Initial Study/Mitigated Negative Declaration

Topham Trunk Line Replacement Project

Los Angeles Department of Water and Power
Environmental Planning and Assessment
111 North Hope Street, Room 1044
Los Angeles, California 90012

June 2023

CEQA Initial Study and Mitigated Negative Declaration

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ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
amsl	above mean sea level
APE	Area of Potential Effects
AQMP	Air Quality Management Plan
BERD	California State Built Environment Resource Directory
BMP	best management practice
BSA	Biological Survey Area
C2	commercial use zone
C4	commercial use zone
CalEEMod	California Emissions Estimator Model
CAL FIRE	California Department of Forestry and Fire Protection
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CRHR	California Register of Historical Resources
CRMP	Cultural Resources Monitoring Plan
CRPR	California Rare Plant Rank
dB	decibel
dBA	A-weighted decibel scale
DI	ductile iron pipe
EIR	Environmental Impact Report
ERDIP	earthquake resistant ductile iron pipe
FESA	federal Endangered Species Act
FP	fully protected
GHG	greenhouse gas emission
HPOZ	Historic Preservation Overlay Zone
IPaC	Information for Planning and Consultation
IS	Initial Study
LADOT	City of Los Angeles Department of Transportation
LADWP	Los Angeles Department of Water and Power
LAFD	Los Angeles Fire Department
LAHCM	Los Angeles Historic Cultural Monument
LAMC	City of Los Angeles Municipal Code
LAPD	Los Angeles Police Department
LCY	loose cubic yards
L_{eq}	equivalent noise level
LST	Localized Significance Threshold
LUST	leaking underground storage tank
M1	limited industrial zone
MBTA	Migratory Bird Treaty Act
Metro	Los Angeles County Metropolitan Transportation Authority

MND	Mitigated Negative Declaration
mph	miles per hour
MTBM	microtunneling boring machine
$MTCO_2e$	metric tons of carbon dioxide equivalents
NOx	nitrogen oxide
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
O_3	ozone
OS	open space
PF	public facilities
$PM_{2.5}$	particulate matter 2.5 microns or less in diameter
PM_{10}	particulate matter 10 microns or less in diameter
PPV	peak particle velocity
PRC	Public Resources Code
R1	Single Family Residential Zone
R3	Multi-Family Residential Zone
RD	Restricted Density Multiple Dwelling Zone
ROW	right-of-way
RS	suburban
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RWQCB	Regional Water Quality Control Board
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCCIC	South Central Coastal Information Center
SOx	sulfur dioxide
SRA	source receptor area
SSC	Species of Special Concern
SWPPP	Storm Water Pollution Prevention Plan
SZ	service zone
TAC	toxic air contaminant
TBM	tunneling boring machine
TTLR	Topham Trunk Line Replacement
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VHFHSZ	Very High Fire Hazard Severity Zone
VMT	vehicle miles traveled
VOC	volatile organic compound
WL	watch List
WSP	welded steel pipe
ZI	Metro Right-of-Way
ZIMAS	City of Los Angeles Zoning Information and Map Access System

SECTION 1
PROJECT DESCRIPTION

1.1 Overview of the Project

The Los Angeles Department of Water and Power (LADWP) proposes to install approximately 23,300 linear feet (LF) of a 36-inch diameter underground pipe along Victory Boulevard, Topham Street, and Oxnard Street, in the west San Fernando Valley area of the City of Los Angeles. The installation of the new 36-inch diameter trunk line (referred to herein as the Topham Trunk Line Replacement [TTLR] Project, the project, or proposed project) would replace the aging and deteriorating existing 24-inch Topham Trunk Line to provide greater operational flexibility for water flow and delivery and to improve system redundancy and resiliency. The proposed project would also include approximately 6,599 LF of new 12-inch diameter underground distribution mainline that would connect the proposed TTLR Project to the existing distribution system on Mason Avenue, Victory Boulevard, and Topham Street. In addition, the proposed project would include approximately 3,429 LF of new 16-inch diameter underground distribution mainline that would replace the existing 8-inch diameter distribution mainline on Tampa Avenue, south of Topham Street. The TTLR and the distribution mainlines would be installed mostly parallel to their respective existing lines; once installation is completed, the existing lines would be abandoned in place and decommissioned accordingly.

1.2 California Environmental Quality Act

The California Environmental Quality Act (CEQA; California Public Resources Code [PRC] Section 21000 et seq.) applies to proposed projects initiated by, funded by, or requiring discretionary approvals from state or local government agencies. The proposed project constitutes a project as defined by CEQA. The CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387) Section 15367 states that lead agency "means the public agency which has the principal responsibility for carrying out or approving a project." Therefore, as a municipal utility that will implement the proposed project, LADWP is the lead agency responsible for compliance with CEQA.

As the CEQA lead agency, LADWP must complete an environmental review to determine if implementation of the proposed project would result in significant adverse environmental impacts and to propose measures, as feasible, to eliminate or reduce any such identified impacts. LADWP has prepared a CEQA Initial Study (IS) to assist in making this determination. Based on the nature and scope of the proposed project and the evaluation contained in the IS environmental checklist (included herein), LADWP, as the lead agency, has concluded that a Mitigated Negative Declaration (MND) is the proper level of CEQA environmental documentation for the proposed project. The IS shows that impacts caused by the proposed project are either less than significant or significant but mitigable to a less than significant level with incorporation of appropriate mitigation measures as defined herein. This conclusion is supported by CEQA Guidelines Section 15070, which states that an MND can be prepared when:

> the initial study identifies potentially significant effects, but (1) revisions in the project plans or proposals made by, or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur; and (2) there is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment.

1.3 Project Location and Setting

The proposed project would be located in the western San Fernando Valley of the City of Los Angeles within the communities of Winnetka, Woodland Hills, Tarzana, Encino, and the Sepulveda Basin (Figures 1 and 2). Approximately 23,300 LF of the new 36-inch diameter trunk line would be installed along Victory Boulevard, Topham Street, and Oxnard Street, beginning just east of the intersection of De Soto Avenue and Victory Boulevard and ending at the intersection of Oxnard Street and Encino Avenue. A portion of the new 36-inch diameter trunk line would be installed within an existing LADWP easement located at the Los Angeles County Metropolitan Transportation Authority (Metro)'s Pierce College Station parking lot and immediately north of the baseball fields at Winnetka Avenue and Victory Boulevard. In addition, approximately 6,599 LF of the new 12-inch diameter distribution would be installed along Mason Avenue (from Kittridge Street to Victory Boulevard), Victory Boulevard (at the intersection of Mason Avenue and Victory Boulevard), and Topham Street (from Victory Boulevard to Tampa Avenue). Approximately 3,429 LF of the new 16-inch diameter distribution mainline would be installed along Topham Street (from Tampa Avenue to Evenhaim Lane) and Tampa Avenue (from Topham Street to Ventura Boulevard). As described previously, the TTLR and the distribution mainlines would be installed mostly parallel to their respective existing lines; once installation is completed, the existing lines would be abandoned in place and decommissioned accordingly.

Land uses along Victory Boulevard, Topham Street, Oxnard Street, and Tampa Avenue are mixed and include residential, religious, commercial, public transit (Metro Orange Line), one private school (Woodcrest Preschool), limited manufacturing, open space, and public facilities including Pierce College. The Los Angeles River runs east-west, approximately 0.25 to 0.5 mile north of the proposed project.

1.4 Project Background

The existing Topham Trunk Line, which was installed in 1917, consists of approximately 14,160 feet of 24-inch diameter riveted-steel pipe beginning at De Soto Avenue and Victory Boulevard and terminating at Tampa Avenue and Ventura Boulevard. The portion of Ventura Trunk Line connecting Topham Trunk Line to Encino Inlet Line was installed in 1937 and consists of approximately 11,210 feet of 24-inch diameter welded-steel pipe (WSP) and 1,370 feet of 24-inch diameter ductile iron (DI) pipe.

The existing Topham Trunk Line and a portion of Ventura Trunk Line connect De Soto Trunk Line, identified as the 1,123-foot service zone (1123SZ)[1] and Encino Inlet Line, identified as the 1,134-foot service zone (SZ) (1134SZ). The Ventura and Wilbur Seasonal Gate, located on Ventura Trunk Line, serves as the system boundary between the 1123SZ and 1134SZ. Under normal operations, Topham Trunk Line supplies the southeastern 1123SZ and the 1123SZ portion of

[1] LADWP's water distribution SZs are also known as system elevation zones and are classified by the elevation of the downstream valve setting or base elevation of a tank. Trunk lines supply service zones either through their associated mainlines, or through direct service connections from the trunk line to a customer.

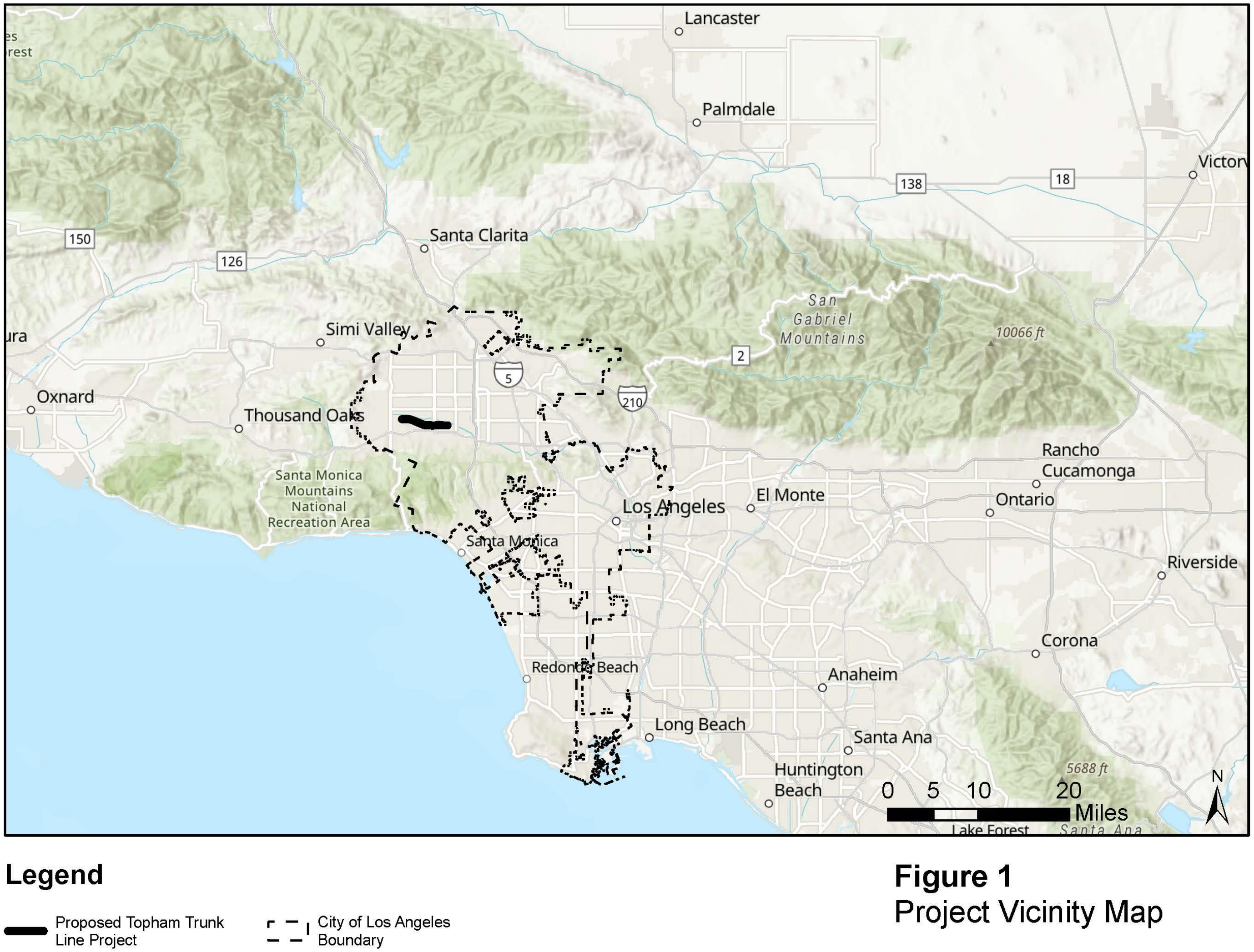
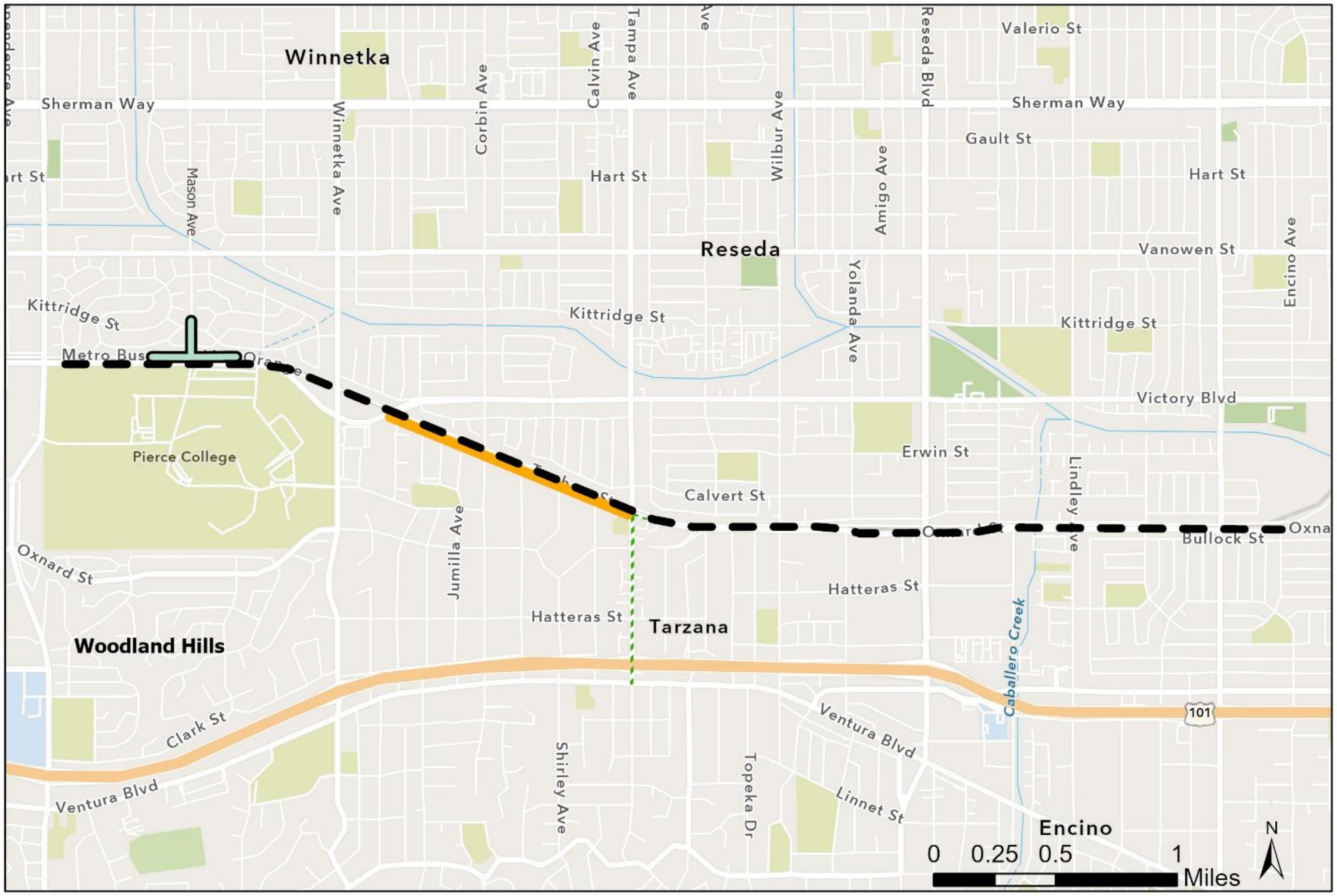


Figure 1
Project Vicinity Map

County of Los Angeles, California State Parks, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, Esri, USGS



Legend

Proposed Topham Trunk Line Project

Proposed 12" Victory Blvd & Mason Ave Mainline Open Cut

Proposed 12" Topham St Mainline Open Cut

Proposed 16" Tampa Ave Mainline Open Cut

Figure 2
Project Overview Map

County of Los Angeles, California State Parks, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA

Ventura Trunk Line with water from the Rinaldi and De Soto Regulator Station (1196SZ and 1123SZ). The Encino Inlet Line supplies the southwestern 1134SZ through the 1134SZ portions of Ventura Trunk Line with water from the Los Angeles Reservoir. However, when the Ventura and Wilbur Seasonal Gate is open, Topham Trunk Line conveys Los Angeles Reservoir water from Ventura Trunk Line to De Soto Trunk Line. The Ventura and Wilbur Seasonal Gate, although classified as a seasonally operated gate valve, is now normally closed.

LADWP has identified the proposed project as a requirement to enhance water supply resiliency and redundancy in the San Fernando Valley area. The proposed project would replace approximately 10,500 feet of an aging and deteriorating trunk line, which has been identified as likely susceptible to operational failure. In addition, the proposed project would:

- Provide operational flexibility for the east-west flows between the 1134SZ and 1123SZ;
- Eliminate the system boundary between the 1134SZ and 1123SZ for improved system resiliency;
- Maintain pressures in the 1134SZ and 1123SZ during periods of high demand;
- Allow the 1134SZ to supply a majority of the 1123SZ during a planned or emergency outage of De Soto Reservoir or Rinaldi Trunk Line.; and
- Increase seismic resiliency of system.

1.5 Project Objectives

The primary objective of the proposed project is to replace the aging and deteriorating existing Topham Trunk Line to provide greater operational flexibility for potable water flow between the 1134SZ and 1123SZ. In addition, the proposed project would improve system redundancy and resiliency by providing potable water supply to the 1123SZ during a planned or emergency outage of the De Soto Reservoir or Rinaldi Trunk Line, increasing overall reliability in the service zones of the west San Fernando Valley.

1.6 Proposed TTLR Components and Location

The primary component of the proposed project is a new 36-inch diameter underground trunk line, which would replace the existing Topham Trunk Line. As previously discussed, the replacement line would be routed mainly within Victory Boulevard, Topham Street, and Oxnard Street. On the east, the TTLR would connect directly to the existing Encino Inlet Line, identified as the 1134SZ at Encino Avenue. On the west, the TTLR would connect directly to the De Soto Trunk Line, identified as the 1123SZ at De Soto Avenue. Because the existing Topham Trunk Line must remain in service until the proposed project is completed, the TTLR would be installed in an alignment parallel to, rather than removing and replacing, the existing trunk line (Figure 3).

