facilities.

Construction activities such as demolition and excavation would temporarily expose bare soil, increasing the risk of erosion. Uncontrolled erosion and discharge of sediments and other potential pollutants, including the discharge of fill material, would affect water quality in Alternative 6 receiving waters (e.g., the Pacoima Wash, Tujunga Wash, and Los Angeles River) if not appropriately managed by proper implementation of the construction SWPPP.

In addition to sediments, other pollutants including trash, concrete waste, and petroleum products, such as fuels, solvents, and lubricants, would degrade water quality and contribute to water pollution if not appropriately managed. The use of construction equipment and vehicles for Alternative 6 would result in spills of vehicle-related fluids that would contribute to water pollution if not appropriately managed. Improper handling, storage, or disposal of these materials or improper cleaning and maintenance of equipment would result in accidental spills and discharges that would contribute to water pollution.

Alternative 6 would be located within the Los Angeles Watershed and the Santa Monica Bay Watershed in the Ballona Creek subwatershed. The vast majority of land in the Los Angeles Watershed (approximately 80 percent) is developed with urban uses. Most of the Ballona Creek subwatershed drainage network has been modified into storm drains, underground culverts, and open concrete channels. A few natural channels remain in the Santa Monica Mountains and Baldwin Hills. Construction activities such as excavation near the Santa Monica Mountains and Baldwin Hills section of Alternative 6 would have the potential to impact these natural channels by contributing increased sediment/pollutants if not appropriately managed.

The construction activities for utility relocation would include demolishing existing concrete pavement and utilities, excavating trenches for new utility routing, backfilling, and reconstructing the concrete pavement. Cut-and-cover box construction involves demolishing existing structures, constructing supporting utilities, piling and decking, excavating, hauling materials, and constructing temporary roadway decking. All stations except the Wilshire Boulevard/Metro D Line Station would be constructed as cut-and-cover box structures. The groundwater depth in the vicinity of the Santa Monica Boulevard Station, UCLA Gateway Plaza Station, and the Ventura Boulevard Station, generally ranges from 40 to 310 feet below ground surface (bgs). The depth of excavation for these stations would vary between 140 to 255 feet bgs. There is the potential that groundwater may be encountered during excavation activities for these stations; therefore, dewatering would be required.

The SEM would be used for constructing underground stations where surface structures cannot be demolished. SEM involves excavation, shoring, and underpinning and would be performed at the Metro E Line Station and the Wilshire/Metro D Line Station. The groundwater level in the vicinity of the Metro E Line Station varies between 30 and 40 feet bgs and between 35 and 80 feet bgs in the vicinity of Wilshire Boulevard/Metro D Line Station. The excavation would occur between 110 and 150 feet bgs for the Wilshire Boulevard/Metro D Line Station and up to approximately 100 feet bgs for the Metro E Line Station. There is the potential that groundwater may be encountered during excavation activities for these stations; therefore, dewatering would be required. However, project stations would be constructed with a watertight system (e.g., secant pile, slurry wall) to prevent groundwater intrusion.

The tunnel alignment would be constructed over three segments. The majority of the tunnel invert along the proposed alignment is below groundwater level. However, from Burbank Boulevard in the vicinity of the Metro G Line Station to the Van Nuys Metrolink Station, the tunnel invert is above the groundwater level. There is the potential that groundwater may be encountered during tunnel boring activities for the areas where the tunnel invert is below groundwater level; however, dewatering is expected to be minimal during pressurized-face TBM operations for bored soft-ground and bored rock tunnel segments. Pressurized-face TBMs are designed to maintain the pressure at the tunnel face to equal or slightly higher than the surrounding groundwater pressure. This balance in pressure prevents groundwater from flowing into the tunnel excavation. As the TBM advances, it would install pre-cast concrete segments (tunnel liners) behind the shield to form the tunnel’s structural lining. The tunnel liners would be fitted with waterproof gaskets at the joints to seal the tunnel and prevent groundwater intrusion. Tunneling with pressurized, closed-faced TBMs and use of tunnel liners with waterproof gaskets would minimize or eliminate groundwater intrusion into the tunnel excavations and thus reduce groundwater depletion.

The Stone Canyon vent shaft would be constructed using a VSM. The tunnel depth at the vent site would be greater than approximately 600 feet deep; therefore, removal of nuisance water as well as excavated material may be required during the excavation activities. However, shafts would be constructed with a watertight system to prevent groundwater intrusion.

If dewatering is required, dewatering activities would be conducted in compliance with the Los Angeles Regional Water Quality Control Board’s NPDES dewatering permits, *Waste Discharge Requirements for Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties* (Order R4-2018-0125) and *Waste Discharge*

Requirements for Specified Discharges to Groundwater in the Santa Clara River and Los Angeles River Basins (Order No. 93-010), as applicable. The watertight systems (e.g., secant pile, slurry wall) to be employed during station construction would minimize groundwater intrusion, and any residual impacts would be managed under the established regulatory framework. In such cases, temporary pumps and filtration systems would be used in compliance with the applicable NPDES permits. The temporary system would be required to comply with all relevant NPDES requirements related to construction and discharges from dewatering operations. Water removed from the boreholes would be containerized and analyzed to determine the proper disposal method or possible treatment and reuse on-site. The treatment and disposal of the dewatered water would occur in accordance with the requirements of NPDES Order R4-2018-0125 and Order No. 93-010, as applicable. The WDRs require that wastes be analyzed prior to being discharged in order to determine if it contains pollutants in excess of the applicable Basin Plan water quality objectives. Or if possible, the dewatered water would potentially be treated and reused on-site (e.g., for dust control or cleaning equipment) rather than being disposed, with any runoff from reuse on-site to be properly managed.

Volatile organic compounds such as TCE, PCE, petroleum compounds, chloroform, nitrate, sulfate, and heavy metals have been detected in groundwater of the San Fernando Valley groundwater basin. Although the groundwater quality in the remainder of the Project Study Area is not specifically known, it may contain elevated levels of constituents such as petroleum hydrocarbons and solvents resulting from commercial and industrial discharges, in addition to potentially elevated TDS and metals related to natural conditions. Uncontrolled discharge of groundwater carrying these potential pollutants would result in degradation of groundwater and surface water if it is not properly managed during construction activities. If groundwater containing contaminants such as VOCs, heavy metals, or petroleum hydrocarbons is encountered during dewatering activities, additional treatment or special disposal methods would be required to comply with applicable regulatory requirements and prevent contamination of receiving waters. BMPs would be implemented to ensure proper containment and disposal of grouting materials and wastewater, as well regular monitoring and adaptive management.

Alternative 6 would be required to comply with all applicable water quality protection laws and regulations at the federal, state, regional, and local levels, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Policies, NPDES Construction General Permit (CGP) requirements, the MS4 Permit, Caltrans NPDES Statewide Stormwater Permit, and the City of Los Angeles and County of Los Angeles LID Ordinance.

Alternative 6 would be required to comply with the CGP in effect at the time of construction. In accordance with the CGP, Alternative 6 would be required to prepare and submit a construction SWPPP, which must be submitted to the SWRCB prior to construction and adhered to during construction. Proper implementation of the construction SWPPP would avoid potential impacts to water quality. The construction SWPPP would identify the BMPs that would be in place to protect water quality prior to the start of construction activities and during construction. BMP categories would include erosion control, sediment control, tracking control, wind erosion, stormwater and non-stormwater management, and materials management with regular monitoring. Although specific temporary construction-related BMPs would be selected at the time of SWPPP preparation, potential BMPs would likely include fiber rolls, bonded-fiber matrix hydroseeding, soil furrowing, water bars, and check dams for erosion control, inlet protection (sand/gravel bags and geotextiles), silt fencing, sediment traps/basins for sediment controls, soil berming around disturbed areas, and phasing of soil disturbance during the wet season (i.e., limiting widespread grading) for effectively managing erosion and pollutant discharge during significant rainfall events.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to the violation of any water quality standards or WDRs or the degradation of surface or groundwater quality during construction activities of Alternative 6 would be less than significant.

10.3.1.3 Maintenance and Storage Facility

Maintenance of vehicles and equipment would occur at the MSF, which would include multiple buildings, including a multi-level maintenance-of-way building, track storage area, wash bays, ancillary storage buildings, and TPSS structure. The MSF would be constructed on parcels containing existing impervious surfaces and would actually increase pervious surface material on existing impervious surface. Therefore, the MSF would not increase the existing impervious surface area.

Potential impacts associated with the MSF would be the same as that previously described for the rest of the Alternative 6 components. The MSF design for Alternative 6 would comply with the same regulatory requirements previously described for the rest of the Alternative 6 components, and applicable regulatory requirements are presented in that discussion.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to the violation of any water quality standards or WDRs or substantial degradation of surface or groundwater quality during construction and operation of the MSF would be less than significant.

10.3.2 Impact HWQ-2: 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?

10.3.2.1 Operational Impacts

During operations, Alternative 6 would not increase impervious surfaces because most of the land surfaces in the Project Study Area are developed and covered by existing impervious surfaces. Alternative 6 would result in a net increase of approximately 395,539 square feet of pervious area compared to existing conditions.

Alternative 6 would be designed to incorporate several sustainability features, such as pervious pavement, native landscaping/soil improvements, and on-site retention, that would serve to capture, treat, and re-use stormwater in accordance with current LID requirements, promoting infiltration and groundwater recharge (after treatment). These measures and practices would be incorporated at applicable component sites along the Alternative 6 alignment. Alternative 6 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan (LARWQCB, 2014), as well as commonly used industry standards.

Alternative 6 would comply with the Caltrans NPDES Statewide Stormwater Permit, the City of Los Angeles Municipal Code, the City of Los Angeles and County of Los Angeles LID Ordinance, an equivalent to the Metro Rail Design Criteria (MRDC), and all other applicable regulations for all operational activities, including adherence to an approved Alternative 6-specific LID Plan, which would identify the BMPs for Alternative 6 operations. The LID Plan would identify the BMPs for the Alternative 6 post-construction design (i.e., operational characteristics to control/treat runoff for the range of potential pollutants) in accordance with current LID requirements. As the intent of LID infrastructure is to offset creation of impermeable surfaces by directing surface water toward permeable surfaces for infiltration and groundwater recharge, Alternative 6 would include design elements (e.g., depressed landscape gardens for runoff retention and infiltration, permeable surfaces to reduce runoff volume, hardscape replacement with pervious or planted substitutions, bioswales or artistic water features that creatively convey runoff into planted or pervious areas, and roof downspout discharges to vegetated areas) that would serve to infiltrate stormwater and promote groundwater recharge.

Additionally, operation of Alternative 6, including the underground stations and tunnels, would not involve the extraction of any groundwater and would not be expected to impact groundwater supplies or groundwater recharge. Groundwater intrusion into underground facilities is not anticipated. Therefore, Alternative 6 would not be expected to result in a decrease in groundwater supplies or interfere substantially with groundwater recharge to the extent that Alternative 6 may impede sustainable groundwater management of the basin. Depending on final design features, exfiltration from LID/treatment BMPs is anticipated to improve groundwater recharge characteristics of the area. Additionally, natural treatment of infiltrated runoff would occur, thereby improving exfiltrated water from LID and water quality additions to the groundwater table.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to groundwater supply and recharge during operations of Alternative 6 would be less than significant.

10.3.2.2 Construction Impacts

Construction activities associated with foundations would include excavation and concrete work, installation of drilled piles, and tunneling. As previously discussed, excavations for station and other underground structures would occur at depths ranging between 60 and 255 feet and tunnel depth would range from 40 feet to 730 feet deep. Groundwater levels in the Project Study Area generally range from depths of approximately 40 to 310 feet bgs, with deeper groundwater depths occurring at the base of the Santa Monica Mountains.

The Alternative 6 alignment may encounter groundwater in shallower areas and would require the removal of nuisance water that seeps into boreholes during construction. Nuisance water and seepage encountered during construction would be removed from the boreholes, containerized, and analyzed consistent with existing applicable regulations to determine the proper disposal method or reuse on-site.