The TTLR would consist of WSP, which is considered a continuous pipeline because the joints between pipe segments are welded together. Seismic loads created by ground displacement from a seismic event are accommodated by the capability of the walls of the WSP to stretch and bend.

Because the TTLR would interconnect directly to the 1123SZ and 1134SZ to provide system redundancy and operational flexibility, the proposed project would also include the installation of approximately 6,599 LF of new 12-inch diameter underground distribution mainline and approximately 3,429 LF of new 16-inch diameter underground distribution mainline.

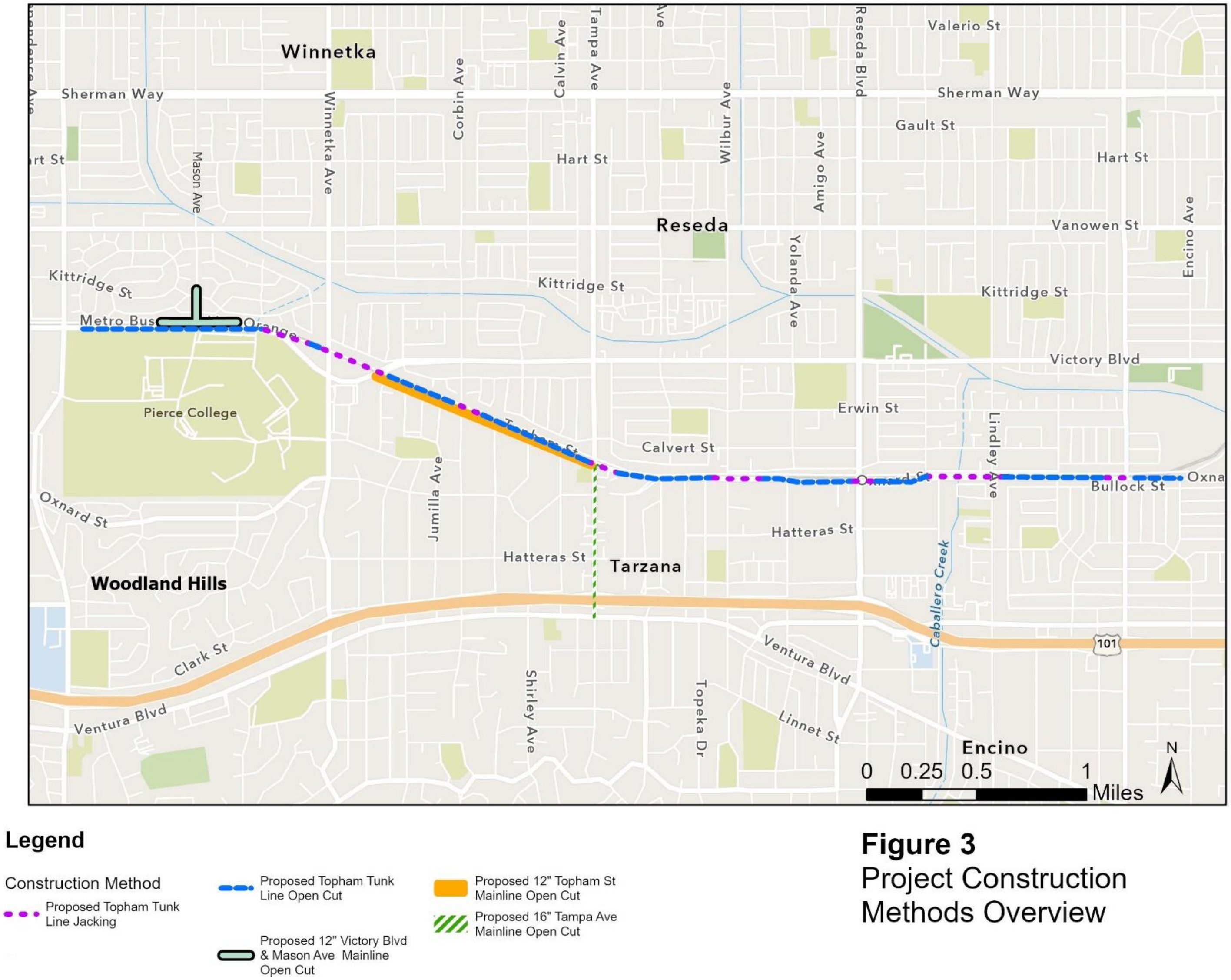


Figure 3
Project Construction Methods Overview

County of Los Angeles, California State Parks, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA

The 12-inch diameter distribution mainline and 16-inch diameter distribution mainline would be connected to existing distribution mainlines throughout the alignment to provide direct service to the 1123SZ. Both distribution mainlines would consist of earthquake resistant ductile iron pipe (ERDIP) to provide resilience during seismic events. Segments of ERDIP are joined with a gasket rather than being fused together, which provides flexibility at the joints to accommodate seismic loads by allowing the pipeline not only to bend laterally but also expand and contract lengthwise.

In addition to the above, several appurtenant facilities necessary to support the operation of the proposed trunk line and mainlines would be installed. These include isolation valves, a flow meter, and a flow recorder. The isolation valves and flow meter would be located underground within the public road right-of-way (ROW). The flow recorder would be installed in an aboveground cabinet (72 inches tall, 48 inches wide, and 24 inches deep) located on the western end of the project alignment on Victory Boulevard (just east of De Soto Avenue), within the public road ROW. After the TTLR is operational, the existing Topham Trunk Line would be isolated from the drinking water system and abandoned in place.

1.7 Project Construction

1.7.1 Construction Schedule

Construction for the proposed project is estimated to begin in Fall 2023 and would take approximately 7 years to complete (Figure 4).

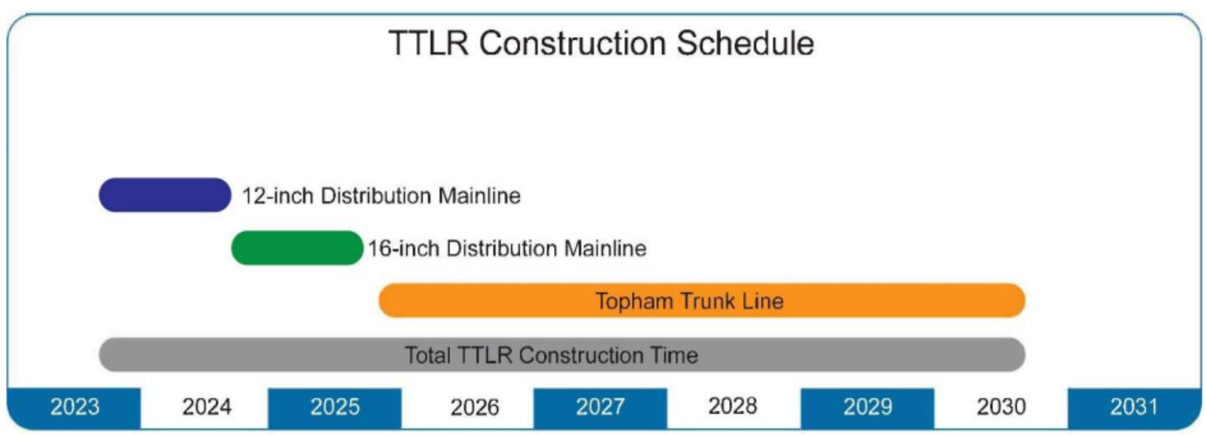


Figure 4
Project Construction Schedule

As shown above in Figure 4, the 12-inch diameter distribution mainline would be installed first from approximately third quarter 2023 to third quarter 2024, followed by the 16-inch diameter distribution mainline, which would be installed from approximately third quarter 2024 to second quarter 2025. The TTLR would be installed a few months after the 16-inch diameter distribution mainline is completed from approximately third quarter 2025 to third quarter 2030.

Construction activities for the TTLR would occur between 7:00 a.m. and 6:00 p.m., Monday through Friday. For the 12-inch and 16-inch distribution mainlines, construction activities would occur between 9:00 a.m. and 3:30 p.m., Monday through Friday, but some nighttime construction may be required.

1.7.2 Trunk Line and Mainline Open-Trench Construction

The 12-inch and 16-inch diameter distribution mainlines as well as the majority of the TTLR would be installed through an open-trench method of construction whereby a trench is excavated in the roadway, pipeline segments are placed in the trench, the trench is backfilled, and the road is repaved.

In order to achieve the open-trench construction in an effective, efficient, and safe manner, work zones would be established in the roadway within which open-trench construction activities could proceed unimpeded. Preliminarily, the work zones for the 12-inch and 16-inch diameter distribution mainlines would total approximately 2,400 feet in length, and the work zones for the TTLR would total approximately 3,000 feet in length. These work zones would include the active construction work area (400 feet for the 12-inch and 16-inch diameter distribution mainlines and 1,000 feet for the TTLR), and traffic control tapering on each end of the work area, at 1,000 feet in length at each end.

The work zones would be the minimum width required to accommodate barriers or cones separating traffic from construction activities, safety setbacks adjacent to the trench, shoring required to stabilize the trench walls (for the TTLR installation), the trench itself, and adequate area to safely and effectively operate equipment and trucks, as well as the flexibility to avoid existing substructures in the road. With these measures, the work zones would be approximately 25 to 30 feet in width for the 12-inch and 16-inch diameter distribution mainlines, and 30 to 40 feet in width for the TTLR. Based on the width of the work zone, some street segments along the proposed project alignment may allow only for one traffic lane in each direction and no parking. For the TTLR construction, the following street segments may require full closure with local access only, due to the narrow curb to curb dimensions:

- Topham Street, between Victory Boulevard and Cahill Avenue
- Oxnard Street, between Cahill Avenue and Wilbur Avenue
- Oxnard Street, between Lindley Avenue and Encino Avenue

These work zones would allow for the continuous installation of the TTLR pipeline in longer spans without the requirement to frequently disassemble and relocate barriers, equipment, and construction support facilities and modify traffic control elements, all of which would hamper the pipeline installation process but not substantially improve the flow of traffic in the vicinity of the construction. In addition to the actual work zones, lane transition zones would be required extending outward from the work zone along Mason Avenue, Victory Boulevard, Topham Street, Oxnard Street, and Tampa Avenue to channel approaching traffic into the travel lanes adjacent to the work zone.

The open-trench construction process for the TTLR would involve several steps. The initial step of the installation would be establishing the construction work zone. This would be accomplished by first installing traffic controls, including restriping of lanes, signage, and traffic signal modifications, as necessary, to merge traffic and direct it safely around the work zone. K-rails and other traffic barriers or markers would then be installed around the actual work zone to demarcate the zone and provide a safe working area. Placing the K-rail barriers would require the use of a forklift or other type of construction equipment. Mobilization would include delivering construction equipment and materials to the work zone and establishing field offices and other personnel and construction support facilities necessary for trunk line installation to proceed.

Once the work zone has been established, subsurface utility exploration would be conducted to verify the vertical and horizontal location of underground utilities that must be avoided, protected, or relocated during pipeline installation. This would involve core drilling a small-diameter hole in the pavement and removing soil with a vacuum truck to expose the utilities. Once the precise alignment of the trunk line has been established based on this exploration, the pavement would be cut along both edges of a given length of the trench using a pavement saw, and the pavement over the trench would be stripped using an excavator and a front loader. The pavement would be loaded on trucks and hauled from the site and either reclaimed for use as paving material or road base material, or it would be taken to a landfill as inert debris that can be recycled as road base for internal landfill use.

Because of the depth of excavation for the trunk line, shoring to support the walls of the trench may be required to provide a stable and safe working environment. Cantilever or braced shoring methods would be utilized, but are dependent on soil investigation results. No impact pile-driving would be involved. Installing the piles would be accomplished using a drill rig and a hydraulic crane with various attachments, depending on the method of installation. These steps, from traffic control to installing the shoring piles, would be completed before any of the actual pipeline installation tasks would begin and would take approximately two months.

After the shoring piles are in place, work would begin on installing individual pipe segments. For the 36-inch trunk line, the trench would be excavated approximately 5 to 6 feet wide and 8 to 15 feet deep. These depths are necessary to accommodate the 36-inch diameter trunk line, bedding material under the pipe, and the minimum of five feet of cover required over the trunk line.

The steel shoring plates would be lowered between the H-beams as the depth of the trench excavation increases. Approximately 250 to 300 LF of trench could be excavated and shored in a month for the TTLR. The excavated material would be loaded onto trucks parked adjacent to the trench and hauled from the work zone. While some of the excavated material may be utilized at other construction sites within the region, it is assumed for environmental analysis purposes that all material would be hauled to a local landfill.

In addition to the pipe segments, various appurtenances, such as valves, meters, and maintenance holes, would also be installed as required. The general process for installation of these appurtenances would be similar to the pipe segments and would occur within the designated work zones.

After completion of the work within a given work zone, equipment, materials, and facilities would be removed from the zone, the pavement would be restored and restriped, and the traffic barriers would be removed. Depending on the length of the work zone and actual conditions, active construction within an individual work zone may range for approximately 3 to 4 months. The entire process would then be repeated for the next construction work zone, which may or may not be in an adjacent section of the roadway.

The open-trench construction process for the 12-inch and 16-inch diameter distribution mainlines is more simple than the TTLR. All traffic control materials would be setup prior to the start of every work shift and would be removed after work is completed for the day. The Underground Service Alert system would be utilized to map underground utilities along the alignment. The pavement cutting and excavation process would involve excavating similar to the TTLR except for the trench dimensions. For the 12-inch diameter distribution mainline, the trench would be excavated approximately 30 inches wide and 4 to 5 feet deep. For the 16-inch diameter distribution mainline, the trench would be excavated approximately 3 feet wide and 5 feet deep. For these depths, no shoring would be needed. These depths would be necessary to accommodate the 12-inch and 16-inch diameter distribution mainlines, bedding material under the lines, and the minimum of 3 feet of cover required over the mainlines. At the end of every work shift, any open trench would be covered with steel plates for the safety of the public. For the 12-inch diameter distribution mainline, approximately 20 to 40 LF of trench could be installed in a day. For the 16-inch diameter distribution mainline, approximately 20 to 25 LF of trench could be installed in a day.

Various pieces of construction equipment would be used to accomplish the open-trench installation of the TTLR as well as the 12-inch and 16-inch diameter distribution mainlines. For the TTLR, the construction equipment would include the following: drill rig, front loader, hydraulic cranes, pavement saw, sweeper, forklift, excavator, backhoe, blower, skid steer, wheel loader, carry deck, utility trucks (water truck, gang truck, slurry truck, flat bed pipe truck, four pick-up trucks, two axle dump trucks, and three axle dump trucks), and trailers (dump trailer, low bed trailer, weld truck with trailer). For the 12-inch and 16-inch diameter distribution mainlines, the construction equipment would include the following: backhoe, crane (or carry deck if overhead power is present or the work zone is within a narrow street), utility trucks (two axle dump truck, three axle dump truck, gang truck, flatbed for pipe), skid steer, sweeper truck, and carrier for backhoe (or trailer attached to a dump truck). However, these pieces of equipment serve specialized purposes during the pipeline installation and would generally only be operated for brief periods when required. For example, the saw would be used to cut the edges of the trench at the beginning of the construction process, the excavator would be used during trench excavation, and a crane would be used when installing the H-beam piles and the trunk line or mainline pipe segments. Therefore, individual pieces of equipment would not operate continuously during the day and generally would not operate simultaneously.

Trucks would haul debris and excavated material from the site and deliver construction materials, such as pipe segments and backfill material, to the site. The peak of haul truck trips would occur during the excavation of the trench, which may require an average of three dump trucks trips in a single day, assuming a 10-cubic yard truck capacity for the TTLR and a 20-cubic yard truck capacity for the 12-inch and 16-inch diameter distribution mainlines. The peak of delivery trucks would occur during the backfilling of the trench with the soil-cement slurry. Assuming a 10-cubic yard concrete truck capacity for the TTLR, this may require an average of one to two concrete trucks per day to backfill the trench within 5 feet of the surface after the installation of the trunk line. Also, assuming a 20-cubic yard dump truck capacity for the 12-inch and 16-inch diameter distribution mainlines, this may require an average of three to four dump trucks per day to backfill the trench within 3 feet of the surface after the installation of these distribution mainlines. These excavation and backfilling operations may occur simultaneously in different sections of the trench, which may result in a peak of approximately five truck trips per day within a given work zone.

Within a given work zone, the open-trench construction would require approximately 20 daily construction personnel for the trunk line and 8 daily construction personnel for the 12-inch and 16-inch diameter distribution mainlines installation. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

1.7.3 Trunk Line Microtunneling (Jacking)

While the majority of the TTLR would be installed using the above described open-trench method of construction, in certain areas, a microtunneling (also referred to as jacking) method would be employed to install the trunk line. This method would use a cutting head that loosens the soil, then the soil is transported out. Microtunneling would be utilized where large substructures exist that cannot be easily relocated for the TTLR. These structures include major sewer, storm, natural gas, or water lines or other structures. Microtunneling involves installing the trunk line beneath these substructures at a depth sufficient to avoid direct conflicts as well as indirect impacts related to settlement of soil material above the tunnel. As the tunnel is bored, steel pipe casing is continually pushed forward into the tunnel by a hydraulic jacking system.

The total length of microtunneling is preliminarily estimated at approximately 6,161 LF of the total 23,300-LF TTLR (Figure 3). Microtunneling would occur at the following locations along the TTLR alignment: Victory Boulevard (just south of Oso Avenue) to the existing LADWP easement located at Metro's Pierce College Station parking lot and immediately north of the baseball fields at Winnetka Avenue and Victory Boulevard; Topham Street (at Corbin Avenue and Tampa Avenue, respectively); and, Oxnard Street (between Topeka Drive and Yolanda Avenue, at Reseda Boulevard, between Etiwanda Avenue and Lindley Avenue, and between Balcom Avenue and White Oak Avenue, respectively).

While direct disturbance of most of the roadway surface within a tunneling span is avoided, the microtunneling method requires excavating shafts at either end of the span. Similar to open-trench construction, the microtunneling would require a work zone to accommodate various pieces of equipment involved in the tunneling and jacking process, delivery and haul trucks, and other construction support functions. Based on the width of these work zones, some street segments along the proposed project alignment may allow only for one traffic lane in each direction and no parking. The work zones for the End Tunnel Pit on Oxnard Street east of Lindley Avenue, the Jacking Pit on Oxnard Street west of Topeka Drive, or the pits on Topham Street, may require complete road closures and signage for detours would be posted accordingly. In addition, a portion of the work zone that occurs within the existing LADWP easement on Metro's Pierce College Station parking lot may require the northern portion of the parking lot to be closed for approximately one year for completion of the microtunneling work. The work zones surrounding each shaft would total approximately 3,000 feet in length. This would include the two launching and receiving work areas for the pits, approximately 1,000 feet of spacing between the pits, and the traffic control tapering that extends about 1,000 feet beyond both sides of the work areas. They would overlap in location with the adjacent open-trench work zone but both work zones would not be active at the same time.