The tunnel alignment would be constructed over three segments. The majority of the tunnel invert along the Alternative 6 alignment is below groundwater level. There is the potential for groundwater to be encountered during tunnel boring activities for the areas where the tunnel invert is below groundwater level; however, dewatering is expected to be minimal during pressurized-face TBM operations for bored soft-ground and bored rock tunnel segments. Pressurized-face TBMs are designed to maintain the pressure at the tunnel face to equal or slightly higher than the surrounding groundwater pressure. This balance in pressure prevents groundwater from flowing into the tunnel excavation. As the TBM advances, it would install pre-cast concrete segments (tunnel liners) behind the shield to form the tunnel's structural lining. The tunnel liners would be fitted with waterproof gaskets at the joints to seal the tunnel and prevent groundwater intrusion. Tunneling with pressurized, closed-faced TBMs and use of tunnel liners with waterproof gaskets would minimize or eliminate groundwater intrusion into the tunnel excavations and thus reduce groundwater depletion. In addition, project stations and shafts would be constructed with a watertight system (e.g., secant pile, slurry wall) to prevent groundwater intrusion.

Any dewatering would be limited to the construction phase only. The volume of groundwater extracted during construction would not be expected to decrease groundwater supplies. The volume of groundwater removed during construction would be monitored and documented. Therefore, construction activities are not anticipated to interfere substantially with groundwater recharge or groundwater resource supplies.

Alternative 6 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Policies, NPDES CGP, the MS4 Permit, Caltrans NPDES Statewide Stormwater Permit, and the City of Los Angeles and County of Los Angeles LID Ordinance.

Due to the limited amount of nuisance seepage water anticipated to be encountered and because most of the existing surfaces at the Alternative 6 alignment component sites are currently covered with impervious surfaces, and because Alternative 6 would result in a net increase in pervious area, construction activities are not anticipated to interfere substantially with groundwater recharge or groundwater resource supplies. Construction activities, including construction of underground structures, are not anticipated to decrease groundwater supplies such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to groundwater supply and recharge during construction of Alternative 6 would be less than significant.

10.3.2.3 Maintenance and Storage Facility

Potential impacts associated with the MSF would be the same as that previously described for the rest of the Alternative 6 components. The MSF would be designed to incorporate several sustainability features in compliance with the LID Standards Manual, which would serve to promote infiltration and groundwater recharge. The MSF would also comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan (LARWQCB, 2014), as well as commonly used industry standards.

The MSF would comply with an MRDC equivalent, City of Los Angeles Municipal Code, and all other applicable regulations for all operational activities, including adherence to an approved LID Plan, which would identify the BMPs for MSF operations. The LID Plan would identify the BMPs for the MSF post-construction design (i.e., operational characteristics to control/treat runoff). The MSF would include design elements, such as depressed landscape gardens for runoff retention and infiltration, permeable surfaces to reduce runoff volume, hardscape replacement with pervious or planted substitutions, bioswales or artistic water features that creatively convey runoff into planted or pervious areas, roof downspout discharges to vegetated areas, and rainwater cisterns and other on-site stormwater retention methods, that would serve to capture and re-use stormwater in accordance with current LID requirements. These measures and practices would be incorporated within the MSF site. Additionally, operation of the MSF would not involve the extraction of any groundwater. Therefore, the MSF would not be expected to result in a decrease in groundwater supplies or interfere substantially with groundwater recharge to the extent that the MSF may impede sustainable groundwater management of the basin. Depending on final design features, exfiltration from LID BMPs is anticipated to improve groundwater recharge characteristics of the area.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts to groundwater supply and recharge during construction and operation of the MSF would be less than significant.

10.3.3 Impact HWQ-3: 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, in a manner which would:

i) result in substantial erosion or siltation on- or off-site;

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?

10.3.3.1 Operational Impacts

Operation of Alternative 6 would not increase impervious surfaces compared to existing conditions because most of the Alternative 6 alignment would be underground and other land surfaces in the Project Study Area would be developed and covered by existing impervious surfaces, including the footprints of Alternative 6 components. Components that would slightly increase the existing impervious surface area include the mountain shaft facility, TPSS structures, and the access road. However, new pervious surface would be created on existing impervious surface. Therefore, Alternative 6 would result in a net increase of approximately 395,539 square feet of pervious area compared to existing conditions.

Even though Alternative 6 would result in a net decrease in impervious area and a net increase in pervious area compared to existing conditions, LID features would be implemented to maintain existing drainage patterns, reduce runoff amounts, and minimize pollutant discharge. Alternative 6 design and LID BMPs would offset any increases in flow and changes to drainage patterns post-Alternative 6. Operation of Alternative 6 would not alter the course of any streams or rivers or impede or redirect flows. Existing drainage patterns would be maintained as much as possible.

As previously described, Alternative 6 would be designed to incorporate several sustainability features in compliance with the *Low Impact Development Standards Manual* (LADPW, 2014) and the City of Los Angeles *Planning and Land Development Handbook for Low Impact Development* (City of Los Angeles, 2016), which would serve to reduce impervious area, promote infiltration, and reduce runoff, thereby improving water quality. It would also comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan (LARWQCB, 2014) and the MS4 Permit, as well as commonly used industry standards.

Alternative 6 would comply with the Caltrans NPDES Statewide Stormwater Permit, the City of Los Angeles Municipal Code, the City of Los Angeles and County of Los Angeles LID Ordinance, and all other applicable regulations for all operational activities, including adherence to an approved Alternative 6-specific LID Plan, which would identify the BMPs for Alternative 6 operations. The LID Plan would identify the BMPs for the Alternative 6 post-construction design (i.e., operational characteristics to control/treat runoff for the range of potential pollutants). Alternative 6 would include design elements that would serve to infiltrate, capture, and re-use stormwater in accordance with current LID requirements — thereby minimizing the potential for increased surface runoff, flooding, erosion and siltation, and pollutant discharge. LID design features would slow (detain or retain) stormwater, which would reduce the runoff volume discharged from Alternative 6 and would decrease the peak runoff discharge velocity for design storms — which would also ultimately reduce the amount of stormwater runoff burden into the city's stormwater conveyance systems. As a result, LID design would reduce flow to maintain pre-Alternative 6 conditions; therefore, less flow with fewer pollutants would be transported through the conveyance systems, which would minimize the potential for flooding and pollutant transport into surface receiving waters.

Alternative 6 is anticipated to require IGP coverage for maintenance facilities, fueling operations, equipment cleaning/washing operations, and TPSSs. As such, an IGP SWPPP would be prepared and submitted to the SWRCB prior to operations and adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases. Other BMPs may also be employed as appropriate, such as indoor/covered areas for cabin maintenance, approved flammable/hazmat storage lockers for lubricants and other industrial liquids, drip/spill protection in maintenance areas and similar BMPs when conducting tower maintenance, dry clean-up practices, and dedicated enclosed areas for metal working, painting, and welding.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to substantial erosion and siltation, a substantial increase in the rate or amount of surface runoff resulting in flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows during operation of Alternative 6 would be less than significant.

10.3.3.2 Construction Impacts

Construction activities such as demolition of existing site structures and excavation for foundations would temporarily expose bare soil, which would be at increased risk for erosion. Exposed or stockpiled soils would also be at increased risk for erosion. Sediments resulting from erosion might accumulate, blocking storm drain inlets and causing downstream sedimentation. Uncontrolled erosion and discharge of sediments and other potential pollutants would be carried by stormwater runoff into storm drain inlets and would affect water quality in Alternative 6 receiving waters (e.g., Pacoima Wash, Tujunga Wash, and Los Angeles River) if not appropriately managed by proper implementation of the construction SWPPP.

Even though Alternative 6 would result in a net decrease in impervious area, the construction of any new impervious surfaces would increase the rate of runoff, pollutant concentrations, and pollutant loading from these new impervious surfaces. Construction activities would temporarily increase the potential for stormwater to contact other construction-related contaminants creating additional sources of pollutant runoff. Additionally, placement of construction equipment and materials may temporarily impact localized drainage patterns.

Alternative 6 would be located within the Los Angeles Watershed and the Santa Monica Bay Watershed in the Ballona Creek subwatershed. The vast majority of land in the Los Angeles Watershed (approximately 80 percent) is developed with urban uses. Most of the Ballona Creek subwatershed drainage network has been modified into storm drains, underground culverts, and open concrete channels. A few natural channels remain in the Santa Monica Mountains and Baldwin Hills. Construction activities associated with Alternative 6, such as excavation near the Santa Monica Mountains and Baldwin Hills, and tunneling through the Eastern Santa Monica Mountains, would temporarily impact the drainage course of these natural channels or result in additional sources of pollutant runoff. However, any impacts to channels would be temporary and would be minimized with implementation of a SWPPP, which would help to maintain existing drainage patterns and control stormwater runoff from construction areas.

The TPSS structures, the deep vent shaft structure at SCR, additional vent shafts, and parking facilities adjacent to stations would be constructed on parcels that currently contain existing asphalt and concrete pavement on and/or adjacent to the road ROW and surrounded by existing development and structures. Construction of the SCR vent shaft and other ancillary facilities near the SCR may temporarily affect the natural drainage pattern.

Drainage facilities at the westbound I-10 loop off ramp to southbound Bundy Drive and the drainage facilities along the station box section of Santa Monica Boulevard would be impacted by Alternative 6. Placement of construction equipment and materials may temporarily affect existing drainage patterns.

To address these temporary impacts, Alternative 6 would implement runoff control measures and pollution prevention practices in compliance with the construction SWPPP to control runoff rates/amounts and the discharge of potential pollutants. Existing drainage systems would be modified where applicable and the existing drainage patterns would be maintained as much as possible and monitored throughout construction. In addition, drainage facilities would be replaced in kind at the end of the construction activities. At curb inlets on Santa Monica Boulevard, trash collection devices would be installed as part of water quality features of Alternative 6.

As previously discussed, Alternative 6 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, as well as commonly used industry standards. These include the CWA, Porter-Cologne Water Quality Control Act, State of California Antidegradation Polices, NPDES CGP regulations, Caltrans NPDES Statewide Stormwater Permit, Basin Plan (LARWQCB, 2014), City of Los Angeles Municipal Code, the City of Los Angeles and County of Los Angeles LID Ordinance, and all other applicable regulations for all construction activities.

In accordance with the CGP, Alternative 6 would be required to prepare and submit a construction SWPPP, which must be submitted to the SWRCB prior to construction, and adhered to during construction. Proper implementation of the construction SWPPP would avoid potential impacts to water quality. The construction SWPPP would identify the BMPs that would be in place to protect water quality prior to the start of construction activities and during construction. BMP categories would include erosion control, sediment control, non-stormwater management, and materials management BMPs. Although specific temporary construction-related BMPs would be selected at the time of SWPPP preparation, potential BMPs would likely include fiber rolls, bonded-fiber matrix hydroseeding, soil furrowing, water bars, and check dams for erosion control, inlet protection (sand/gravel bags and geotextiles), silt fencing, sediment traps/basins for sediment controls, soil berming around disturbed areas, and phasing of soil disturbance during the wet season (i.e., limiting widespread grading) for effectively managing erosion and pollutant discharge during significant rainfall events.

Construction activities would temporarily impact localized drainage patterns; however, these impacts would not substantially increase the rate or volume of stormwater flows. Construction activities would comply with all applicable federal and local floodplain regulations, including the Los Angeles County Comprehensive Floodplain Management Plan. Furthermore, implementation of runoff control measures and pollution prevention practices in compliance with the construction SWPPP would control stormwater runoff from construction areas and would minimize construction-related flooding impacts, erosion, and pollutant discharge.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff resulting in flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows during construction of Alternative 6 would be less than significant.

10.3.3.3 Maintenance and Storage Facility

Potential impacts associated with the MSF would be the same as that previously described for the rest of the Alternative 6 components. As described in Sections 10.3.3.1 and 10.3.3.2, the MSF would comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, as well as commonly used industry standards. The MSF would include design elements that would serve to capture and re-use stormwater in accordance with current LID requirements — thereby minimizing the potential for increased runoff rates/amounts, flooding, erosion and siltation, and pollutant runoff. LID design features would slow (detain or retain) stormwater, which would reduce the runoff volume discharged from the MSF and would decrease the peak runoff discharge velocity for design storms. As a result, the MSF design and LID BMPs would offset any increases in flow and changes to drainage patterns post-MSF; therefore, less flow with fewer pollutants would be transported through the conveyance systems minimizing flooding and pollutant transport into surface receiving waters. In addition, existing drainage patterns would be maintained as much as possible and operation of the MSF would not alter the course of any streams or rivers or impede or redirect flows.

During operations, the MSF would be required to obtain IGP coverage. An IGP SWPPP would be prepared and submitted to the SWRCB prior to operations. The IGP SWPPP would include discharge prohibitions, effluent limitations, and receiving water limitations that must be adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases.

Construction activities would comply with all applicable federal and local floodplain regulations. Any impacts to existing drainage patterns would be temporary. Implementation of runoff control measures and pollution prevention practices in compliance with the construction SWPPP would control stormwater runoff from the MSF site to minimize construction-related flooding impacts, erosion, and the discharge of potential pollutants, including sedimentation/siltation.