The microtunneling operation would require a launching shaft at the beginning of the tunneling span and a receiving shaft at the end of the span. To avoid substructures and prevent damage from settlement of soil above the tunnel, the shafts would be deeper than the open-trench depth, at an average of approximately 30 feet. To accommodate the microtunnel boring machine, the hydraulic jacking frame and casing/pipe segments, and space for crews and other equipment to maneuver, the launching and receiving shafts would be approximately 12 feet wide, 35 feet long, and 30 feet deep.

Cantilever or braced shoring methods would be utilized, but are dependent on soil investigation results. No impact pile-driving would be involved. After the piles have been installed, the shafts would be excavated, and the excavated material would be loaded onto trucks parked adjacent to the shaft and hauled from the construction work zone to a local landfill. The establishment of the shafts and installation of tunneling equipment may take several weeks.

Several types of microtunnel boring machines may be utilized for pipeline installations. However, for the purposes of environmental analysis, it has been assumed that a closed-face slurry shield microtunneling boring machine (MTBM) would be employed. This type of MTBM permits tunneling where groundwater may be encountered and limits groundwater intrusion into the launching and receiving shafts, minimizing the need for dewatering.

The microtunneling process would involve the installation of a steel casing pipe between the launching and receiving shafts. The MTBM process does not require construction personnel to enter the tunnel, as the machines are controlled from outside the tunnel. The MTBM would be lowered into the launching shaft and pushed forward by the hydraulic jacking frame as the cutter head of the MTBM removes soil at the leading edge of the tunnel. The slurry shield MTBM provides a closed environment within which soil particles are transferred into the interior of the cutter head, mixed with water that is pumped from the surface to the MTBM, and pumped through discharge lines to the surface as a slurry mixture. This process allows the MTBM to be advanced toward the receiving shaft by the hydraulic jack, with pipe casing segments, which are nominally 35 feet in length, continually lowered into the launching shaft and pushed forward behind the MTBM. Each new casing segment would be welded to the previous segment to extend the casing. The slurry mixture pumped to the surface would be processed in a separation plant to remove the spoils and recycle the water through the MTBM. The spoils would be transferred to a dump truck to be hauled off site.

Because microtunneling is limited to a length of approximately 1,000 feet, in some longer spans identified for tunneling under the proposed project, it would be necessary to have intermediate shafts in addition to the shafts at the end points of the entire span.

The work zones surrounding each shaft would total approximately 4,000 feet in length. This would include the two launching and receiving work areas for the pits, approximately 2,000 feet of spacing between the pits, and the traffic control tapering that extends about 1,000 feet beyond both sides of the work areas. The work zones for the End Tunnel Pit on Oxnard Street east of Lindley Avenue may require complete road closure due to the narrow curb to curb width.

The average pace of installation for microtunneling would be approximately 40 feet per day, which would not include pit excavation or pipe installation. The actual time to complete a microtunneling installation for a given span would depend on factors such as soil conditions as well as the length of the span, with the total length of individual spans ranging from about 350 feet to 1,550 feet for microtunneling. However, the entire microtunneling operation at a given shaft location would be expected to be approximately 6 months.

Various pieces of construction equipment would be used to accomplish the microtunneling or tunneling installation, including an excavator, front loader, hydraulic crane, utility truck, tunnel ventilation systems, slurry separator plant, tunnel boring machine, power generators, electrical systems, and high pressure water pump. Trucks would haul excavated material from the shaft and the spoils from the boring operation as well as deliver construction materials. The peak of haul truck trips would occur during the excavation of the launching and receiving shafts, which may require up to two to three trucks per day and result in a peak of approximately three truck trips per day within a given work zone.

The peak of delivery trucks for microtunneling operations would occur during the backfilling of the shafts with the soil-cement slurry. Assuming a 10-cubic yard truck capacity, this may require up to about three concrete trucks per day to backfill both shafts. Microtunneling would require approximately 28 construction personnel for each operation. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

1.7.4 Connections

As mentioned above, the existing Topham Trunk Line must remain in service during project construction. Therefore, the proposed project, including the 12-inch and 16-inch diameter distribution mainlines, would first be placed in service and supplied via a connection to the new De Soto Trunk Line Replacement at De Soto Avenue and Victory Boulevard at the west end. The existing Topham Trunk Line would remain in service and supplied by the existing Encino Inlet Line at Oxnard Street and Encino Avenue at the east end. This would allow connections from the 12-inch and 16-inch diameter distribution mainlines to the distribution system to be done with minimal impact to normal operations in the 1123SZ. Once these distribution connections have been made, the TTLR connection to the Encino Inlet Line at Oxnard Street and Encino Avenue would be made. The shutdown of the existing Topham Trunk Line would take place during the winter months when water demand is low to avoid potential supply issues. The existing Topham Trunk Line would be isolated from the drinking water system and abandoned in place once these final connections have been made.

1.8 Project Operations

The Topham Trunk Line would interconnect the 1134SZ at the east end and the 1123SZ at the west end, allowing flow between the two zones, providing operational flexibility and system resiliency. The TTLR would not require any additional supplies to the City's drinking water system. Most of the TTLR would be entirely underground and would not be visible, with the exception of the aboveground flow recorder; however, given its small size (72 inches tall, 48 inches wide, and 24 inches deep) and location in the public road ROW, it would not be a noticeable visual element. Activities associated with long-term operations and maintenance would be minimal, limited to scheduled maintenance or emergency repair. No additional permanent LADWP workforce would be required to operate the TTLR.

1.9 Best Management Practices

The following best management practices (BMPs) would be employed during construction of the proposed project, to help minimize or eliminate potential impacts to the environment. BMPs are distinguished from mitigation measures because they are based on existing regulatory requirements and/or are standard practices and procedures of LADWP and/or its contractors not unique to the proposed project.

1.9.1 Air Quality

- **BMP-AQ-1:** The proposed project would comply with South Coast Air Quality Management District (SCAQMD) Rule 401 (Visible Emissions) and Rule 402 (Nuisance) to prevent the occurrence of public nuisances and visible dust plumes traveling off-site, and would implement Rule 403 dust control measures and Rule 1166 measures to control the emission of Volatile Organic Compounds (VOCs) from excavating, grading, handling and treating VOC-contaminated soil as required by the SCAQMD, including but not limited to the following:

- o Water shall be applied to exposed surfaces at least two times per day to prevent generation of dust plumes.
- o The construction contractor shall utilize at least one of the following measures at each vehicle egress from the project site to a paved public road:
    - Pave the surface extending at least 100 feet and at least 20 feet wide;
    - Utilize a wheel shaker/wheel spreading device consisting of raised dividers at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages; or
    - Install a wheel washing system to remove bulk material from tires and vehicle undercarriages.
- o All trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
- o Construction activity on exposed or unpaved dirt surfaces shall be suspended when wind speed exceeds 25 miles per hour (mph).
- o A community liaison shall be identified concerning on-site construction activity including resolution of issues related to dust generation.
- o Non-toxic soil stabilizers shall be applied according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more).
- o Streets shall be swept at the end of the day if visible soil is carried onto adjacent public paved roads. If feasible, water sweepers with reclaimed water shall be used.

1.9.2 Biological Resources

Because project construction activities would be continuous during the 7-year construction period, nesting bird season (which generally occurs February 15 through September 15, and as early as January for raptors) could not be avoided. Therefore, the following BMPs shall be employed to avoid and minimize impacts to nesting birds protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGC):

- **BMP-BIO-1:** A pre-construction nesting bird survey shall be conducted by a qualified biologist within 3 days prior to the start of construction activities during the nesting season to determine whether active nests are present within or directly adjacent to the construction zone. All nests found shall be recorded.

- **BMP-BIO-2:** In the event an active nest is detected, a qualified biologist shall monitor the nest to determine if a nest avoidance buffer zone is necessary to restrict construction activities in proximity to the nest to protect the nest from failing. Any buffer zone, within which construction activities may not occur, shall be established in coordination with the qualified biologist, who shall take into account existing baseline conditions (e.g., topography, buffering buildings or other structures, etc.). In addition, observed avian response to ambient conditions (e.g., existing traffic noise and human activity) shall factor into the requirement for and size of a nest avoidance buffer.

- **BMP-BIO-3**: The qualified biologist shall monitor all active nests, including those with and without an established buffer, at least once per week to determine whether birds are being disturbed. If signs of disturbance or stress are observed, the qualified biologist shall implement adaptive measures to reduce disturbance. These measures could include establishing or increasing buffer distances, or placing visual screens or sound dampening structures between the nest and construction activity until fledging is confirmed. The qualified biologist shall monitor each active nest until they determine that nestlings have fledged and dispersed, or the nest is no longer active.

- **BMP-BIO-4:** Should an active nest of any federal or state-listed bird species be detected during pre-construction surveys or subsequent construction monitoring, construction activity in the immediate area shall not commence or shall cease if already underway, and the applicable federal and/or state agency (e.g., United States Fish and Wildlife Service [USFWS], California Department of Fish and Wildlife [CDFW], etc.) shall be notified. Work in other areas of the project site may continue until the active nests has been evaluated.

1.9.3 Cultural Resources

- **BMP-CUL-1:** All field supervisors and all construction workers shall participate in training on cultural resources awareness prior to the initiation of project construction on project sites that involve ground-disturbing activities. The training shall include a description of the types of cultural resources (including tribal cultural resources and human remains) that could inadvertently be encountered during ground-disturbing activities, the sensitivity of the resources, the legal basis for protection of the resources, and the penalties for unauthorized collection of or knowingly damaging the resources. The training shall address the proper procedures in the event of an inadvertent discovery of a cultural resource, including the immediate halting of work in the area of the discovery, notification of appropriate individuals of the discovery, the establishment of appropriate protective buffer zones around the discovery, and the continued avoidance of the protected area until the resource has been evaluated by qualified individuals and an appropriate treatment plan has been developed and implemented. These procedures shall be documented in a Cultural Resources Monitoring Plan (CRMP) that shall establish, in the event of inadvertent discovery of cultural resources, monitoring procedures (including potential Native American monitors), notification procedures, key staff, and preliminary treatment measures for potential discoveries. The CRMP shall be written to ensure compliance with appropriate state and federal laws. The training presentation and CRMP shall be available to additional supervisory or construction personnel who may join after project construction has begun.

1.9.4 Paleontological Resources

- **BMP-GEO-1:** In the event previously unknown paleontological resources are encountered, the construction manager would halt construction activities in the immediate area in accordance with CEQA Guidelines Section 15064.5(f). LADWP would retain a qualified paleontologist to make an immediate evaluation of the significance and appropriate treatment of the resource. Construction activities may continue on other parts of the construction site while evaluation and any necessary treatment of paleontological resources take place.

1.9.5 Stormwater and Erosion Control

- **BMP-WQ-1:** A Storm Water Pollution Prevention Plan (SWPPP), which will include erosion and sedimentation BMPs, shall be developed and implemented for construction activities. The SWPPP may include, but would not be limited to, the following:
    - Minimizing the extent of disturbed areas and duration of exposure;
    - Stabilizing and protecting disturbed areas;
    - Keeping runoff velocities low; and
    - Retaining sediment within the construction area.
- **BMP-WQ-2:** Construction erosion and sediment control BMPs may include, but are not limited, to the following:
    - Temporary desilting basins;
    - Silt fences;
    - Gravel bag barriers;
    - Temporary soil stabilization with mattresses and mulching;
    - Temporary drainage inlet protection; and
    - Diversion dikes and interceptor swales.

1.9.6 Transportation

- **BMP-TRA-1**: Residences and businesses near the pipeline alignment would be notified prior to the start of construction (e.g., via flyers) of lane closures and parking restrictions in their vicinity. The notices would include a telephone number for comments or questions related to construction activities.
- **BMP-TRA-2** LADWP would coordinate with all applicable agencies regarding construction schedules and worksite traffic control and detour plans, including but not limited to the City of Los Angeles Department of Transportation, the City of Los Angeles Department of Public Works, Bureau of Engineering, the City of Los Angeles Fire Department, and the City of Los Angeles Police Department.

1.9.7 Utilities and Service Systems

- **BMP-UTL-1:** The proposed project construction would incorporate source reduction techniques and recycling measures and maintain a recycling program to divert waste in accordance with the Citywide Construction and Demolition Debris Recycling Ordinance.

1.10 Required Permits and Approvals

Numerous approvals and/or permits would be required to implement the proposed project. The environmental documentation for the project would be used to facilitate compliance with federal and state laws and the granting of permits by various state and local agencies having jurisdiction over one or more aspects of the proposed project. These approvals and permits may include, but may not be limited, to the following:

City of Los Angeles Department of Public Works, Bureau of Engineering

- Excavation Permit
- Peak Hour Exemptions
- Holiday Moratorium Waiver
- Sewer Capacity Availability Request

City of Los Angeles Department of Public Works, Bureau of Sanitation

- Sewer Capacity Availability Request

City of Los Angeles Bureau of Street Services

- Street Closure Building Materials Permit
- Tree Removal Permit

City of Los Angeles Department of Transportation

- Approval of Traffic and Signal Control Plan
- Approval of temporary road closures

County of Los Angeles, Department of Public Works, Flood Control

- Utility Crossing Permit

Los Angeles County Metropolitan Transportation Authority

- Consult and coordinate with Metro on utilizing Metro's Pierce College Station parking lot in accordance with the City of Los Angeles' Zoning Ordinance No. 1117.

State of California Department of Industrial Relations, Division of Occupational Safety and Health, Mining and Tunneling Unit

- Underground Classification Permit for tunneling and jacking locations

State of California Los Angeles Regional Water Quality Control Board

- National Pollution Discharge Elimination System (NPDES) Permit for stormwater associated with construction activities

- NPDES Permit for groundwater discharge from construction activities and project dewatering to surface waters

U.S. Army Corps of Engineers (USACE)

- 408 Permit for crossing of USACE flood control facilities

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SECTION 2
INITIAL STUDY CHECKLIST

The following discussion of potential environmental effects was completed in accordance with Section 15063(d)(3) of the CEQA Guidelines (2023) to determine if the proposed project may have a significant effect on the environment.

CEQA INITIAL STUDY FORM

Project Title:
Topham Trunk Line Replacement Project

Lead Agency Name and Address:
Los Angeles Department of Water and Power
Environmental Planning and Assessment
111 North Hope Street, Room 1044
Los Angeles, CA 90012

Contact Person and Phone Number:
Marshall Styers
Environmental Planning and Assessment
Los Angeles Department of Water and Power
(213) 367-3541

Project Sponsor's Name and Address:
Los Angeles Department of Water and Power
111 North Hope Street
Los Angeles, CA 90012

Project Location:
The proposed project would be located in the western San Fernando Valley of the City of Los Angeles within the communities of Winnetka, Woodland Hills, Tarzana, Encino, and the Sepulveda Basin. Approximately 23,300 LF of the new 36-inch diameter trunk line would be installed along Victory Boulevard, Topham Street, and Oxnard Street, beginning just east of the intersection of De Soto Avenue and Victory Boulevard and ending at the intersection of Oxnard Street and Encino Avenue. The new 36-inch diameter trunk line would also be installed within an existing LADWP easement located at Metro's Pierce College Station parking lot and immediately north of the baseball fields at Winnetka Avenue and Victory Boulevard. In addition, approximately 6,599 LF of the new 12-inch diameter distribution mainline would be installed along Mason Avenue (from Kittridge Street to Victory Boulevard), Victory Boulevard (at the intersection of Mason Avenue and Victory Boulevard), and Topham Street (from Victory Boulevard to Tampa Avenue). In addition, approximately 3,429 LF of the new 16-inch diameter distribution mainline would be installed along Topham Street (from Tampa Avenue to Evenhaim Lane) and Tampa Avenue (from Topham Street to Ventura Boulevard). The new trunk line and the distribution mainlines would be installed mostly parallel to their respective existing lines; once installation is completed, the existing lines would be abandoned in place and decommissioned accordingly.

General Plan Designation:
The proposed project would be within existing road ROW as well as within the existing LADWP easement located at Metro's Pierce College Station parking lot and immediately north of the baseball fields at Winnetka Avenue and Victory Boulevard. The portions of the proposed project located within the existing LADWP easement would have a City General Plan land use designation of Open Space. However, the remaining portions of the proposed project that are located within existing road ROW would not have a City General Plan land use designation. The properties adjacent to the proposed project would have the following City General Plan land use designations: Public Facilities, Very Low Residential, Low Residential, Low Medium Residential, General Commercial, Limited Manufacturing, and Open Space.

Zoning:
The portions of the proposed project located within the existing LADWP easement would have the following City zoning designations: Open Space River Implementation Overlay District (OS-1XL-RIO) and Public Facilities River Implementation Overlay District (PF-1XL-RIO). However, the remaining portions of the proposed project that are located within existing road ROW would not have a City General Plan zoning designation. The properties adjacent to the proposed project would have the following City zoning designations: Single- and Multi-Family Residential (R1 and R3, respectively), Restricted Density Multiple Dwelling Zone (RD), Open Space (OS), Public Facilities (PF), Suburban (RS), Commercial Uses (C2 and C4), ZI (Metro Right-of-Way), and Limited Industrial Zone (M1).

Description of Project:
The primary component of the proposed project is a new 36-inch diameter underground trunk line, which would the replace the existing Topham Trunk Line. The replacement line would be installed along Victory Boulevard, Topham Street, and Oxnard Street, as well as installed along the existing LADWP easement located at Metro's Pierce College Station parking lot and immediately north of the baseball fields at Winnetka Avenue and Victory Boulevard. On the east, the TTLR would connect directly to the existing 61-inch diameter Encino Inlet Trunk Line at Encino Avenue. On the west, the TTLR would connect directly to the new 54-inch diameter De Soto Trunk Line Replacement at De Soto Avenue. The proposed project would also include approximately 6,599 LF of a new 12-inch diameter distribution mainline that would connect the proposed TTLR Project to the existing distribution system on Mason Avenue, Victory Boulevard, and Topham Street. In addition, the proposed project would include approximately 3,429 LF of a new 16-inch diameter distribution mainline that would replace the existing 8-inch diameter distribution mainline on Tampa Avenue, south of Topham Street. The TTLR and the distribution mainlines would be installed mostly parallel to their respective existing lines; once installation is completed, the existing lines would be abandoned in place and decommissioned accordingly. All these facilities would be located underground within the public road ROW, with the exception of the flow recorder. The flow recorder would be installed in an aboveground cabinet (72 inches tall, 48 inches wide, and 24 inches deep) located on the western end of the project alignment on Victory Boulevard (just east of De Soto Avenue), within the public road ROW. After the TTLR is operational, the existing Topham Trunk Line would be isolated from the drinking water system and abandoned in place.