With adherence to existing regulations and proper implementation of stormwater compliance requirements, potential impacts related to substantial erosion or siltation, a substantial increase in the rate or amount of surface runoff resulting in flooding, creation of runoff that would exceed drainage system capacity or provide additional sources of polluted runoff, or impede or redirect flood flows during construction and operation of the MSF would be less than significant.

10.3.4 Impact HWQ-4: Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

10.3.4.1 Operational Impacts

The alignment of Alternative 6 would be mostly underground. Thus, there would be minimal potential for operations of the underground portion of Alternative 6 to release pollutants during inundation by flooding, tsunami, or seiche.

The majority of the Alternative 6 alignment would be constructed outside of the FEMA-designated 100-year floodplain and would be in an inland area that is not in proximity to the ocean; therefore, the risk of inundation by a tsunami is considered low. A small segment of Alternative 6, located at the ridgetop of the Santa Monica Mountains at Mulholland Drive, and open space areas, owned by Los Angeles County, are located in Zone D, which is an area of undetermined flood hazard. However, the alignment at Mulholland Drive would be underground and there would be low potential for inundation. The channelized limits of the Los Angeles River, where it crosses I-405 and Sepulveda Boulevard, is identified as Zone AE and other small portions within Alternative 6 east of Overland Avenue are within Zones AO and AH and are subject to inundation by a 1 percent annual chance of flooding. There are no 500-year flood plains within the Project Study Area.

The Encino Reservoir is located on the west side of the Project Study Area approximately 3 miles west of the Alternative 6 alignment, and the SCR is located on the eastern side of the Project Study Area approximately 0.5 mile west of the Alternative 6 alignment. Both reservoirs are in the Santa Monica Mountains and are subject to Zones A and AE, respectively. These reservoirs have a risk of inundation with a 1 percent annual chance of flooding since they retain a significant amount of water. However, given the distance of Alternative 6 from the reservoirs, any oscillation and subsequent release of water in the reservoirs as part of a seiche would not inundate Alternative 6. Therefore, there would be low potential for risk of release of pollutants due to inundation by seiche.

The Los Angeles River and Ballona Creek are the major flood control measures for draining stormwater from the Project Study Area and directing it safely to the San Pedro Bay and Santa Monica Bay, respectively. The potential risk related to flooding would be considered low as the Alternative 6 alignment would extend along well-developed areas that maintain storm drainage and water runoff control. In addition, as previously described, Alternative 6 would implement LID BMPs to offset any increases in runoff rates due to the creation of new impervious surface areas. LID design features would reduce the runoff volume discharged from Alternative 6, thereby minimizing the potential for flooding.

The Alternative 6 alignment would not result in impacts to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways. Alternative 6 would not alter the ability of floodways to convey the 100-year flows and there would be negligible change to the floodplain extents.

Alternative 6 would have no impacts related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during operations would be less than significant.

10.3.4.2 Construction Impacts

Impacts related to release of pollutants due to inundation by flood, tsunami, or seiche during construction activities of Alternative 6 would be similar to operational impacts. Similar to operational impacts, the majority of the Alternative 6 alignment would be constructed outside of the FEMA-designated 100-year floodplain and would be in an inland area that is not in proximity to the ocean; therefore, the risk of inundation by a tsunami is considered low.

Given the distance of Alternative 6 from Encino and Stone Canyon Reservoirs, any oscillation and subsequent release of water in the reservoirs as part of a seiche would not inundate Alternative 6. Therefore, there would be low potential for risk of release of pollutants due to inundation by seiche.

Construction activities during construction of the SCR vent shaft and other ancillary facilities near the SCR may temporarily increase the potential for a release of construction-related pollutants during inundation. However, the risk related to flooding would be considered low as the Alternative 6 alignment would extend along well-developed areas that maintain storm drainage and water runoff control.

The Alternative 6 alignment would not result in impacts to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways. Alternative 6 would not alter the ability of floodways to convey the 100-year flows and there would be negligible change to the floodplain extents.

Alternative 6 would have no impacts related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during construction would be less than significant.

10.3.4.3 Maintenance and Storage Facility

The MSF would be located outside of the FEMA-designated 100-year floodplain and would be in an inland area that is not in proximity to the ocean; therefore, the risk of inundation by a tsunami is considered low.

Given the distance of the MSF from Encino and Stone Canyon Reservoirs, any oscillation and subsequent release of water in the reservoirs as part of a seiche would not inundate the MSF. Therefore, there would be low potential for risk of release of pollutants due to inundation by seiche.

The Los Angeles River and Ballona Creek are the major flood control measures for draining stormwater from the Project Study Area and directing it safely to the San Pedro Bay and Santa Monica Bay, respectively. The risk related to flooding would be considered low as the MSF is within a well-developed area that maintains storm drainage and water runoff control.

The MSF would not result in impacts to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways.

The MSF would have no impacts related to risk of release of pollutants due to inundation by flood, tsunami, or seiche, and potential impacts during construction or operation of the MSF would be less than significant.

10.3.5 Impact HWQ-5: Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

10.3.5.1 Operational Impacts

Alternative 6 would require routine maintenance that would be performed by the system operator. Potential pollutants (e.g., petroleum products/lubricants, paints, solvents, and other Alternative 6-related products) used during Alternative 6 operations and maintenance would contribute to water pollution. Uncontrolled discharge of runoff carrying these potential pollutants would result in significant impacts to water quality in receiving waters, which would violate federal, state, and local water quality standards and WDRs, if not appropriately managed. As previously discussed, Alternative 6 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan (LARWQCB, 2014), *Ballona Creek Watershed Management Plan* (LACDPW, 2004), and the *LA River Master Plan* (Los Angeles County and Los Angeles County Public Works, 2022), the MS4 Permit, the Caltrans NPDES Statewide Stormwater Permit, and the City of Los Angeles and County of Los Angeles LID Ordinance, as well as commonly used industry standards.

The City of Los Angeles city ordinances related to stormwater control and LID requirements for sustainability contain compliance provisions for BMPs that must address water infiltration, treatment, and peak-flow discharge. The City of Los Angeles provides guidance to developers of newly developed projects for compliance with regulatory standards through the LID Standards Manual.