Surrounding Land Uses and Setting:
The proposed project would be located in the western San Fernando Valley of the City of Los Angeles within the urbanized and fully developed communities of Winnetka, Woodland Hills, Tarzana, Encino, and the Sepulveda Basin. Surrounding land uses to the

project site are mixed and include residential, religious, commercial, public transit (Metro Orange Line), one private school (Woodcrest Preschool), limited manufacturing, open space, and public facilities including Pierce College. The Los Angeles River runs east-west, approximately 0.25 to 0.5 mile north of the proposed project.

Other public agencies whose approval is required:
See Section 1.10 of this IS/MND.

Have California Native American tribes traditionally and culturally affiliated with the Project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun?
Pursuant to California Public Resources Code Section 21080.3.1, LADWP submitted consultation invitation letters to all of the tribes provided by the Native American Heritage Commission list. Three tribes, the Gabrielino Tongva Indians of California, Fernandeño Tataviam Band of Mission Indians and the Gabrieleño Band of Mission Indians – Kizh Nation, requested consultation with LADWP on the potential impact of the proposed project, and consultation has been initiated. Additional discussion about tribal consultation conducted for this proposed project can be found in Section 3, XVIII. Tribal Cultural Resources, of this IS/MND.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a “Potentially Significant Impact” as indicated by the Environmental Impacts discussion in Section 3.

☐ Aesthetics	☐ Agriculture Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Energy
☐ Geology/Soils	☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials
☐ Hydrology/Water Quality	☐ Land Use/Planning	☐ Mineral Resources
☐ Noise	☐ Population/Housing	☐ Public Services
☐ Recreation	☐ Transportation	☐ Tribal Cultural Resources
☐ Utilities/Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

DETERMINATION

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an environmental impact report is required.

☐ I find that the proposed project may have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Jane Hauptman

Signature

May 30, 2023

Date

Jane Hauptman
Manager of Environmental Assessment and Planning
Los Angeles Department of Water and Power

		Potentially Significant Impact	Less Than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
I.	**AESTHETICS**. Except as provided in Public Resources Code Section 21099, would the project:				
a.	Have a substantial adverse effect on a scenic vista?				X
b.	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c.	In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?				X
d.	Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?			X	
II.	**AGRICULTURE AND FORESTRY RESOURCES**. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state’s inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a.	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b.	Conflict with existing zoning for agricultural use, or a Williamson act contract?				X
c.	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				X
d.	Result in the loss of forest land or conversion of forest land to non-forest use?				X
e.	Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				X

		Potentially Significant Impact	Less Than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
III.	**AIR QUALITY**. Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a.	Conflict with or obstruct implementation of the applicable air quality plan?			X	
b.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality?			X	
c.	Expose sensitive receptors to substantial pollutant concentrations?			X	
d.	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			X	
IV.	**BIOLOGICAL RESOURCES**. Would the project:				
a.	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?			X	
b.	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?				X
c.	Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X
d.	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery/breeding sites?				X
e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			X	
f.	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X
V.	**CULTURAL RESOURCES**. Would the project:				
a.	Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5?				X
b.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?			X	
c.	Disturb any human remains, including those interred outside of formal cemeteries?			X	

		Potentially Significant Impact	Less Than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
VI.	**ENERGY.** Would the project:				
a.	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			X	
b.	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?				X
VII.	**GEOLOGY AND SOILS**. Would the project:				
a.	Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to California Geological Survey Special Publication 42.			X	
	ii) Strong seismic ground shaking?			X	
	iii) Seismic-related ground failure, including liquefaction?			X	
	iv) Landslides?				X
b.	Result in substantial soil erosion or the loss of topsoil?			X	
c.	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			X	
d.	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?			X	
e.	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				X
f.	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	
VIII.	**GREENHOUSE GAS EMISSIONS**: Would the project:				
a.	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
b.	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	
IX.	**HAZARDS AND HAZARDOUS MATERIALS**: Would the project:				
a.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	

		Potentially Significant Impact	Less Than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
c.	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			X	
d.	Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?			X	
e.	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?				X
f.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
g.	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?				X
X.	**HYDROLOGY AND WATER QUALITY**. Would the project:				
a.	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?			X	
b.	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			X	
c.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of stream or river, in a manner that would:				
	i) Result in substantial erosion or siltation on- or off-site?			X	
	ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?			X	
	iii) Create or contribute runoff water which would exceed the capacity of existing or planner stormwater drainage systems or provide substantial additional sources of polluted runoff?			X	
	iv) Impeded or redirect flood flows?				X
d.	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				X
e.	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?				X
XI.	**LAND USE AND PLANNING**. Would the project:				
a.	Physically divide an established community?				X
b.	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?				X
XII.	**MINERAL RESOURCES**. Would the project:				

		Potentially Significant Impact	Less Than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
a.	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b.	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X
XIII.	**NOISE**. Would the project result in:				
a.	Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?		X		
b.	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			X	
c.	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
XIV.	**POPULATION AND HOUSING**. Would the project:				
a.	Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b.	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				X
XV.	**PUBLIC SERVICES**.				
a.	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
	i) Fire protection?				X
	ii) Police protection?				X
	iii) Schools?				X
	iv) Parks?				X
	v) Other public facilities?				X
XVI.	**RECREATION**.				
a.	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X

	Potentially Significant Impact	Less Than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?				X
XVII. TRANSPORTATION. Would the project:				
a. Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?			X	
b. Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?				X
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			X	
d. Result in inadequate emergency access?			X	
XVIII. TRIBAL CULTURAL RESOURCES. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:				
a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?				X
b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of the Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.		X		
XIX. UTILITIES AND SERVICE SYSTEMS. Would the project:				
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction of which could cause significant environmental effects?				X
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?				X
c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
d. Generate solid waste in excess of state or local standards, or in excess of the future capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?			X	
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?				X

		Potentially Significant Impact	Less Than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
XX.	**WILDFIRE**. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a.	Substantially impair an adopted emergency response plan or emergency evacuation plan?				X
b.	Due to slope, prevailing winds, and other factors, exacerbate wildland fires risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?				X
c.	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may result in temporary or ongoing impacts to the environment?				X
d.	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?				X
XXI.	**MANDATORY FINDINGS OF SIGNIFICANCE**.				
a.	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		X		
b.	Does the project have impacts that are individually limited, but cumulatively considerable? “Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.			X	
c.	Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?		X		

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SECTION 3
ENVIRONMENTAL IMPACT ASSESSMENT

INTRODUCTION

The following discussion addresses potential impacts associated with the proposed project to various environmental resources per the IS checklist questions contained in Appendix G of the CEQA Guidelines. The following discussion also includes consideration of the proposed project's BMPs discussed previously in Section 1.9 of this IS/MND.

I. AESTHETICS

Would the project:

a) Have a substantial adverse effect on a scenic vista?

No Impact. The proposed project would not have an adverse effect on a scenic vista. Scenic views or vistas are panoramic public views of various natural features, including the ocean, striking or unusual natural terrain, or unique urban or historic features. Public access to these views may be from park lands, private and publicly owned sites, and public ROW. The proposed project would be located within the fully urbanized communities of Winnetka, Woodland Hills, Tarzana, Encino, and Sepulveda Basin in the western San Fernando Valley of the City of Los Angeles. The Encino-Tarzana, Reseda-West Van Nuys, and Canoga Park-Winnetka-Woodland Hills-West Hills Community Plans identify the Mulholland Scenic Parkway as a scenic vista, which is located approximately 2.3 miles southwest of the western end of the project site.[2][3][4] No portion of the proposed project would be within this scenic vista. Therefore, the proposed project would not have an adverse effect on a scenic vista. No impact would occur.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. Implementation of the proposed project would not damage scenic resources within a state scenic highway. U.S Route 101 near Route 27 (Topanga Canyon Boulevard), which is an officially eligible state scenic highway, is the nearest state scenic highway to the project site, located approximately 1.6 miles southwest from the western end of the project site.[5] In addition, no portion of the proposed project is within a City Designated Scenic Highway, as identified in the Mobility Plan

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[2] City of Los Angeles, 1998, Encino-Tarzana Community Plan, available at: https://planning.lacity.org/odocument/7d419ea7-e1b9-400d-8f7e-ea7f39822527/Encino-Tarzana_Community_Plan.pdf. Accessed April 2023.

[3] City of Los Angeles, 1998, Reseda-West Van Nuys Community Plan, available at: https://planning.lacity.org/odocument/66bbc469-c66e-4d63-9b3d-6040a57d637e/Reseda-West_Van_Nuys_Community_Plan.pdf. Accessed April 2023.

[4] City of Los Angeles, 1999, Canoga Park-Winnetka-Woodland Hills-West Hills Community Plan, available at: https://planning.lacity.org/odocument/c2a26cca-955f-42ee-8eeb-332f05286c78/Canoga_Park-Winnetka-Woodland_Hills-West_Hills_Community_Plan.pdf. Accessed April 2023.

[5] California Department of Transportation (Caltrans), List of Eligible and Officially Designated State Scenic Highways, available at: https://dot.ca.gov/-/media/dot-media/programs/design/documents/desig-and-eligible-aug2019_a11y.xlsx. Accessed April 2023.

2035 of the City of Los Angeles General Plan.[6] Therefore, the proposed project would not substantially damage scenic resources within a state scenic highway. No impact would occur.

c) In non-urbanized areas, substantially degrade the existing visual character or quality of the site and its surroundings? If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

No Impact. As discussed above, the proposed project would be located within the fully urbanized communities of within the Winnetka, Woodland Hills, Tarzana, Encino, and Sepulveda Basin in the western San Fernando Valley of the City of Los Angeles. The proposed project would occur within existing roadways and the existing LADWP easement located at Metro's Pierce College Station parking lot and immediately north of the baseball fields at Winnetka Avenue and Victory Boulevard. The proposed TTLR alignment, distribution mainlines, and facilities would be located underground within the public road ROW, with the exception of the flow recorder, which would be installed in an aboveground cabinet (72 inches tall, 48 inches wide, and 24 inches deep) located on the western end of the project site on Victory Boulevard (just east of De Soto Avenue), within public road ROW. While most of the proposed project would occur within existing roadways and would thus not have City General Plan land designations or City zoning designations, the portions of the proposed project (consisting of the new trunk line) located within the existing LADWP easement would have a City General Plan land use designation of Open Space and City zoning designations of OS-1XL-RIO and PF-1XL-RIO. The portions of the new trunk line within the LADWP easement would be located entirely underground and existing paved surface conditions temporarily disturbed during construction would be restored to pre-construction conditions. The proposed project would be a covered activity under LADWP's easement and would not conflict with the City's General Plan or Zoning Code as no change in land uses would occur from implementation of the proposed project. Implementation of the proposed project would also not result in a change to the adjacent properties' land uses. Therefore, the proposed project would be consistent with applicable zoning and other regulations governing scenic quality for the project site. No impact would occur.

d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

Less Than Significant Impact. As discussed above, most of the proposed project would be underground and would not create a new source of light or glare. The aboveground flow recorder would not require lighting nor create glare. However, construction of the proposed project would require nighttime construction. Construction activities for the TTLR would occur between 7:00 a.m. and 6:00 p.m., Monday through Friday. For the 12-inch and 16-inch distribution mainlines, construction activities would occur between 9:00 a.m. and 3:30 p.m., Monday through Friday, but some nighttime construction may be required. Nighttime construction would require temporary lighting which would create a new source of light and glare. However, as discussed above, the proposed project would be located within a fully urbanized area with existing roadways and the existing LADWP

[6] City of Los Angeles Department of City Planning, *Mobility Plan 2035, An Element of the General Plan*, adopted April 26, 2021.

easement located at Metro's Pierce College Station parking lot and immediately north of the baseball fields at Winnetka Avenue and Victory Boulevard. There would be existing nighttime light and glare sources within the project site and surrounding properties from streetlights, light poles, passing vehicles, and exterior building lights. While the proposed project would create a new source of light and glare, it would be temporary and would comply with Section 93.0117 of the City of Los Angeles Municipal Code (LAMC) regarding outdoor lighting affecting residential property, and thus would not adversely affect nighttime views in the area. Therefore, the proposed project would not create a new source of substantial light or glare that would adversely affect views. This impact would be less than significant.

II. AGRICULTURE AND FORESTRY RESOURCES

Would the project:

a) Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. The project site is within existing paved areas (e.g., roadways and parking lot) in fully urbanized portions of the western San Fernando Valley. The project site is designated as Urban and Built-Up Land on the "Important Farmland in California" map prepared by the California Resources Agency pursuant to the Farmland Mapping and Monitoring Program. While there is a parcel of land adjacent to the project site along Victory Boulevard at Pierce College that is designated as Prime Farmland, the proposed project's work zone at this location would be confined within the public road ROW on Victory Boulevard and would not impact this parcel.[7] Therefore, the proposed project would not convert Farmland to a non-agricultural use. No impact would occur.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. As discussed above, the project site is within existing paved areas in fully urbanized portions of the western San Fernando Valley and is not zoned for agricultural use. Furthermore, the City of Los Angeles does not offer Williamson Act contracts.[8] Therefore, the proposed project would not conflict with existing zoning for agricultural use or a Williamson Act contract. No impact would occur.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

No Impact. As discussed above, the project site is within existing paved areas in a fully urbanized portion of the San Fernando Valley. No portion of the project site is

[7] State of California Department of Conservation, Division of Land Resource Protection, Farmland Mapping & Monitoring Program, Important Farmland in California, 2018 map, available at: https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed April 2023.

[8] State of California Department of Conservation, Division of Land Resource Protection, Current and Historic Data About Land Conservation (Williamson) Act Status, available at: https://www.conservation.ca.gov/dlrp/wa/Documents/stats_reports/2022%20WA%20Status%20Report.pdf. Accessed April 2023.

zoned for or contains forest land or timberland as defined in PRC Section 12220(g) and Government Code Section 4526, respectively.[9] Therefore, the proposed project would not conflict with existing zoning for or cause a rezoning of forest land or timberland. No impact would occur.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. As discussed above, the project site is within existing paved areas in a fully urbanized portion of the western San Fernando Valley. No portion of the project site is zoned for or contains forest lands.[10] Therefore, the proposed project would not result in the loss of forest land or conversion of forest land to non-forest use. No impact would occur.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

No Impact. As discussed above, the project site is within existing paved areas. No portion of the project site is identified as Farmland, and the parcel adjacent to project site along Victory Boulevard at Pierce College that is designated as Prime Farmland would not be impacted by the proposed project. In addition, the project site does not contain forest land. Therefore, the proposed project would not change the existing environment in a way that would result in the conversion of Farmland to non-agricultural use or forest land to non-forest use. No impact would occur.

III. AIR QUALITY

Potential impacts related to air quality associated with the proposed project were determined from the results presented in the Air Quality Impacts Assessment prepared by Terry A. Hayes Associates Inc. (TAHA) for the proposed project, which is included as Appendix A to this IS/MND.

Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact. The following analysis addresses the consistency with applicable SCAQMD and Southern California Association of Governments (SCAG) policies, including the SCAQMD's 2022 Air Quality Management Plan (AQMP) and growth projections within the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). In accordance with the procedures established in the SCAQMD's CEQA Air Quality Handbook, the following criteria are required to be addressed in order to determine the consistency with applicable SCAQMD and SCAG policies:

- Would the proposed project result in any of the following?
    - An increase in the frequency or severity of existing air quality violations;

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9 City of Los Angeles Zoning Information and Map Access System (ZIMAS), available at: http://zimas.lacity.org/. Accessed April 2023.

10 *Ibid.*

    - Cause or contribute to new air quality violations; or
    - Delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.

- Would the proposed project exceed the assumptions utilized in preparing the AQMP?
    - Is the project consistent with the population and employment growth projections upon which AQMP forecasted emission levels are based;
    - Does the project include air quality mitigation measures; or
    - To what extent is project development consistent with the AQMP land use policies?

The first indicator is assessed by comparing emissions of air pollutants that would be produced by construction and operation of the proposed project to the SCAQMD significance thresholds, both on regional and localized scales. The regional and localized air quality significance thresholds were designed to prevent the occurrence and exacerbation of air quality violations resulting from construction and operation of individual CEQA projects in the context of existing ambient air quality conditions. The second indicator is assessed by determining consistency of permanent operations with population, housing, and employment assumptions that were used in the development of the AQMP and the RTP/SCS.

The proposed project would not introduce any new permanent sources of air pollutant emissions to the South Coast Air Basin (SCAB) and would not spur any growth in population, housing, or employment. The analysis of potential air quality impacts related to AQMP consistency that could occur from implementation of the proposed project was based on the possibility of air pollutant emissions during construction activities exacerbating the frequency or severity of air quality violations, which occur when ambient concentrations of air pollutants exceed the established SCAQMD air quality significance thresholds.

Construction

Construction of the proposed project has the potential to create air quality impacts through the use of heavy-duty construction equipment and through vehicle trips by construction workers and haul and delivery trucks traveling to and from the project site. Fugitive dust emissions would primarily result from roadway stripping, excavation, and truck loading activities, as well as vehicle travel on the regional roadway network. Nitrogen dioxide (NO_x) emissions would be generated from off-road equipment exhaust and on-road vehicle exhaust. Fugitive volatile organic compound (VOC) emissions would be generated from repaving of the disturbed roadway areas with fresh asphalt. The assessment of construction air quality impacts considers all of these emissions sources. Throughout the course of the 7-year construction period, the equipment and vehicle activity inventory would vary substantially from day to day. The analysis invoked reasonably conservative estimates of vehicle travel and equipment usage to address potential impacts.

The project site is located within the SCAB. It is mandatory for all construction projects in the SCAB to comply with SCAQMD Rule 403 for Fugitive Dust. Rule 403 control requirements include measures to prevent the generation of visible dust plumes. Measures include, but are not limited to, applying soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system or other control measures to remove bulk material from tires and vehicle undercarriages before vehicles exit the project site, and maintaining effective cover over exposed areas. Compliance with the provisions propagated by Rule 403 (as indicated in BMP AQ-1 in Section 1.9 of this IS/MND), such as the application of water as a dust suppressant to exposed stockpiles and disturbed ground surfaces, would reduce regional fugitive dust respirable particulate matter 10 microns or less in diameter (PM_{10}) and fine particulate matter 2.5 microns or less in diameter ($PM_{2.5}$) emissions associated with construction activities by approximately 61 percent.

Daily emissions of VOCs, NO_x, carbon monoxide (CO), sulfur dioxide (SO_x), PM_{10}, and $PM_{2.5}$ that would be generated during construction of the proposed project were estimated using the California Emissions Estimator Model (CalEEMod). Table 1 through Table 3 present the maximum daily emissions that would be generated during construction of each proposed component attributed to a single work zone. Table 1 presents the maximum daily emissions that would be generated during open-trench construction of the 12-inch and 16-inch diameter distribution mainline components of the proposed project in 2023 and 2024. Table 2 presents the results of the emissions analysis for a single work zone engaged in the TTLR microtunneling activities. Table 3 presents the results of the emissions modeling for the shallow open-trench construction activities to install the distribution mainline parallel to segments of trunk line microtunneling.