As previously described, Alternative 6 would comply with all applicable regulations for all operational activities, including adherence to an approved LID Plan that would identify the BMPs for Alternative 6 operations. Alternative 6 would incorporate into its design on-site drainage systems and sustainability features that would meet regulatory requirements of the applicable plans for the protection of water resources.

The LID Plan would identify the BMPs for the Alternative 6 post-construction design (i.e., operational characteristics to control/treat runoff for the range of potential pollutants). Alternative 6 would include design elements that would serve to infiltrate, capture, and re-use stormwater in accordance with current LID requirements — thereby minimizing the potential for increased runoff volumes/rates and pollutant transport. LID design features, such as depressed landscape gardens for runoff retention and infiltration, permeable surfaces to reduce runoff volume, hardscape replacement with pervious or planted substitutions, bioswales or artistic water features that creatively convey runoff into planted or pervious areas, roof downspout discharges to vegetated areas, and rainwater cisterns and other on-site stormwater retention methods, would slow (detain or retain) stormwater, which would reduce the runoff volume discharged from Alternative 6 and would decrease the peak runoff discharge velocity for design storms — which would also ultimately reduce the amount of stormwater runoff burden into the City of Los Angeles' stormwater conveyance systems. As a result, less flow with fewer pollutants would be transported through the conveyance systems, and ultimately into surface waters, including ancillary exfiltration to the groundwater table. Additionally, natural treatment of infiltrated runoff would occur, thereby improving exfiltrated water from LID and water quality additions to the groundwater table.

Additionally, operation of Alternative 6 would not involve the extraction of any groundwater. Therefore, Alternative 6 would not be expected to result in a decrease in groundwater supplies or interfere substantially with groundwater recharge to the extent that Alternative 6 may impede sustainable groundwater management of the basin. Depending on final design features, exfiltration from LID BMPs is anticipated to improve groundwater recharge characteristics of the area.

Alternative 6 is anticipated to require IGP coverage for maintenance facilities, fueling operations, equipment cleaning/washing operations, and TPSSs. As such, an IGP SWPPP would be prepared and submitted to the SWRCB prior to and adhered to during operations. IGP SWPPP BMPs would include good housekeeping, prevention and maintenance activities, material handling and waste management, erosion and sediment controls, training, recordkeeping, and reporting of spills or releases. Other BMPs may also be employed as appropriate, such as indoor/covered areas for maintenance, approved flammable/hazmat storage lockers for lubricants and other industrial liquids, drip/spill protection in maintenance areas and similar BMPs when conducting tower maintenance, dry clean-up practices, and dedicated enclosed areas for metal working, painting, and welding.

With adherence to existing regulations and with proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during operations of Alternative 6 would be less than significant.

10.3.5.2 Construction Impacts

Construction of Alternative 6 components would be conducted in several phases, including site preparation and installation of foundations and columns; erection of stations; construction of tunnels; and construction of ancillary components, including replacement or restoration of paving, sidewalk, and landscaping.

Construction of Alternative 6 has the potential to impact the water quality of downstream receiving waters if applicable and appropriate BMPs are not implemented. Construction activities such as demolition of existing site structures and excavation for foundations would temporarily expose bare soil and would temporarily increase erosion. Exposed or stockpiled soils would also be at increased risk for erosion. Uncontrolled erosion and discharge of sediments and other potential pollutants would affect water quality in Alternative 6 receiving waters (e.g., the Pacoima Wash, Tujunga Wash, and Los Angeles River) if not appropriately managed by proper implementation of the construction SWPPP.

In addition to sediments, other pollutants including trash, concrete waste, and petroleum products (e.g., heavy equipment fuels, solvents, and lubricants) would contribute to stormwater pollution if not appropriately managed. The use of construction equipment and other vehicles during Alternative 6 construction would result in spills of oil, brake fluid, grease, antifreeze, or other vehicle-related fluids, which would contribute to water quality impacts if not appropriately managed. Improper handling, storage, or disposal of fuels and vehicle-related fluids or improper cleaning and maintenance of equipment would result in accidental spills and discharges that would contribute to water pollution.

Nuisance groundwater may be encountered during installation of piles for each of the components, which may result in degradation of groundwater quality if not addressed properly. Additionally, potentially impacted groundwater may result in degradation of surface water if it is not properly managed during construction activities. Although construction activities are not anticipated to interfere substantially with groundwater recharge, groundwater resource supplies, or groundwater quality, any accidental interference would be handled in accordance with applicable federal, state, regional, and local laws and regulations, groundwater management plans, and WDRs for groundwater discharge.

As discussed previously, Alternative 6 would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans, including the Basin Plan (LARWQCB, 2014), as well as commonly used industry standards. Alternative 6 would comply with the Caltrans NPDES Statewide Stormwater Permit, the NPDES CGP, the MS4 Permit, the City of Los Angeles and County of Los Angeles LID Ordinance, the City of Los Angeles Municipal Code, and all other applicable regulations for all construction activities.

In accordance with the CGP, Alternative 6 would be required to implement a construction SWPPP, which must be submitted to the SWRCB prior to construction and adhered to during construction. Proper implementation of the construction SWPPP would avoid potential impacts to water quality. The construction SWPPP would identify the BMPs that would be in place to protect water quality prior to the start of construction activities and during construction. The BMP categories would include erosion control, sediment control, non-stormwater management, and materials management BMPs. Although specific temporary construction-related BMPs would be selected at the time of SWPPP preparation, potential BMPs would likely include fiber rolls, bonded-fiber matrix hydroseeding, soil furrowing, water bars, and check dams for erosion control, inlet protection (sand/gravel bags and geotextiles), silt fencing, sediment traps/basins for sediment controls, soil berming around disturbed areas, and phasing of soil disturbance during the wet season (i.e., limiting widespread grading) for effectively managing erosion and pollutant discharge during significant rainfall events.

With adherence to existing regulations and with proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during construction of Alternative 6 would be less than significant.

10.3.5.3 Maintenance and Storage Facility

Potential impacts associated with the MSF would be the same as that previously described for the rest of the Alternative 6 components. As described in Sections 10.3.5.1 and 10.3.5.2, the MSF would be required to comply with all applicable federal, state, regional, and local agency water quality protection laws and regulations, and water quality control and/or sustainable groundwater management plans. The MSF would incorporate into its design on-site drainage systems and sustainability features that would meet regulatory requirements of the applicable plans for the protection of water resources. The MSF would include design elements that would serve to capture, treat, and re-use stormwater in accordance with current LID requirements, promoting infiltration and groundwater recharge. The MSF would not be expected to result in a decrease in groundwater supplies or interfere substantially with groundwater recharge to the extent that the MSF may impede sustainable groundwater management of the basin. Dewatering would be limited to the construction phase only. Extracting large volumes of groundwater that would decrease groundwater supplies would not be expected during construction.

With adherence to existing regulations and with proper implementation of stormwater compliance requirements, potential impacts related to conflict with implementation of a water quality control plan or sustainable groundwater management plan during construction and operation of the MSF would be less than significant.

10.4 Mitigation Measures

10.4.1 Operational Impacts

No mitigation measures are required.

10.4.2 Construction Impacts

No mitigation measures are required.

10.4.3 Impacts After Mitigation

No mitigation measures are required; impacts are less than significant.

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12 REFERENCES

California Department of Transportation (Caltrans). 2008. *I-405 Stormwater Quality Master Plan*. Interstate-405 Widening Project. Post Mile 28.8 to 39.0. Los Angeles County, CA. Caltrans District 7. April 30.

California Department of Transportation (Caltrans). 2017. *Construction Site Best Management Practices (BMP) Manual*. dot.ca.gov/-/media/dot-media/programs/construction/documents/environmental-compliance/csbmp-may-2017-final.pdf.

California Department of Transportation (Caltrans). 2023. *Project Planning and Design Guide*. n.d. dot.ca.gov/-/media/dot-media/programs/design/documents/ppdg_final-ada-a11y.pdf.

California Department of Water Resources (DWR). 2020a*. California's Groundwater Bulletin 118, Coastal Plain of Los Angeles Groundwater Basin, Santa Monica Subbasin*. n.d. water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/4_011_01_SantaMonicaSubbasin.pdf.

California Department of Water Resources (DWR). 2020b. *California's Groundwater Bulletin 118, San Fernando Valley Groundwater Basin*. n.d. water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/4_012_SanFernandoValley.pdf.

California Department of Water Resources (DWR). 2021. SGMA Basin Priority Dashboard. gis.water.ca.gov/app/bp-dashboard/final/. Accessed June 19, 2021.

California Water Code. 1969a. Porter-Cologne Water Quality Control Act. Division 7.

California Water Code. 1969b. Waste Discharge Requirements. Division 7, Chapter 4, Article 4, Section 13263.

California Water Code. 2014. Sustainable Groundwater Management Act. Part 2.74.

City of Los Angeles. 1998. Ordinance No. 172081. *Specific Plan for the Management of Flood Hazards*. June 23. apps.engineering.lacity.gov/projects/fmp/pdf/ORD_172081.pdf.

City of Los Angeles Department of City Planning (DCP). 2001. *The Citywide General Plan Framework, An Element of the City of Los Angeles General Plan*. Approved July27, 1995. Re-adopted August 8, 2001. planning.lacity.gov/odocument/513c3139-81df-4c82-9787-78f677da1561/Framework_Element.pdf.

City of Los Angeles Department of Sanitation. 2016. *Planning and Land Development Handbook for Low Impact Development (LID)*. Part B Planning Activities, 5th Edition. May 9. lastormwater1.org/files/wp-content/files_mf/lidmanualfinal.pdf.

City of Los Angeles Department of Sanitation. 2018. *One Water LA 2040 Plan*. n.d. sanitation.lacity.gov/san/faces/home/portal/s-lsh-es/s-lsh-es-owla?_adf.ctrl-state=ywvy0fjn2_5&_afrLoop=1960918965450274#!. Accessed June 22, 2021.

City of Los Angeles Department of Water and Power (LADWP). 2013. LADWP Facts and Figures. ladwp.com. Accessed June 21, 2021.

Federal Emergency Management Agency (FEMA). 2021. National Flood Hazard Layer*.* fema.gov/flood-maps/national-flood-hazard-layer*.* Accessed June 22, 2021.

Federal Emergency Management Agency (FEMA). 2023. Flood Map Service Center. msc.fema.gov. Accessed August 9, 2023.

Los Angeles County. 2023. Los Angeles County Code of Ordinances. *Chapter 12.80 - Stormwater And Runoff Pollution Control*. library.municode.com. Accessed August 9, 2023.

Los Angeles County and Los Angeles County Department of Public Works. 2022. *LA River Master Plan*. June. pw.lacounty.gov/uploads/swp/LARiverMasterPlan-FINAL-DIGITAL-COMPRESSED.pdf.

Los Angeles County Department of Public Works (LADPW). 2004. *Ballona Creek Watershed Management Plan*. September. ladpw.org/wmd/watershed/bc/bcmp/masterplan.cfm.

Los Angeles County Department of Public Works (LADPW). 2014. *Low Impact Development Standards Manual.* February. pw.lacounty.gov/ldd/lddservices/docs/Los%20Angeles%20County%20Low%20Impact%20Development%20(LID)%20Manual.pdf.

Los Angeles County Department of Public Works (LADPW). 2019. Groundwater Wells Map. Groundwater Wells. Accessed June 19, 2021.

Los Angeles County Department of Public Works (LADPW). 2021. *Los Angeles County Comprehensive Floodplain Management Plan.* July. Comprehensive Floodplain Management Plan.pdf.

Los Angeles County Department of Public Works (LADPW). 2024. Survey Mapping and Property Management Division, Mapping and GIS Services Section. Los Angeles County Storm Drain System. egis-lacounty.hub.arcgis.com/apps/0aaf09f081ee44eb98b1e6e886b5f515/about. Accessed October 15, 2024.

Los Angeles County Department of Regional Planning (LA County Planning). 2020a. Ground Water Basins Feature Layer. County of Los Angeles, California, Enterprise GIS Repository. egis-lacounty.hub.arcgis.com/datasets/lacounty::ground-water-basins-feature-layer. Accessed 2021.

Los Angeles County Department of Regional Planning (LA County Planning). 2020b. Flood Zone. County of Los Angeles, California, Enterprise GIS Repository. egis-lacounty.hub.arcgis.com/apps/5b0fcdd773b34f89b600cac53cf254dc. Accessed 2021.

Los Angeles County Department of Regional Planning (LA County Planning). 2024. *Los Angeles County General Plan 2035.* June 25. planning.lacounty.gov/long-range-planning/general-plan/general-plan-elements/. Accessed December 2024.