As shown in the comparative analysis at the bottom of the Table 1, daily emissions of ozone (O_3) precursors and criteria pollutants would remain well below the applicable SCAQMD regional thresholds and Source Receptor Area (SRA) 6 LST screening values.

Table 2, below, displays the daily emissions that would be produced during each activity involved in the TTLR open-trench construction. The primary differences between the TTLR open-trench construction and the distribution mainlines open-trench construction would be the size of the active work zone (approximately 1,000 feet long for the TTLR and approximately 400 feet long for the distribution mainlines), the width and depth of the trench to accommodate the 36-inch diameter trunk line, and the duration of daily construction activities (7:00 a.m. to 6:00 p.m. for the TTLR and 9:00 a.m. to 3:30 p.m. for the distribution mainlines). As shown below, maximum daily emissions during construction of a single TTLR open-trench work zone would be substantially less than the SCAQMD regional mass daily thresholds and LST screening values for SRA 6.

Table 1: Estimated Daily Emissions – Distribution Mainlines Open-Trench Construction

Phase and Source Location	Maximum Daily Emissions (Pounds Per Day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Subsurface Exploration and Pavement Removal						
On-Site Emissions	0.3	2.9	4.3	<0.1	0.6	0.2
Off-Site Emissions	0.1	1.1	1.1	<0.1	0.4	0.1
Total	***0.4***	***4.0***	***5.4***	***<0.1***	***1.0***	***0.3***
Trench Excavation						
On-Site Emissions	0.3	2.7	3.5	<0.1	0.1	0.1
Off-Site Emissions	0.1	1.7	1.2	<0.1	0.5	0.1
Total	***0.4***	***4.4***	***4.7***	***<0.1***	***0.6***	***0.3***
Pipeline Installation						
On-Site Emissions	0.6	6.1	5.8	<0.1	0.3	0.3
Off-Site Emissions	0.1	1.3	1.1	<0.1	0.4	0.1
Total	***0.7***	***7.4***	***6.9***	***<0.1***	***0.7***	***0.4***
Trench Backfilling						
On-Site Emissions	0.4	3.7	6.3	<0.1	0.2	0.2
Off-Site Emissions	0.1	1.3	1.1	<0.1	0.4	0.1
Total	***0.5***	***5.0***	***7.4***	***<0.1***	***0.6***	***0.3***
Roadway Repaving						
On-Site Emissions	0.4	3.8	5.5	<0.1	0.2	0.2
Off-Site Emissions	0.1	0.3	0.9	<0.1	0.3	0.1
Total	***0.5***	***4.1***	***6.4***	***<0.1***	***0.5***	***0.3***
Distribution Mainlines Single Work Zone Analysis						
Maximum Regional Emissions	0.7	7.4	7.4	<0.1	1.0	0.4
SCAQMD Regional Threshold	75	100	550	150	150	55
Maximum Localized Emissions	0.6	6.1	6.3	<0.1	0.6	0.3
SCAQMD LST Screening Value	-	103	426	-	4	3

Note: Emission modeling files can be found in Appendix A of this IS/MND.
Source: TAHA, 2023.

Table 2: Estimated Daily Emissions – TTLR Open-Trench Construction Work Zone

Phase and Source Location	Maximum Daily Emissions (Pounds Per Day)					
	VOC	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Subsurface Exploration and Pavement Removal						
On-Site Emissions	0.3	2.4	4.3	<0.1	0.5	0.2
Off-Site Emissions	0.2	1.7	1.9	<0.1	0.8	0.2
Total	***0.5***	***4.2***	***6.2***	***<0.1***	***1.3***	***0.4***
Shoring						
On-Site Emissions	0.3	3.0	3.6	<0.1	0.1	0.1
Off-Site Emissions	0.2	0.3	1.5	<0.1	0.6	0.2
Total	***0.5***	***3.3***	***5.1***	***<0.1***	***0.7***	***0.3***
Trench Excavation						
On-Site Emissions	0.3	2.9	4.8	<0.1	0.1	0.1
Off-Site Emissions	0.2	1.7	1.9	<0.1	0.8	0.2
Total	***0.5***	***4.6***	***6.7***	***<0.1***	***0.9***	***0.3***
Pipeline Installation						
On-Site Emissions	0.6	6.0	6.7	<0.1	0.2	0.2
Off-Site Emissions	0.2	0.3	1.5	<0.1	0.6	0.2
Total	***0.8***	***6.3***	***8.2***	***<0.1***	***0.8***	***0.4***
Trench Backfilling						
On-Site Emissions	0.4	3.4	7.2	<0.1	0.2	0.1
Off-Site Emissions	0.2	1.3	1.8	<0.1	0.7	0.2
Total	***0.6***	***4.8***	***9.0***	***<0.1***	***0.9***	***0.4***
Roadway Repaving						
On-Site Emissions	0.5	4.3	7.3	<0.1	0.2	0.2
Off-Site Emissions	0.2	0.3	1.5	<0.1	0.6	0.2
Total	***0.7***	***4.5***	***8.8***	***<0.1***	***0.8***	***0.4***
TTLR Open-Trench Site Single Work Zone Analysis						
Maximum Regional Emissions	**0.8**	**6.3**	**9.0**	**<0.1**	**1.3**	**0.4**
SCAQMD Regional Threshold	75	100	550	150	150	55
Maximum Localized Emissions	**0.6**	**6.0**	**7.3**	**<0.1**	**0.5**	**0.2**
SCAQMD LST Screening Value	-	103	426	-	4	3

Note: Emission modeling files can be found in Appendix A of this IS/MND.
Source: TAHA, 2023.

Construction of the proposed project would require a microtunneling technique along roadway segments and under intersections where substantial subsurface utility structures are present, comprising approximately 6,161 LF. Microtunneling activities would involve the excavation of launching and receiving shafts (approximately 12 feet wide by 35 feet long by 30 feet deep) at either end of the work zone to accommodate the tunnel boring machine. Table 3 presents the daily emissions for microtunneling activities.

Table 3: Estimated Daily Emissions – TTLR Microtunnel Construction

Phase and Source Location	Maximum Daily Emissions (Pounds Per Day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Subsurface Exploration and Road Stripping						
On-Site Emissions	0.3	2.7	4.7	<0.1	0.7	0.2
Off-Site Emissions	0.2	1.0	2.2	<0.1	0.9	0.2
Total	***0.5***	***3.7***	***7.0***	***<0.1***	***1.6***	***0.4***
Sheet Pile Shoring						
On-Site Emissions	0.3	3.2	3.8	<0.1	0.1	0.1
Off-Site Emissions	0.2	0.4	2.1	<0.1	0.8	0.2
Total	***0.6***	***3.6***	***5.9***	***<0.1***	***1.0***	***0.4***
Shaft Excavation						
On-Site Emissions	0.4	3.4	5.3	<0.1	0.1	0.1
Off-Site Emissions	0.2	1.0	2.2	<0.1	0.9	0.2
Total	***0.6***	***4.3***	***7.6***	***<0.1***	***1.0***	***0.4***
Microtunnel Casing and Piping						
On-Site Emissions	1.0	8.3	11.9	<0.1	0.3	0.3
Off-Site Emissions	0.2	0.4	2.1	<0.1	0.8	0.2
Total	***1.2***	***8.7***	***14.0***	***<0.1***	***1.2***	***0.5***
Shaft Backfilling						
On-Site Emissions	0.4	3.2	6.9	<0.1	0.1	0.1
Off-Site Emissions	0.2	1.2	2.3	<0.1	1.1	0.4
Total	***0.6***	***4.4***	***9.3***	***<0.1***	***1.1***	***0.4***
Roadway Repaving						
On-Site Emissions	0.5	4.1	6.3	<0.1	0.2	0.2
Off-Site Emissions	0.2	0.4	2.1	<0.1	0.8	0.2
Total	***0.7***	***4.5***	***8.4***	***<0.1***	***1.0***	***0.4***
Microtunnel Site Work Zone Analysis						
Maximum Regional Emissions	**1.2**	**8.7**	**14.0**	**<0.1**	**1.6**	**0.5**
SCAQMD Regional Threshold	75	100	550	150	150	55
Maximum Localized Emissions	**1.0**	**8.3**	**11.9**	**<0.1**	**0.7**	**0.3**
SCAQMD LST Screening Value	-	103	426	-	4	3

Note: Emission modeling files can be found in Appendix A of this IS/MND.
Source: TAHA, 2023.

Throughout the construction period, multiple crews would be working on different components of the TTLR Project simultaneously. Although logistical constraints would preclude concurrent construction of adjacent microtunneling and shallow open-trench distribution mainline installation within the same work zone, it is possible that multiple work zones of each type of activity would be ongoing at the same time at various locations along the 4-mile corridor.

Table 4 presents the regional and localized emissions analyses of potentially overlapping activities, assuming up to five work zones could be active on a worst-case day. The first element of the analysis evaluated five concurrent work zones of the distribution mainlines assuming maximum daily emissions at each site. The second element of the analysis evaluated four concurrent TTLR open-trench sites and an additional microtunneling site. As shown below, the combined work zones analyses determined that construction of the proposed project would not generate emissions exceeding any applicable SCAQMD regional or localized threshold, even when assuming maximum possible emissions at each individual site. The combined emissions from five work zones along the TTLR corridor would not exceed the LST screening values that apply to a singular construction site, representing a protectively conservative approach as the work zones would likely be at considerable distances from one another. Therefore, potential impacts related to the frequency and severity of air quality violations would be less than significant during proposed project construction.

Table 4: Emissions Analysis – Concurrent Pipeline Installation Activities

Project Component	Maximum Daily Emissions (Pounds Per Day)					
	VOC	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Regional Emissions – Individual Sites						
Distribution Mainlines Construction x5	***3.5***	***36.8***	***37.1***	***<0.1***	***4.9***	***1.9***
TTLR Open-Trench Construction x4	3.1	25.2	35.8	<0.1	5.2	1.6
TTLR Microtunnel Construction x1	1.2	8.7	14.0	<0.1	1.6	0.5
TTLR Open-Trench + Microtunneling	***4.3***	***33.8***	***49.8***	***<0.1***	***6.8***	***2.1***
Regional Emissions Analysis						
Maximum Daily Activities (Five Sites)	**4.3**	**36.8**	**49.8**	**<0.1**	**6.8**	**2.1**
SCAQMD Regional Threshold	75	100	550	150	150	55
Exceed Threshold?	***No***	***No***	***No***	***No***	***No***	***No***
Localized Emissions – Individual Sites						
Distribution Mainlines Construction x5	***3.0***	***30.3***	***31.4***	***<0.1***	***2.8***	***1.3***
TTLR Open-Trench Construction x4	2.5	24.1	29.2	<0.1	2.1	0.9
TTLR Microtunnel Construction x1	1.0	8.3	11.9	<0.1	0.7	0.3
TTLR Open-Trench + Microtunneling	***3.5***	***32.4***	***41.1***	***<0.1***	***2.8***	***1.3***
Localized Emissions Analysis						
Maximum Daily Activities (Five Sites)		**32.4**	**41.1**		**2.8**	**1.3**
SCAQMD Localized Threshold	-	103	426	-	4	3
Exceed Threshold?	***-***	***No***	***No***	***-***	***No***	***No***

Note: Emission modeling files can be found in Appendix A of this IS/MND.
Source: TAHA, 2023.

Based on the combined activities analysis, construction of the proposed project would not have any potential to conflict with or obstruct implementation of the AQMP based on the air quality violation criterion. When considering five active work zones with each zone producing its maximum daily emissions, total regional and localized NO_X emissions would remain below half of the applicable thresholds. Localized particulate matter emissions from the combined sites would remain below the LST values that apply to a singular 1-acre construction site within SRA 6.

Upon completion of construction activities, vehicle and equipment sources involved with the proposed project would no longer be active and producing emissions. The construction workforce would comprise LADWP crews and contractors assembled from the local area and is not anticipated to introduce new permanent job growth to the region. Construction of the proposed project would have no impact related to the second AQMP consistency criterion related to assumptions incorporated into the regional growth forecasts for population, housing, and employment within the City of Los Angeles.

In summary, construction of the proposed project would not conflict with or obstruct implementation of the AQMP. Impacts would be less than significant.

Operation

Operational activities associated with the proposed project would be minimal, and no new permanent sources of air pollutant emissions would be introduced to the project area. The majority of proposed TTLR alignment and distribution lines would be underground, with the exception of the flow recorder that would be installed in an aboveground cabinet the public road ROW. Implementation of the proposed project would not expand the LADWP workforce. The occasional vehicle trips to the project site would produce negligible emissions of air pollutants at the regional level. Operation of the proposed project would not have any potential to exacerbate the frequency or severity of air quality violations. The impact related to air quality emissions would be less than significant.

The second consistency criterion requires that the proposed project not exceed the assumptions in the AQMP, thereby rendering the regional emissions inventory inaccurate. Implementation of the proposed project would not introduce new population, housing, and employment projections for the region and there would be no potential to result in growth that would exceed the projections incorporated into the AQMP or the RTP/SCS. The proposed project would not interfere with air pollution control measures listed in the 2022 AQMP and would not conflict with the goals of the City of Los Angeles General Plan Air Quality Element.

In summary, operation of the proposed project would not conflict with or obstruct implementation of the AQMP. This impact would be less than significant.

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Less Than Significant Impact. The SCAB is currently designated nonattainment for ozone (O_3), PM_{10}, and $PM_{2.5}$ under the state standards and nonattainment for O_3 and $PM_{2.5}$ under the federal standards. Therefore, a project may result in a cumulatively considerable air quality impact under this criterion if daily emissions of O_3 precursors (VOC and NO_x) or particulate matter (PM_{10} and $PM_{2.5}$) exceed applicable air quality thresholds of significance established by the SCAQMD. The SCAQMD designed the regional mass daily thresholds and LST values to prevent projects from exceeding the ambient air quality standards and potentially resulting in air quality violations that could obstruct or delay implementation of the AQMP. The SCAQMD suggests that if any quantitative air quality significance threshold is exceeded by an individual project during construction activities or operation, that project is considered cumulatively considerable and would be required to implement effective and feasible mitigation measures to reduce air quality impacts.

Conversely, the SCAQMD has determined that if an individual project would not exceed the regional mass daily thresholds or LST values, then it is generally not considered cumulatively significant. This method of impact determination allows for the screening of individual projects that would not represent substantial new sources of emissions in the SCAB; it also serves to exclude smaller projects from the responsibility of identifying potentially concurrent new or proposed construction and operation emissions nearby because the incremental contribution to regional emissions is minor.

Construction

As shown above in Table 1 through Table 4, construction of the proposed project would not generate emissions in excess of any of the applicable regional or localized thresholds established by the SCAQMD. All construction activities would be conducted in accordance with the BMP AQ-1 pursuant to SCAQMD Rule 403 to minimize fugitive dust emissions. Emissions produced during construction activities associated with the proposed project would not be cumulatively considerable. This impact would be less than significant.

Operation

Following the completion of construction activities, a majority of the proposed TTLR alignment and distribution lines would be underground, with the exception of the flow recorder which would be installed in an aboveground cabinet within the public road ROW. All proposed project facilities would not generate emissions of air pollutants. Implementation of the proposed project would not introduce any land use developments or LADWP facilities that would generate new vehicle trips or install new stationary sources of emissions. Therefore, the proposed project would not generate cumulatively considerable emissions of O_3 precursors or particulate matter. This impact would be less than significant.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact.

Construction

The SCAQMD devised its LST values to prevent the occurrence of localized hot spots of criteria pollutant concentrations at sensitive receptor locations surrounding the project site. The LST values were determined using emissions modeling based on ambient air quality measured throughout the SCAB. If maximum daily emissions remain below the LST values during construction activities, it is highly unlikely that air pollutant concentrations in ambient air would reach substantial levels sufficient to create public health concerns for sensitive receptors. As shown in Table 1 through Table 4, maximum daily emissions of criteria pollutants and O_3 precursors from sources located on the project site would not exceed any applicable LST values. Additionally, the use of construction equipment in any particular location would be intermittent and temporary, such that nearby residential, educational, and medical sensitive receptors would not be exposed to recurring high levels of emitted pollutants.

Regarding emissions of toxic air contaminants (TACs), carcinogenic risks, and non-carcinogenic hazards, off-road equipment exhaust would contain diesel particulate matter, which is the most prevalent air toxic in the greater Los Angeles region. However, each individual piece of equipment would only be in operation for a portion of the workday. Carcinogenic risks are typically assessed on timescales of several years to multiple decades, as the risk accumulates over extended periods of exposure. Given that construction activities would only be occurring during the daytime when the atmospheric inversion layer is at its highest and the greatest amount of pollutant dispersion occurs, there is little potential for TAC concentrations to reach levels that would be hazardous for nearby sensitive receptors. Therefore, construction of the proposed project would not result in exposure of sensitive receptors to substantial concentrations of air pollution. This impact would be less than significant.

Operation

Following the completion of construction activities, operation of the proposed project would not involve any active sources of air pollutant emissions. There would be no potential for sensitive receptors located along the proposed project corridor to be exposed to substantial pollutant concentrations resulting from sources associated with the proposed project. Therefore, operation of the proposed project would not expose sensitive receptors to substantial pollutant concentrations. No impact would occur.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less Than Significant Impact.

Construction

Odors are the only potential construction emissions other than the sources addressed above. Potential sources that may produce objectionable odors during construction activities include equipment exhaust, application of asphalt and architectural coatings, and other finishes. Odors from these sources would be localized and generally confined to the immediate area surrounding the project site and would be temporary in nature and would not persist beyond the termination of construction activities. In addition, as construction-related emissions dissipate away from the construction area, the odors associated with these emissions would also decrease and would be quickly diluted. With implementation of BMP AQ-1, LADWP will ensure that activities comply with SCAQMD Rules 402 (Nuisance) and 401 (Visible Emissions) to prevent the occurrence of public nuisances and visible dust plumes traveling off-site. Therefore, construction of the proposed project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. This impact would be less than significant.

Operations

Given the nature and location of the proposed project facilities, operation of the project has no potential to generate new, adverse odors. Therefore, operation of the proposed project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. No impact would occur.

IV. BIOLOGICAL RESOURCES

Potential impacts to biological resources associated with the proposed project were determined from the results presented in the Biological Resources Technical Memorandum prepared by AECOM for the proposed project, which is included as Appendix B to this IS/MND.

A search of relevant regional databases for special-status biological resources in the vicinity of the project area was conducted prior to conducting a field survey. The proposed project runs east-west along Victory Boulevard and occurs entirely within the southeast portion of the U.S. Geological Survey's (USGS) Canoga Park 7.5-minute quadrangle. A search of this quadrangle and the surrounding eight quadrangles (Simi, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills) was conducted using the CDFW's California Natural Diversity Database (CNDDB) and the California Native Plant Society's (CNPS) on-line Inventory of Rare and Endangered Plants of California. Additionally, the USFWS online Information for Planning and Consultation (IPaC) database was queried for special-status species, sensitive natural communities, and protected areas known from the project vicinity.

The Biological Survey Area (BSA) evaluated included the project alignment, which would be entirely within existing paved areas (i.e., roadways and a parking lot), plus a 500-foot survey buffer around the alignment. A buffer around the project alignment was evaluated to capture potential indirect effects to biological resources from implementation of the proposed project. Indirect effects could include elevated noise and dust levels, soil compaction, and increased human activity within the BSA. A field survey of the study area was conducted on April 11, 2022, to document existing biological resources that occur or have the potential to occur within and adjacent to the BSA, and to evaluate the potential for special-status plant and wildlife species to occur within the BSA. The entire BSA for the proposed project is urbanized, primarily by residential development, with some areas of commercial development. Open spaces, parks, or similar areas occur within the BSA on the western portion of the project alignment within Pierce College.

Would the project:

a) **Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

Less Than Significant Impact. A significant impact could occur if the proposed project removed or modified the habitat for, or otherwise directly or indirectly affected, any species identified or designated as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulation, or by CDFW or USFWS.

Special-Status Plants

Special-status plant species include those listed as endangered, threatened, or rare or those species proposed for listing by USFWS under the federal Endangered Species Act (FESA), those listed by CDFW under the California Endangered

Species Act (CESA), or those listed by the CNPS.[11,12,13] The CNPS inventory is sanctioned by CDFW and essentially serves as the list of candidate plant species for state listing. CNPS's California Rare Plant Rank (CRPR) 1B and 2 species are considered eligible for state listing as endangered or threatened.

A total of 59 sensitive plant species were identified from the CNDDB[14] and CNPS[15] database searches to have historically been recorded from the Canoga Park and surrounding eight quadrangles (a land area of nearly 100 square miles), and from a search of IPaC[6] for the Project vicinity, including 17 federal and/or state-listed species. However, no naturally occurring special-status plant species were observed in the BSA during the field survey, and no records of special-status plant species coincide with the BSA. In addition, no USFWS-designated Critical Habitat for any special-status plant species coincides with the BSA.

Vegetation within the open spaces and the BSA consists primarily of plantings of non-native ornamental trees and shrubs and areas of lawn associated with residential landscapes. The project alignment is transected by Caballero Creek near Lindley Avenue, flowing north to south within a concrete channel under Oxnard Street. The elevation along the project alignment ranges from approximately 792 feet above mean sea level (amsl) at De Soto Avenue to 727 feet amsl near White Oak Avenue. No native plant communities occur within or adjacent to the BSA. Non-native ornamental species and occasional native species common to residential and commercial properties within the City occur within the BSA.

Construction

No federal or state-listed plant species were identified during the field survey, and special-status plants are not expected to occur in the BSA due to a lack of potentially suitable habitat. As a result, direct impacts to special-status plants are not anticipated.

Indirect impacts to special-status plant species occurring outside of the project site could result from construction-related habitat loss and modification of sensitive natural communities related to dust, noise, and stormwater runoff. If such impacts were to occur, they would be considered significant. However, suitable habitat for special-status plants is not present in the urbanized environment surrounding the project. As a result, indirect impacts to special-status plants are not anticipated.

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11 Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (Title 50 Code of Federal Regulations [CFR] 17.12 [listed plants], Title 50 CFR 17.11 [listed animals] and includes notices in the Federal Register for proposed species).

12 Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (Title 14 California Code of Regulations 670.5).

13 Plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code Section 1900 *et seq*.).

14 California Department of Fish and Wildlife. California Natural Diversity Database (CNDDB). Full condensed report for the Canoga Park, Santa Susana, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills quadrangles. Generated December 28, 2022.

15 California Native Plant Society, Rare Plant Program. 2022. Inventory of Rare and Endangered Plants (online edition, v9-01 0.0), available at: http://www.rareplants.cnps.org/. Accessed December 28, 2022.

Operation

Direct and indirect impacts to special-status plant species during operation of the proposed project are not anticipated. All project facilities' operational and maintenance activities would be conducted within existing paved areas (i.e., roadways and a parking lot) and would generally not change conditions from those present prior to project implementation. Additionally, the proposed TTLR alignment and distribution mainlines would be located underground within the public road ROW, with the exception of the flow recorder, which would be installed in an aboveground cabinet on Victory Boulevard (just east of De Soto Avenue) within the public road ROW.

Sensitive Wildlife Species

Special-status wildlife species include those listed by USFWS under FESA and by CDFW under CESA. USFWS and CDFW officially list species as either threatened, endangered, or as candidates for listing. Additional species receive federal protection under the Bald Eagle Protection Act (e.g., bald eagle, golden eagle) and the MBTA, and state protection under CEQA Section 15380(d).

All birds, except European starlings, English house sparrows, rock doves (pigeons), and non-migratory game birds such as quail, pheasant, and grouse are protected under the MBTA. However, non-migratory game birds are protected under CFGC Section 3503. Many other species are considered by CDFW to be California Species of Special Concern (SSC) and others are on a CDFW Watch List (WL). The CNDDB tracks species within California for which there is conservation concern, including many that are not formally listed, and assigns them a CNDDB Rank. [16] Although CDFW SSC and WL species and species that are tracked by the CNDDB but not formally listed are afforded no official legal status, they may receive special consideration during the environmental review process. CDFW further classifies some species as "Fully Protected" (FP), indicating that the species may not be taken or possessed except for scientific purposes, under special permit from CDFW. Additionally, CFGC Sections 3503, 3505, and 3800 prohibit the take, destruction, or possession of any bird, nest, or egg of any bird except English house sparrows and European starlings unless authorization is obtained from CDFW.

A total of 58 wildlife species were identified from the CNDDB[17] search of the Canoga Park and surrounding eight quadrangles and from a search of IPaC[18] for the project vicinity, including 19 federal and/or state-listed wildlife species. No CNDDB records of special-status wildlife species coincide within the BSA. In addition, no USFWS-designated Critical Habitat for any special-status wildlife species coincides with the BSA.

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[16] California Department of Fish and Wildlife. 2022. California Natural Diversity Database (CNDDB). Special Animals List. October.

[17] California Department of Fish and Wildlife. California Natural Diversity Database (CNDDB). Full condensed report for the Canoga Park, Santa Susana, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills quadrangles. Generated December 28, 2022.

[18] Information for Planning and Consultation. 2022. U.S. Fish and Wildlife Service. Available at: https://ecos.fws.gov/ipac/. Accessed December 28, 2022.

Construction

Elements of project construction could potentially result in the mortality of individual wildlife species, particularly those species with limited mobility. Additionally, short-term indirect effects on wildlife, primarily urban bird species (discussed further below), would occur due to noise disturbances caused by heavy equipment and increased human activity. Although not considered significant, direct impacts to common wildlife species are not anticipated because all work would occur within existing paved areas (i.e., roadways and a parking lot). In addition, impacts to common terrestrial wildlife would be avoided or minimized by implementing and adhering to standard construction measures related to fugitive dust, erosion control, and noise. As a result, significant impacts to wildlife are not anticipated.

Ornamental trees in the BSA provide potentially suitable nesting habitat for urban bird species. As a result, birds protected by the MBTA and by CFGC have the potential to nest in the BSA. If vegetation is removed during project implementation, a nesting bird survey to identify nests would be required to prevent direct impacts to nesting birds or their associated habitat. Additionally, indirect impacts to nesting birds within the BSA could occur during construction as a result of noise, dust, and increased human presence from construction activities. Such disturbances could result in increased nestling mortality due to nest abandonment or decreased feeding frequency. Such indirect impacts would be considered significant. However, by implementing standard construction measures related to fugitive dust, erosion control, and noise, and by adhering to the MBTA BMPs BIO-1 through BIO-4 (as discussed in Section 1.9 of this IS/MND), related to pre-construction surveys and providing qualified biological monitors as necessary, indirect impacts to nesting birds protected under the MBTA and by CFGC would be reduced to less than significant level.

Operation

Direct and indirect impacts to special-status wildlife species during operation of the proposed project are not anticipated. As mentioned above, all project facilities' operational and maintenance activities would be conducted within existing paved areas (i.e., roadways and a parking lot) and would generally not change conditions from those present prior to project implementation.

Summary

In summary, as described above, the proposed project would not result in a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by CDFW or USFWS. This impact would be less than significant.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

No Impact. Sensitive natural communities are those designated as rare in the region by the CNDDB, support special-status plant or wildlife species, or receive regulatory protection (i.e., Section 404 of the Clean Water Act and/or Sections 1600 et seq. of the CFGC).

Based on a review of the CNDDB,[19] within the Canoga Park and surrounding eight quadrangles: California Walnut Woodland, Riversidean Alluvial Fan Sage Scrub, 13 sensitive vegetative communities have been recorded: California Walnut Woodland, Riversidean Alluvial Fan Sage Scrub, Southern California Coastal Lagoon, Southern California Steelhead Stream, Southern Coast Live Oak Riparian Forest, Southern Coastal Salt Marsh, Southern Cottonwood Willow Riparian Forest, Southern Mixed Riparian Forest, Southern Riparian Scrub, Southern Sycamore Alder Riparian Woodland, Southern Willow Scrub, Valley Needlegrass Grassland, and Valley Oak Woodland. These communities are generally documented in the CNDDB over 2 miles to the north and northeast of the BSA.

No sensitive natural communities occur within the BSA. Vegetation consists primarily of non-native ornamental trees and shrubs that are common in urban environments. However, aquatic communities (i.e., wetlands or other waters) under regulatory jurisdiction of USACE, CDFW, and the Regional Water Quality Control Board (RWQCB) do coincide with the BSA, in the form of Caballero Creek, which occurs as a concrete-encased channel through the BSA. However, no work would occur in Caballero Creek. Therefore, the proposed project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by CDFW or USFWS. No impact would occur.

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No Impact. Wetlands are defined as areas that are inundated by surface or ground water with a frequency sufficient to support under normal circumstances a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands do not occur within the BSA. Therefore, the proposed project would not have a substantial adverse effect on state or federally protected wetlands. No impact would occur.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery/breeding sites?

No Impact. In an urban context, a wildlife migration corridor can be defined as a linear landscape feature of sufficient width and buffer to allow animal movement between two comparatively undisturbed habitat areas or between a habitat area and some vital resource that encourages population growth and diversity. Habitat fragments are isolated patches of habitat separated by otherwise foreign or inhospitable areas, such as urban tracts or highways. Two types of wildlife migration corridors seen in urban settings are regional corridors, defined as those linking two or more large areas of natural open space, and local corridors, defined as those

[19] California Department of Fish and Wildlife. 2022. California Natural Diversity Database (CNDDB). Full condensed report for the Canoga Park, Santa Susana, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills quadrangles. Generated April 19, 2022.

allowing resident wildlife to access critical resources (food, cover, and water) in a smaller area that might otherwise be isolated by urban development.

The proposed project is aligned through a completely urbanized area of the western San Fernando Valley and located within existing paved areas (i.e., roadways and a parking lot). The BSA does not occur within or intersect a recognized or established regional wildlife corridor; however, the proposed alignment intersects Caballero Creek. This channel may provide opportunities for localized wildlife movement within the urbanized western San Fernando Valley. Additionally, the channel extends north and connects to the Los Angeles River, potentially providing a corridor from the urbanized San Fernando Valley into greenfield/open space areas that may provide more suitable opportunities for wildlife. However, fencing along the channel restricts wildlife access and the concrete-encased nature of the channel provides little cover, resting, foraging, or nesting opportunities for wildlife, therefore limiting the channel's suitability to serve as a significant wildlife corridor.

Ornamental trees within and adjacent to the BSA provide some opportunities for cover, resting, foraging, and nesting to localized bird populations; however, they do not function as a significant wildlife movement corridor.

Construction

The BSA does not serve as a regional wildlife corridor and, as a result, direct impacts to a regional wildlife movement corridor would not occur. While Caballero Creek could provide opportunities for local wildlife movement, no work would occur in the channel. Project construction activities are not anticipated to impact the channel's potential to facilitate wildlife movement. Therefore, construction of the proposed project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery/breeding sites. No impact would occur.

Operation

Project operation activities would be conducted within existing paved areas and would be similar to those currently conducted. Therefore, operation of the proposed project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery/breeding sites. No impact would occur.

e) **Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (e.g., oak trees or California walnut woodlands)?**

Less Than Significant Impact. In response to the City's declining oak tree population, the City enacted an oak tree protection ordinance in 1982. To further slow the decline of native trees, the City amended the two LAMC sections pertaining to oak trees in April 2006 to include southern California black walnut (*Juglans californica*), western sycamore (*Platanus racemosa*), and California bay (*Umbellularia californica*) (LAMC Section 17.02). These trees must be 4 inches or greater in diameter at 4.5 feet above ground to be considered protected. The Board of Public Works must issue a permit before any alterations to protected trees are made that could cause them to be damaged, relocated, or removed. Pruning also requires a permit and must comply with the pruning standards set forth by the Western Chapter of the International Society of Arboriculture.

Western sycamore trees protected under the City of Los Angeles Native Tree Protection Ordinance were identified in the BSA, including adjacent to the project alignment, during the field survey. The proposed project could include removal of trees along portions of the project alignment, which could include western sycamores. A Tree Removal Permit in compliance with the City's Native Tree Protection Ordinance would be obtained by LADWP if any western sycamore tree removal is required by the proposed project. With compliance with the City's Native Tree Protection Ordinance, the proposed project would not conflict with any local policies or ordinances protecting biological resources. This impact would be less than significant.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. The proposed project is not within an adopted habitat conservation plan; natural community conservation plan; or other approved local, regional, or state habitat conservation plan area.[20] No impact would occur.

V. CULTURAL RESOURCES

Potential impacts related to cultural resources resulting from implementation of the proposed project were determined from the results presented in the Cultural Resources Technical Memorandum prepared by AECOM for the proposed project, which is included as Appendix C to this IS/MND.

Would the project:

a) Cause a substantial adverse change in the significance of a historical resource pursuant to California Code of Regulations Section 15064.5?

No Impact. Archival research for the proposed project was conducted in May and October 2022, which included a review of South Central Coastal Information Center (SCCIC) provided site records and report data, historical site and property inventories, and historical maps. Inventories of the National Register of Historic Places (NRHP or National Register), the California Register of Historical Resources (CRHR or California Register), the California State Built Environment Resource Directory (BERD), California Historical Landmarks and Points of Interest, Los Angeles Historic Resources Inventory, and the list of City of Los Angeles Historic-Cultural Monuments (LAHCMs) were also reviewed to identify cultural resources within the study area. Supplemental research in published and unpublished sources was also conducted to provide prehistoric and historic contexts for the project area. The research focused on the identification of previously recorded cultural resources

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20 Conservation Biology Institute, Data Basin for Habitat Conservation Plan and Natural Community Conservation Plan, available at: https://databasin.org/maps/new/#datasets=75a75b7fdd3e4a8c9d2c96037c0f9a98. Accessed April 2023.

and cultural resources reports within the study area, which comprises the project Area of Potential Effects (APE) and a 0.5-mile buffer.

The APE is the boundary of the road ROW for Victory Boulevard, Topham Street, and Oxnard Street between De Soto Avenue and Encino Avenue; Mason Avenue between Kittridge Street and Victory Boulevard; and Tampa Avenue between Victory Boulevard and Ventura Boulevard. The APE also includes the existing LADWP easement located at Metro's Pierce College Station parking lot and immediately north of the baseball fields at Winnetka Avenue and Victory Boulevard. The vertical APE is confined to the approximate maximum depths of excavation for the proposed project, which range from 1 to 35 feet below surface.

A resource is generally considered "historically significant" if the resource meets at least one of the four criteria for listing in the CRHR (PRC Section 5024.1[a]). The CRHR is used as a guide by state and local agencies, private groups, and citizens to identify the state historical resources and to include which properties are to be protected, to the extent prudent and feasible, from substantial adverse change. The CRHR evaluation criteria are similar to the NRHP criteria. For a property to be eligible for inclusion in the CRHR, it must meet one or more of the following criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of California history and cultural heritage;

2. It is associated with the lives of persons important in our past;

3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

4. It has yielded, or may be likely to yield, important information in prehistory or history.

The CRHR may also include various other types of historical resources that meet the criteria for eligibility, including the following:

1. Individual historic resources

2. Resources that contribute to a historic district

3. Resources identified as significant in historic resource surveys

4. Resources with a significance rating of Category 3 through Category 5 in the State Inventory (Categories 3 and 4 refer to potential eligibility for the NRHP; Category 5 indicates a property with local significance)

Although the NRHP standard includes the evaluation of resources that are 50 years old or older, the California Office of Historic Preservation endorses recording and evaluating resources over 45 years of age to accommodate the 5-year lag in the planning process.

Previously Recorded Cultural Resources

The SCCIC records search identified one previously recorded cultural resource mapped within the study area. This resource is a historic property built in the early 1960s as a gymnasium on the Pierce College Campus. It has been found to not appear eligible for listing in the National Register, California Register, or local listing. This resource is not within the project APE.

California State Historic Resources Inventory

Review of the BERD focused on properties adjacent to streets within the APE, specifically Victory Boulevard, Topham Street, and Oxnard Street between De Soto Avenue and Encino Avenue; Mason Avenue between Kittridge Street and Victory Boulevard; and Tampa Avenue between Victory Boulevard and Ventura Boulevard. A total of 225 properties are listed in the BERD adjacent to the APE. All identified BERD resources were determined ineligible for listing in the National Register and were not evaluated for the California Register or for Local Listing.

California Historical Landmarks

California Historical Landmarks are buildings, structures, sites, or places that have been determined to have statewide historical interest. A search of the California Historical Landmarks list revealed no California Historic Landmarks within 0.5 mile of the APE.

Los Angeles Historic-Cultural Monuments

LAHCMs are sites in Los Angeles that have been designated by the Los Angeles Cultural Heritage Commission as worthy of preservation based on their architectural, historic, and cultural merits. A search of the LAHCMs revealed two monuments within 0.5 mile of the project APE. Both are houses adjacent to one another approximately 800 feet southwest of the project APE (Table 5). No LAHCMs are located within the project APE.