Los Angeles County Metropolitan Transportation Authority (Metro). 2008. *Measure R Expenditure Plan*. July. metro.net/about/measure-r/, dropbox.com/scl/fi/jzu11yppo8g1eeh16nzcl/2009-MeasureR-expenditure-plan.pdf. Amended July 2021.

Los Angeles County Metropolitan Transportation Authority (Metro). 2009. *General Management Water Use and Conservation Policy Statement*. Effective July 27. General Management. Accessed 2021.

Los Angeles County Metropolitan Transportation Authority (Metro). 2016. *Measure M Los Angeles County Traffic Improvement Plan. Attachment A, Measure M Expenditure Plan.* libraryarchives.metro.net/dpgtl/MeasureM/201609-proposed-ordinance-16-01-county-traffic%20improvement-plan.pdf.

Los Angeles County Metropolitan Transportation Authority (Metro). 2019. *Sepulveda Transit Corridor Project Final Feasibility Report.* November. libraryarchives.metro.net/dpgtl/pre-eir-eis-reports-and-studies/sepulveda-transit-corridor/2019-sepulveda-transit-corridor-final-feasibility-report.pdf.

Los Angeles County Metropolitan Transportation Authority (Metro). 2021. *Sepulveda Transit Corridor Project Notice of Preparation.* November 30. ceqanet.opr.ca.gov/2021110432. Accessed October 1, 2024.

Los Angeles County Metropolitan Transportation Authority (Metro). 2023. *Sepulveda Transit Corridor Project Draft Geotechnical Design Memorandum*. April 14.

Los Angeles County Metropolitan Transportation Authority (Metro). 2024. *Sepulveda Transit Corridor Project Alternative 2 Update*. July 3. boardarchives.metro.net/BoardBox/2024/240703_Sepulveda_Transit_Corridor_Alternative_2_Update.pdf.

Los Angeles County Metropolitan Transportation Authority (Metro). 2025. *Sepulveda Transit Corridor Project Hazards and Hazardous Materials Technical Report*.

Los Angeles Regional Water Quality Control Board (LARWQCB). 1991. Order No. 91-93. General Waste Discharge Requirements for Discharge of Non-Hazardous Contaminated Soils and Other Wastes in Los Angeles River and Santa Clara River Basins (File No. 88-57). June 12. waterboards.ca.gov/rwqcb4/board_decisions/adopted_orders/docs/91-93_WDR.pdf.

Los Angeles Regional Water Quality Control Board (LARWQCB). 1993. Order No. 93-010. General Waste Discharge Requirements for Specified Discharges to Groundwater in Santa Clara River and Los Angeles River Basins, File No. 92-60. waterboards.ca.gov/losangeles/board_decisions/adopted_orders/general_orders/wdr-order93-010.pdf.

Los Angeles Regional Water Quality Control Board (LARWQCB). 2014. *Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties.* September. waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/basin_plan_documentation.html. Accessed October 9, 2024.

Los Angeles Regional Water Quality Control Board (LARWQCB). 2018. Waste Discharge Requirements for Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties. Order No. R4-2018-0125. September 13. waterboards.ca.gov/rwqcb4/board_decisions/adopted_orders/general_orders/r4-2018-0125/OrderNoR4-2018-0125(Order).pdf.

Los Angeles Regional Water Quality Control Board (LARWQCB). 2019a. Watershed Management Programs. waterboards.ca.gov. Accessed June 21, 2021.

Los Angeles Regional Water Quality Control Board (LARWQCB). 2019b. Total Maximum Daily Loads (TMDLs). waterboards.ca.gov. Accessed June 21, 2021.

Los Angeles Regional Water Quality Control Board (LARWQCB). 2021. Waste Discharge Requirements and National Pollutant Discharge Elimination System (NPDES) Permit for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles and Ventura Counties. Order No. R4-2021-0105. waterboards.ca.gov. Accessed May 10, 2021.

Southern California Association of Governments (SCAG). 2020a. *Connect SoCal, 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy*. September 3. scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal-plan_0.pdf.

Southern California Association of Governments (SCAG). 2020b. *Connect SoCal, 2020-2045 RTP/SCS Final Connect SoCal Project List Technical Report.* scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_project-list_0.pdf.

Southern California Association of Governments (SCAG). 2021a. *Final 2021 Federal Transportation Improvement Program Technical Appendix*. Volume II of III. March. scag.ca.gov/sites/main/files/file-attachments/f2021-ftip-technical-appendix.pdf.

Southern California Association of Governments (SCAG). 2021b. *Final 2021 Federal Transportation Improvement Program. Consistency Amendment #21-05*. scag.ca.gov/sites/main/files/file-attachments/21-05-la-finalcomparison.pdf.

State Water Resources Control Board (SWRCB). 1968. Resolution No. 68-16. Statement of Policy with Respect to Maintaining High Quality of Waters In California. waterboards.ca.gov. Accessed June 14, 2021.

State Water Resources Control Board (SWRCB). 2014. Order No. CAS000001. General Permit for Stormwater Discharges Associated with Industrial Activities. waterboards.ca.gov. Accessed June 21, 2021.

State Water Resources Control Board (SWRCB). 2019. The California Water Boards' Annual Performance Report – Fiscal Year 2018-19. waterboards.ca.gov. Accessed June 21, 2020.

State Water Resources Control Board (SWRCB). 2022a. National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (General Permit). Order No. 2022-0057-DWQ, NPDES No. CAS000002. September. waterboards.ca.gov. Accessed June 30, 2023.

State Water Resources Control Board (SWRCB). 2022b. National Pollutant Discharge Elimination System Statewide Stormwater Permit and Waste Discharge Requirements for State of California Department of Transportation. Order No. 2022-0033-DWQ, NPDES No. CAS000003. June. waterboards.ca.gov.

State Water Resources Control Board (SWRCB). 2022c. *California 2020-2022 Integrated Report (303(d) List/305(b) Report)*. Appendix A: Proposed Final 2020-2022 303(d) List. viewofficeappslive.com.apx-a-303d-list.xlsx. Accessed June 30, 2023.

U.S. Geological Survey (USGS). 2023. USGS Watershed Boundary Dataset for 2-digit Hydrologic Unit-18 (published 20230525). usgs.gov/national-hydrography/access-national-hydrography-products. Accessed June 2, 2023.