Table 5. Los Angeles Historic-Cultural Monuments within 0.5 Mile of the Project APE

Monument No.	Name	Street Address	Adopted
976	Corbin Palms House	6118 North Jumilla Avenue	02/26/2010
1163	Corbin Palms Model H-3	6134 North Jumilla Avenue	06/20/2018

Los Angeles Historic Resources Inventory

The City of Los Angeles has conducted a comprehensive survey to identify significant historic resources under the SurveyLA program. The historic resources identified in the survey have been mapped on HistoricPlacesLA, an interactive map that depicts the Los Angeles historic resources inventory, including LAHCMs; Historic Preservation Overlay Zones (HPOZs); and resources identified as eligible for listing on local, state, or federal registers through the SurveyLA program. The data available in the HistoricPlacesLA inventory are updated as additional resources are identified and evaluated for areas not covered by SurveyLA. A search of resources in this database was limited to properties adjacent to streets within the project APE, including Victory Boulevard, Topham Street, and Oxnard Street between De Soto Avenue and Encino Avenue; Mason Avenue between Kittridge Street and Victory Boulevard; and Tampa Avenue between Victory Boulevard and Ventura Boulevard. One historic resource was identified on the Los Angeles Historic Resources Inventory. This is a residential, single-family property, located at 6241 North Corbin Avenue, at the cross street of Topham Street as a part of the Eastwood Estates/Fieldstone Series Historic District Contributor. This resource appears to be eligible as a contributor to an HPOZ through SurveyLA or other survey evaluation. This property is not within the APE.

Field Survey Results

During the field surveys conducted in April and December 2022, one historical resource meeting the age criterion of 45 years or more was identified–the Topham Trunk Line. The Topham Trunk Line consists of approximately 14,160 LF of the original 1917 alignment of 24-inch-diameter riveted-steel pipe beginning at De Soto Avenue and Victory Boulevard and terminating at Tampa Avenue and Ventura Boulevard. Expansions in 1936 and 1937 added 18,625 LF to the alignment. In 1936, 6,045 LF of 36-inch-diameter riveted-steel pipe was added (Unit 43) west of De Soto Street to Canoga Avenue. In 1937, the portion of Ventura Trunk Line connecting Topham Trunk Line to Encino Inlet Line was installed, consisting of approximately 11,210 LF of 24-inch-diameter welded-steel pipe and 1,370 LF of 24-inch-diameter ductile iron pipe. Some additions partially replaced previously constructed portions of the line. The present total length of the Topham Trunk Line is approximately 32,785 LF. The Topham Trunk Line was recorded and evaluated for NRHP and CRHR eligibility. Based on the results of the evaluation, the Topham Trunk Line retains only three aspects of integrity, including location, feeling, and association. Based on the parameters for eligibility established by Office of Historic Resources, an eligible resource must retain integrity of five of the seven aspects of integrity: design, materials, location, feeling, and association (SurveyLA 2017:31–32). The Topham Trunk Line does not retain integrity of design, materials, workmanship, or setting and no longer retains the integrity of an underground water system constructed in 1917. It is therefore recommended as ineligible for the NRHP and CRHR under all applicable criteria.

Summary

Based on the above assessment of historical resources in relation to the project APE, there would be no adverse change in the significance of a historical resource. No impact would occur.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to California Code of Regulations Section 15064.5?

Less Than Significant Impact. An archaeological field survey of the study area was conducted in April and December 2022, which involved a windshield survey along the project alignment with targeted examinations of apparently undisturbed areas (i.e., unpaved areas) adjacent to the project APE. The purpose of the survey was to identify and record cultural resources that are at least 45 years old and evaluate any discovered resources for historical significance based on criteria for listing in the CRHR.

No archaeological resources were identified within the APE during the field survey or the archival search. The project APE has no soil visibility because it is limited to the road ROW, which is covered in asphalt. Targeted inspections of exposed soil adjacent to the project APE were examined, and the soil was predominantly a light tan to yellow-brown, fine-grained silty sand. Modern plastic trash, broken glass, ceramic, and miscellaneous metal refuse were also observed in these areas, which also included streetlights, power poles, and other utility structures that have impacted most of the soil, occasionally evidenced by fill gravel in the soil.

Based on the results of the archival research and field survey, there is low potential that archaeological resources would be encountered during ground-disturbing activities for the proposed project construction. The site is within a heavily disturbed urban area, and the project alignment has been subject to extensive road and underground utility construction activity. The primary roadways in the project APE were initially developed in the early twentieth century and, by the mid-twentieth century, Victory Boulevard, Topham Street, Mason Avenue, Tampa Avenue, and Oxnard Street were well-developed transit routes lined with commercial and residential properties. In addition, numerous below-grade utilities have been installed throughout the entire APE. The process likely heavily impacted any prehistoric or early historic remains that may have existed in the project APE prior to road development. In addition, the results of the survey were negative. Based on this, there is low potential that archaeological resources will be encountered during ground-disturbing activities for the proposed project.

Although not expected to occur due to the low potential in the project APE, in the event of an inadvertent discovery of archaeological resources during construction activities, the proposed project would be subject to California PRC Section 21083.2(i) regarding provisions related to the accidental discovery of archaeological resources. Furthermore, the proposed project would implement BMP CUL-1, as discussed previously in Section 1.9 of this IS/MND, which would require all field supervisors and all construction workers to participate in training on cultural resources awareness prior to the initiation of project construction on project sites that involve ground-disturbing activities. The training would include a description of the types of cultural resources (including tribal cultural resources and human remains) that could inadvertently be encountered during ground-disturbing activities, the sensitivity of the resources, the legal basis for protection of the resources, and the penalties for unauthorized collection of or knowingly damaging the resources. The training would address the proper procedures in the event of an inadvertent discovery of a cultural resource, including the immediate halting of work in the area of the discovery, notification of appropriate individuals of the discovery, the establishment of appropriate protective buffer zones around the discovery, and the continued avoidance of the protected area until the resource has been evaluated by qualified individuals and an appropriate treatment plan has been developed and implemented. These procedures would be documented in a CRMP that establishes, in the event of inadvertent discovery of cultural resources, monitoring procedures (including potential Native American monitors), notification procedures, key staff, and preliminary treatment measures for potential discoveries. The CRMP would be written to ensure compliance with appropriate state and federal laws, including

California PRC Section 21083.2(i). With compliance with existing regulations, as well as implementation of BMP CUL-1, the impact related to inadvertent discovery of archaeological resources during construction activities would be less than significant.

c) Disturb any human remains, including those interred outside of formal cemeteries?

Less Than Significant Impact. There are no cemeteries or known burial grounds within the project vicinity. Based on the results of the archival research and field survey, there is low potential for such sites to be encountered during ground-disturbing activities. Additionally, soils throughout the project alignment have been substantially disturbed by previous subsurface construction activities, including road and utility construction. Although not expected to occur, in the event that human remains are discovered, the remains would be treated in accordance with all applicable regulations. In accordance with the provisions of the California Health and Safety Code Section 7050.5, in the event that human remains are discovered during project construction, no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains would occur, and the Los Angeles County Coroner would be notified. The coroner would provide recommendations concerning the treatment and disposition of the human remains within 2 working days. If the remains and/or related resources, such as funerary objects, are determined to be of Native American origin, the coroner would contact the Native American Heritage Commission within 24 hours. In accordance with California PRC Section 5097.98, the Native American Heritage Commission would immediately notify the person it believes to be most likely descended from the deceased Native American. The most likely descendent would be given access to the site where the remains were discovered and may make recommendations for the treatment and disposition of the remains and related resources, as well as provide input regarding the potential for other remains to be present. Work at the discovery site may commence only after consultation with the most likely descendent and treatment of the remains and any associated resources have been concluded. Work may continue on other parts of the project site while consultation and treatment are conducted. Compliance with these existing regulations as well as the implementation of the Cultural Resources Awareness Training BMP CUL-1, as outlined in Section 1.9 of this IS/MND, would ensure that the impact to human remains, including Native American remains, would be less than significant.

VI. ENERGY

Potential impacts related to energy resulting from implementation of the proposed project were determined from the results presented in the Energy Assessment prepared by TAHA for the proposed project, which is included in Appendix E of this IS/MND.

Would the project:

a) **Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?**

Less Than Significant Impact. The following analysis discusses short-term (construction) and long-term (operational) use of electricity, natural gas, and petroleum related to the proposed project.

Electricity

Construction

Construction of the proposed project would require electricity for operation of electrically powered hand tools. However, electricity for construction activities would be provided by diesel generators. Electricity would be generated by on-site use of petroleum products. Therefore, construction of the proposed project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of electricity. This impact would be less than significant.

Operation

Operation of the proposed project would not interfere with the existing electricity service infrastructure, nor would it impede LADWP efforts to expand its renewable resources. Therefore, operation of the proposed project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of electricity. This impact would be less than significant.

Natural Gas

Construction

Construction activities typically do not require the consumption of natural gas to power equipment or heavy machinery. Natural gas consumed during construction would be negligible and would not result in a significant drain on natural gas resources. Therefore, construction of the proposed project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of natural gas. This impact would be less than significant.

Operation

Future operation of the proposed project would not use natural gas. Therefore, operation of the proposed project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of natural gas. No impact would occur.

Petroleum

Construction

Petroleum fuels would be consumed during construction activities by heavy-duty equipment, which is usually diesel powered, as well as on-road vehicles used by the construction crews, vendor deliveries, and haul trucks. Table 6 shows that a one-time expenditure of approximately 418,390 gallons of diesel fuel and 139,118 gallons of gasoline would be needed to construct the proposed project. Averaged over the 7-year construction timeline, equipment and vehicles employed to construct the proposed project would consume approximately 59,770 gallons of diesel fuel and 19,874 gallons of gasoline per year. The proposed project would use best practices to eliminate the potential for the wasteful consumption of petroleum. Exported materials (e.g., demolition debris and soil hauling) would be disposed of at the closest facility able to accept such materials, and the proposed project would be required to comply with the California Air Resources Board's (CARB) Airborne Toxics Control Measure, which restricts heavy-duty diesel vehicle idling time to 5 minutes. Therefore, because petroleum use would be minimized to the extent feasible and represents a relatively low level of fuel consumption, construction of the proposed project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of petroleum. This impact would be less than significant.

Table 6: Construction Petroleum Demand

Fuel Type/End Use	Gallons
Diesel	
Off-Road Equipment	326,539
Vendor Delivery Trips	18,159
Disposal Hauling Trips	73,692
Total Diesel Consumption	**418,390**
Annual Average Consumption (gallons/year)	***59,770***
Gasoline	
Construction Crew Trips	139,118
Total Gasoline Consumption	**139,118**
Annual Average Consumption (gallons/year)	***19,874***

Source: TAHA, 2023.

Operation

Activities associated with long-term operations and maintenance would be minimal, limited to scheduled maintenance or emergency repair. No additional permanent LADWP workforce would be required to operate the TTLR Project. Periodic maintenance would require a small amount of transportation fuel for site inspections. Furthermore, by replacing the existing trunk line, the TTLR Project would reduce the necessary frequency of maintenance and servicing trips to the trunk line compared to existing maintenance requirements. Therefore, operation of the proposed project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of petroleum. This impact would be less than significant.

Summary

As described above, the proposed project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation. This impact would be less than significant.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact. The proposed project would not conflict with renewable energy or energy efficiency plans. The City of Los Angeles has implemented L.A.'s Green New Deal, which is the City's renewable energy plan. One of the goals of L.A.'s Green New Deal is to reduce potable water use per capita by 22.5 percent by 2025 and 25 percent by 2035 and maintain or reduce 2035 per capita water use through 2050.[21] The proposed project would replace the aging and deteriorating existing Topham Trunk Line to provide greater operational flexibility for potable water flow, thereby reducing potential for potable water waste or leaks due to the deteriorating existing infrastructure. While the proposed project would use transportation fuel, electricity, or natural gas, best practices would be implemented during construction to eliminate the potential for the wasteful consumption of energy (e.g., compliance with CARB's Airborne Toxics Control Measure, which restricts heavy-duty diesel vehicle idling time to 5 minutes). Therefore, the proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. No impact would occur.

VII. GEOLOGY AND SOILS

Would the project:

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to California Geological Survey Special Publication 42.

Less Than Significant Impact. There are numerous earthquake faults in the project vicinity, but the project site does not cross an Alquist-Priolo Earthquake Fault Zone or other known fault zone.[22,23] The proposed project does not include the construction of any habitable structures, nor would the use of the project site change following the proposed project. The proposed TTLR, distribution mainlines, and all appurtenances would be constructed in accordance with the latest version of the City of Los Angeles Building Code and other applicable

21 City of Los Angeles, 2019, L.A.'s Green New Deal, available at: https://plan.lamayor.org/sites/default/files/pLAn_2019_final.pdf. Accessed April 2023.

22 California Department of Conservation, CGS Earthquake Hazard Zones: Fault Traces Map, available at: https://www.arcgis.com/home/webmap/viewer.html?featurecollection=https%3A%2F%2Fgis.conservation.ca.gov%2Fserver%2Frest%2Fservices%2FCGS_Earthquake_Hazard_Zones%2FSHP_Fault_Traces%2FMapServer%3Ff%3Djson%26option%3Dfootprints&supportsProjection=true&supportsJSONP=true. Accessed April 2023.

23 United States Geologic Survey, Quaternary Fault and Fold Database of the United States, Interactive Map, available at: https://doi.org/10.5066/F7S75FJM. Accessed April 2023.

federal, state, and local codes associated with seismic criteria, including, but not limited to, appropriate pipe joint design and adequate excavation shoring during construction. This includes the use of ERDIP to increase the resilience of the distribution mainlines. Therefore, the proposed project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault. This impact would be less than significant.

ii) Strong seismic ground shaking?

Less Than Significant Impact. The project site is located within the seismically active Southern California region and, like all locations within the area, is subject to strong seismic ground shaking. However, as discussed above, the proposed project would be constructed in accordance with applicable federal, state, and local codes associated with seismic criteria. This includes the use of ERDIP to increase the resilience of the distribution mainlines. Therefore, the proposed project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. This impact would be less than significant.

iii) Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. The project site is within a City-designated liquefaction area.[24] However, as discussed above, the proposed project would be designed and constructed in compliance with applicable federal, state, and local codes to minimize impacts related to seismic ground failure. This includes the use of ERDIP to increase the resilience of the distribution mainlines. Therefore, the proposed project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction. This impact would be less than significant.

iv) Landslides?

No Impact. There is a landslide zone at 6035 Calvin Avenue, which is located approximately 400 feet south of the project alignment along Topham Street.[25] However, the proposed TTLR alignment and distribution mainlines are within existing paved areas (e.g., roadways and parking lot) and does not traverse the landslide area. No portion of the proposed project is within or directly adjacent to designated landslide or hillside areas.[26] Therefore, the proposed project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. No impact would occur.

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[24] County of Los Angeles, 2020, Liquefaction Zones Map, available at: https://geohub.lacity.org/datasets/lacounty::liquefaction-zones. Accessed April 2023.

[25] California Department of Conservation, 2023, Earthquake Zones of Required Investigation, available at: https://maps.conservation.ca.gov/cgs/EQZApp/. Accessed April 2023.

[26] County of Los Angeles, 2021, Landslides Zones Map, available at: https://geohub.lacity.org/datasets/37fc7990a4bf42efb1f6d3482c43852b_/explore?location=34.213827%2C-118.341005%2C10.34 Accessed April 2023.

b) Result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact. The proposed project would be within existing paved areas (e.g., roadways and parking lot). Construction activities would include trenching and excavation activities. The soil removed during excavation would not be stockpiled on-site but immediately loaded onto trucks and hauled to a local landfill for proper disposal. Because soil exposed through excavation would be entirely contained within the trenches, which would be properly shored to retain the trench walls, substantial erosion or loss of topsoil would not occur. This impact would be less than significant.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Less Than Significant Impact. As discussed above, there would be no impact related to landslides. In addition, as discussed above, impacts related to liquefaction would be less than significant. This would include lateral spreading, which is a type of liquefaction-induced ground failure on mildly sloping ground.

Subsidence is the lowering of surface elevation due to changes occurring underground, such as the extraction of large amounts of groundwater. The project site is not located in an area of recorded subsidence.[27] The proposed project would include construction methods to control the amount of groundwater dewatering. Interlocking steel sheet piles would be used as shoring material to help control the intrusion of groundwater (which may be present at the depths of the shafts in various locations within the project work zones given the historical highest groundwater depths range from about 10 to 20 feet below ground surface within the project area[28]), thereby minimizing the requirement for dewatering. In addition, a closed-face slurry shield MTBM would be employed, which would permit microtunneling where groundwater may be encountered and limits groundwater intrusion into the launching and receiving shafts, minimizing the need for dewatering. Furthermore, a site specific geologic and geotechnical investigation would be prepared for the proposed project that will address the potential for subsidence and provide design requirements that the proposed project would implement.[29] As such, impacts related to subsidence would be less than significant.

Collapsible soils consist of unconsolidated, low-density, loose, dry materials that may collapse and compact under the addition of excessive water or loading. Collapsible soils generally occur within the top 10 to 15 feet of wind-deposited sands or silts, alluvial fans, colluvial soils, stream banks, or residual mudflow soils.[30] These types of soils are not expected to be encountered within the project site. Pipeline

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[27] USGS, 2022, Areas of Land Subsidence in California, available at: https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html. Accessed April 2023.

[28] LADWP, 2017, Preliminary Geological and Geotechnical Assessment of the Proposed Topham Trunk Line Project (23127).

[29] *Ibid.*

[30] County of Los Angeles, Department of Public Works, 2017, Policy on Foundations on Collapsible Soils, available at: https://dpw.lacounty.gov/bsd/lib/fp/Building/Residential%20Code%20Manuals/2017/RCM%20R401.4%20A3%20-%20Foundation%20on%20Collapsible%20Soils.pdf. Accessed April 2023.

trenches would be backfilled with higher-density soil-cement slurry, which is not subject to collapse. As such, this impact would be less than significant.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Less Than Significant Impact. Expansive soils are clay-based soils that tend to expand (increase in volume) as they absorb water and contract (lessen in volume) as water is removed. The project site is underlain by a variety of soils, including loam, clay loam, sandy loam, fine sandy loam, and gravelly sandy loam.[31,32] Though areas of the project site would be underlain by clay-based soils, the pipeline trenches would be backfilled with higher-density soil-cement slurry, which is not subject to expansion or contraction. As such, this impact would be less than significant.

e) Have soils incapable of adequately supporting use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. The proposed project would not include septic tanks or other alternative wastewater disposal systems. No impact would occur.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant Impact. Geologic maps indicate that the project site lies within an area mapped as having surficial deposits of Quaternary alluvium and older young alluvial fan deposits. No known fossil specimens have been identified in the project alignment. However, fossilized remains have been encountered in similar older quaternary alluvial deposits nearby. Soils at relatively shallow depths can reasonably be assumed to have been disturbed in the recent past by the construction and maintenance of roads and utilities, as well as by natural weathering. Shallow excavations in the project APE, those less than 5 feet in depth, are unlikely to yield intact fossils. Deeper excavations within the project APE, which may extend as far as 40 feet below surface, have low to moderate potential to encounter fossil deposits.

While it is not anticipated that paleontological resources would be encountered during project construction, the proposed project would implement BMP GEO-1, as outlined in Section 1.9 of this IS/MND, which indicates that in the event previously unknown paleontological resources are encountered, the construction manager would halt construction activities in the immediate area in accordance with CEQA Guidelines Section 15064.5(f). LADWP would retain a qualified paleontologist to make an immediate evaluation of the significance and appropriate treatment of the resource. Construction activities may continue on other parts of the construction site while evaluation and treatment of paleontological resources take place, if necessary.

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31 County of Los Angeles, 2022, Open Data, LA County Soil Types, available at: https://data.lacounty.gov/Shape-Files/LA-County-Soil-Types. Accessed April 2023.

32 County of Los Angeles Department of Public Works, 2006, Hydrology Manual, Appendix C Soil Type and Runoff Coefficient Data, available at: http://dpw.lacounty.gov/wrd/Publication/engineering/2006_Hydrology_Manual/Appendix-C.pdf. Accessed April 2023.

Implementation of BMP GEO-1 would ensure that the impact to paleontological resources would be less than significant.

VIII. GREENHOUSE GAS EMISSIONS

Potential impacts related to greenhouse gas (GHG) emissions associated with the proposed project were determined from the results presented in the Greenhouse Gas (GHG) Emissions Impacts Assessment prepared by TAHA for the proposed project, which is included as Appendix D of this IS/MND.

Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less Than Significant Impact. The proposed project would generate GHG emissions exclusively from construction activities. In relation to existing operations, operation of the proposed project following the completion of construction would not introduce any new permanent sources of GHG emissions to the project area. The installation of new infrastructure components could ultimately reduce the necessary frequency of maintenance and service visits to proposed project components in the long run.

Table 7 presents the estimated GHG emissions that would be generated by construction of the proposed project over the 7-year schedule and displays average annual emissions. Emissions modeling estimated that construction of the proposed project would produce approximately 5,295.7 metric tons of carbon dioxide equivalents ($MTCO_2e$) in total over the 7-year implementation timeline, which equates to approximately 756.8 $MTCO_2e$ annually on average. The annual average GHG emissions would be substantially below the lowest SCAQMD recommended screening threshold, and emissions would not persist beyond the completion of construction activities. Therefore, the proposed project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. This impact would be less than significant.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less Than Significant Impact. Operation of the proposed project would not introduce any permanent, long-term sources of GHG emissions. As previously discussed, the replacement of the existing trunk line would reduce the frequency of necessary maintenance and servicing trips. The proposed project would be consistent with applicable GHG emissions reduction plans, including CARB's 2022 Scoping Plan for Achieving Carbon Neutrality and SCAG's Connect SoCal 2020–2045 RTP/SCS as well as Los Angeles Mayor Eric Garcetti's 2017 Green New Deal, which, among other initiatives, includes goals to provide a reliable and efficient water distribution system.

Table 7: Proposed Project Construction Activities Greenhouse Gas Emissions

Component/Source	Greenhouse Gas Emissions ($MTCO_2e$)
Distribution Mainlines Open-Trench Construction (Q3 2023–Q2 2025)	
Off-Road Equipment	563.0
Disposal Hauling Trucks	306.0
Material Delivery Trucks	45.6
Construction Crew Vehicles	145.6
Subtotal	***1,060.2***
TTLR Open-Trench Construction (Q3 2025–Q3 2030)	
Off-Road Equipment	1,461.0
Disposal Hauling Trucks	403.0
Material Delivery Trucks	84.5
Construction Crew Vehicles	630.1
Subtotal	***2,578.7***
TTLR Microtunneling Construction (Q3 2025–Q3 2030)	
Off-Road Equipment	1,058.0
Disposal Hauling Trucks	80.0
Material Delivery Trucks	63.4
Construction Crew Vehicles	455.3
Subtotal	***1,656.8***
Total	**5,295.7**
Annual Average Rate ($MTCO_2e$/year)	***756.8***
Lowest Recommended SCAQMD Threshold ($MTCO_2e$/year)	1,400

Source: TAHA, 2023.

The proposed project's GHG emissions related to construction would be well below the SCAQMD recommended screening threshold for small CEQA projects. GHG emissions are regionally cumulative in nature, and it is highly unlikely construction of any individual project would generate GHG emissions of sufficient quantity to conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Standard construction procedures would be undertaken in accordance with SCAQMD and CARB regulations applicable to heavy duty construction equipment and diesel haul trucks. Adhering to requirements pertinent to construction equipment maintenance and inspections and emissions standards, as well as diesel fleet requirements, including idling time restrictions, would ensure that construction of the proposed project would not conflict with GHG emissions reductions efforts.

Therefore, the proposed project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs. This impact would be less than significant.

IX. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less Than Significant Impact. Construction of the proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Construction activities would include the use of hazardous materials typical of construction (i.e., fuel and lubricants for construction equipment). These materials are not considered acutely hazardous. All handling, storage, and disposal of these materials are regulated by the California Department of Toxic Substances Control, U.S. Environmental Protection Agency, and the LAFD. Construction of the proposed project would also involve the excavation and transport of paving materials (e.g., asphalt, concrete, roadbed fill materials (that could possibly be contaminated by vehicle-related pollution [e.g., oil, gasoline, diesel, other automotive chemicals]). The transport and disposal of construction-related hazardous materials would comply with applicable health and safety laws and regulations. Operation of the proposed project would not require the routine transport, use, or disposal of hazardous materials as the proposed project would carry drinking water. With adherence to applicable regulations, the proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. This impact would be less than significant.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less Than Significant Impact. Construction activities for the proposed project would involve the limited transport, storage, and use of hazardous materials, such as fuel for construction equipment. These types of materials, however, are not acutely hazardous, and all storage, handling, and disposal of these materials would comply with existing regulations. The operation of the proposed project would not involve the use of hazardous materials. Compliance with regulations would ensure the proposed project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. This impact would be less than significant.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school?

Less Than Significant Impact. Portions of the proposed project are within one-quarter mile of schools. Specifically, there are two schools located adjacent to the project alignment – Pierce College, located adjacent to the project alignment along Victory Boulevard at 6201 Winnetka Avenue; and Woodcrest Preschool, located adjacent to the project alignment along Tampa Avenue at 6043 Tampa Avenue.[33] However, as discussed above, construction of the proposed project would involve

[33] Google Earth Pro, 2023.

the limited use of hazardous materials, such as fuel and lubricants, which are not considered acutely hazardous, and would not emit hazardous emissions. These materials would be handled in accordance with applicable federal, state, and local regulations regarding storage, use, and disposal. Compliance with existing regulations would ensure that the proposed project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school. This impact would be less than significant.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Less Than Significant Impact. There are no hazardous waste and substances sites (Cortese) listed within or near the project site; however, several Leaking Underground Storage Tank (LUST) cleanup sites are located in the vicinity of the proposed project. The Former Bodycote Thermal Processing West Inc Site at 18600 Oxnard Street is adjacent to the project alignment and undergoing an active cleanup.[34,35] The proposed project at this location would be within public roadway ROW and would not encroach onto the active cleanup site. Therefore, the proposed project would not be located on a hazardous materials site and would not result in a hazard to the public or the environment. This impact would be less than significant.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

No Impact. As discussed in the Noise and Vibration Assessment prepared by TAHA for the proposed project (see Appendix F of this IS/MND), the proposed project is located within two miles of Van Nuys Airport to the east. However, according to the Los Angeles County Airport Land Use Commission, the project area is not within the Airport Influence Area.[36] Furthermore, the proposed project would be mostly underground once completed with the exception of the flow recorder that would be installed in a 72-inch tall aboveground cabinet on Victory Boulevard (just east of De Soto Avenue) within the public road ROW. As such, the proposed project would not result in a safety hazard or excessive noise for people residing or working in the project area. No impact would occur.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. The proposed project would require temporary lane closures during construction activities. Based on the width of the work zone, some

[34] California Department of Toxic Substances Control. EnviroStor – Hazardous Waste and Substances List (Cortese), available at: https://www.envirostor.dtsc.ca.gov/public/search?cmd=search&reporttype=CORTESE&site_type=CSITES,FUDS&status=ACT,BKLG,COM&reporttitle=HAZARDOUS+WASTE+AND+SUBSTANCES+SITE+LIST+%28CORTESE%29. Accessed April 2023.

[35] California Department of Toxic Substances Control, EnviroStor interactive map of LUST cleanup sites, available at: https://www.envirostor.dtsc.ca.gov/public/map/?global_id=38330005. Accessed April 2023.

[36] TAHA, 2023, Los Angeles Department of Water and Power (LADWP) Topham Trunk Line Replacement Project – Noise and Vibration Assessment. See Appendix F of this IS/MND.

street segments along the proposed project alignment may allow only one traffic lane in each direction. The following street segments may require full closure with local access only, due to the narrow curb to curb dimensions:

- Topham Street, between Victory Boulevard and Cahill Avenue
- Oxnard Street, between Cahill Avenue and Wilbur Avenue
- Oxnard Street, between Lindley Avenue and Encino Avenue

As such, construction could potentially hinder emergency access along the pipeline alignments. The primary disaster route in the project vicinity is Ventura Freeway (State Route 134), and the secondary disaster routes are Victory Boulevard and Tampa Avenue. The temporary lane closures could have an effect on designated disaster routes. However, per implementation of BMP TRA-2 discussed in Section 1.9, LADWP would coordinate with emergency responders, including the LAFD and LAPD, regarding construction schedule and traffic control plans to coordinate emergency response routing during construction work. Coordination with emergency response agencies would ensure the construction of the proposed project would not result in inadequate emergency access. This impact would be less than significant.

During project operation, roadways would be returned to pre-construction configuration, and emergency access would not be restricted. No impact would occur.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

No Impact. The proposed project would be located within existing paved areas (e.g., roadways and parking lot) within fully urbanized areas of the City of Los Angeles and is not located within a local or state-designated Very High Fire Hazard Severity Zone (VHFHSZ).[37,38]As such, the proposed project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. No impact would occur.

X. HYDROLOGY AND WATER QUALITY

Would the project:

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less Than Significant Impact. The proposed project would require earthwork, including trenching, microtunneling and other excavation for installation of the trunk line, distribution mainlines, and associated appurtenant facilities, which may temporarily increase the potential for soil erosion. Construction activities would result in the disturbance of more than 1 acre of soil and would be required to obtain a Construction General Permit, issued by the State Water Resources Control Board. In addition, with implementation of BMP WQ-1 and BMP WQ-2 as outlined in Section 1.9 of this IS/MND, a project-specific SWPPP would be developed and implemented to control pollutants in stormwater discharges during construction activities in

[37] ZIMAS, available at: http://zimas.lacity.org/. Accessed January 2022.
[38] State of California and the Department of Forestry and Fire Protection (CAL FIRE), Very High Fire Hazard Severity Zone Map, available at: https://osfm.fire.ca.gov/media/5830/los_angeles.pdf. Accessed January 2022.

accordance with the Construction General Permit requirements. The SWPPP would identify structural and nonstructural measures, such as erosion and sediment control, general housekeeping practices, and inspection for leaks and spills from construction vehicles and equipment that would be implemented during construction of the proposed project. During post-construction operation, the proposed project facilities would carry drinking water and would not have the potential to violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality. Adherence to existing requirements and implementation of the SWPPP would ensure that the proposed project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality. This impact would be less than significant.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less than Significant Impact. Construction activities would require water for dust control. Water for this purpose would be from existing water supplies and is anticipated to require a relatively small volume in relation to the existing supplies. As discussed in Section VII(c) of this IS/MND, groundwater may be present at the depths of the shafts and microtunneling spans in various locations within the project work zones given the historical highest groundwater depths range from about 10 to 20 feet below ground surface within the project area.[39] Interlocking steel sheet piles would be used as shoring material and a closed-face slurry shield MTBM would be used for microtunneling to minimize the need for dewatering. Therefore, construction impacts to groundwater supply would be less than significant. There would be no operational impacts to groundwater supply because the TTLR Project would replace an existing trunk line and would not increase the use of drinking water. As such, the proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. This impact would be less than significant.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner, which would:

i) Result in substantial erosion or siltation on- or offsite?

Less Than Significant Impact. The proposed project would be located within existing paved areas (e.g., roadways and parking lot) and, as such, would not alter the existing drainage pattern of the area. However, as discussed above, the proposed project would require earthwork, including trenching, microtunneling and other excavation for installation of the trunk line, distribution mainlines, and associated appurtenant facilities, which may temporarily increase the potential for soil erosion. Construction activities would result in the disturbance of more than 1 acre of soil and would be required to obtain a Construction General Permit, issued by the State Water Resources Control Board. In addition, with implementation of BMP WQ-1 and BMP WQ--2 as outlined in Section 1.9 of this IS/MND, a project-specific SWPPP would be

[39] LADWP, 2017, Preliminary Geological and Geotechnical Assessment of the Proposed Topham Trunk Line Project (23127).

developed and implemented to control erosion on- or offsite during construction activities in accordance with the Construction General Permit requirements. The SWPPP would identify structural and nonstructural measures, such as erosion and sediment control, that would be implemented during construction of the proposed project. Following completion of construction, existing paved surface conditions temporarily disturbed during construction would be restored to pre-construction conditions. Thus, the proposed project would not increase the amount of impervious surfaces and would not 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. This impact would be less than significant.

ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?

Less Than Significant Impact. As discussed above, the proposed project would be located within existing paved areas (e.g., roadways and parking lot) and, as such, would not alter the existing drainage pattern of the area. However, as discussed above, the proposed project would require earthwork, including trenching, microtunneling and other excavation for installation of the trunk line, distribution mainlines, and associated appurtenant facilities, which may temporarily increase the rate or amount of surface runoff. Construction activities would result in the disturbance of more than 1 acre of soil and would be required to obtain a Construction General Permit, issued by the State Water Resources Control Board. In addition, with implementation of BMP WQ-1 and BMP WQ--2 as outlined in Section 1.9 of this IS/MND, a project-specific SWPPP would be developed and implemented to control runoff on- or offsite during construction activities in accordance with the Construction General Permit requirements. The SWPPP would identify structural and nonstructural measures to control runoff that would be implemented during construction of the proposed project. Following completion of construction, existing paved surface conditions temporarily disturbed during construction would be restored to pre-construction conditions. Therefore, the proposed project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite. This impact would be less than significant.

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?

Less Than Significant Impact. As discussed above, the proposed project would be located within existing paved areas (e.g., roadways and parking lot) and, as such, would not alter the existing drainage pattern of the area. However, as discussed above, the proposed project would require earthwork, including trenching, microtunneling and other excavation for installation of the trunk line, distribution mainlines, and associated appurtenant facilities, which may temporarily increase the rate or amount of surface runoff. Construction activities would result in the disturbance of more than 1 acre of soil and would be required to obtain a Construction General Permit, issued by the State Water Resources Control Board. In addition, with implementation of BMP WQ-1 and BMP WQ-2 as outlined in Section 1.9 of this IS/MND, a project-specific SWPPP would be developed and implemented to control runoff on- or offsite during construction activities in accordance with the Construction General Permit requirements. The SWPPP would identify structural and nonstructural measures to control runoff that would be implemented during construction of the proposed project, which would ensure the proposed project would not 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. Following completion of construction, existing paved surface conditions temporarily disturbed during construction would be restored to pre-construction conditions; as such, there would be no increase in impervious surfaces. thus Therefore, the proposed project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. This impact would be less than significant.

iv) Impede or redirect flood flows?

No Impact. A 100-year flood is a flood defined as having a 1.0 percent chance of occurring in any given year. The proposed project is not within a 100-year flood hazard zone.[40] Therefore, the proposed project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows. No impact would occur.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

No Impact. As discussed above, the project site is not within a 100-year flood hazard zone. No impact would occur.

Tsunamis affect low-lying areas along the coastline. The project site is approximately 10.4 miles north of the Pacific Ocean and is not within a designated Tsunami Hazard Area.[41] No impact would occur.

Seiches are oscillations of the water surface generated in enclosed bodies of water, often as a result of earthquake-related ground shaking. A seiche wave has the potential to overflow the sides of a containing basin to inundate adjacent or downstream areas. Seiches primarily cause damage to properties that are adjacent to a body of water. Due to the distance between the proposed project and the nearest

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[40] Federal Emergency Management Agency, FEMA Flood Map Service Center, available at: https://msc.fema.gov/portal. Accessed April 2023.

[41] City of Los Angeles, Department of City Planning. *City of Los Angeles General Plan – Safety Element*, available at: https://planning.lacity.org/odocument/31b07c9a-7eea-4694-9899-f00265b2dc0d/Safety_Element.pdf. Accessed April 2023.

bodies of water, there would no risk of a seiche resulting in damage to the proposed project. No impact would occur.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

No Impact. As previously discussed, with implementation of BMP WQ-1 and BMP WQ-2, a project-specific SWPPP would be developed and implemented to control pollutants in stormwater discharges during construction activities. Operation of the proposed project would not create runoff in excess of or in varying quality to existing conditions. The proposed project would not substantially deplete groundwater supplies. Therefore, the proposed project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. No impact would occur.

XI. LAND USE AND PLANNING

Would the project:

a) Physically divide an established community?

No Impact. The proposed project would not physically divide an established community. The proposed project would occur within existing roadways and the existing LADWP easement located at Metro's Pierce College Station parking lot and immediately north of the baseball fields at Winnetka Avenue and Victory Boulevard. The installation of pipelines within the road ROW would necessitate temporary vehicle lane closures. However, no streets or sidewalks would be permanently closed as a result of the proposed project. Following installation of the proposed project, the roadways would be returned to their existing conditions, and no separation of uses or disruption of access between land use types would occur. As such, the proposed project would not physically divide an established community. No impact would occur.

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

No Impact. As discussed above, the proposed project would occur within existing roadways and the existing LADWP easement located at Metro's Pierce College Station parking lot and immediately north of the baseball fields at Winnetka Avenue and Victory Boulevard. The proposed TTLR alignment, distribution mainlines, and facilities would be located underground within the public road ROW, with the exception of the flow recorder, which would be installed in an aboveground cabinet (72 inches tall, 48 inches wide, and 24 inches deep) located on the western end of the project alignment on Victory Boulevard (just east of De Soto Avenue), within public road ROW. While most of the proposed project would occur within existing roadways and would thus not have City General Plan land designations or City zoning designations, the portions of the proposed project (consisting of the new trunk line) located within the existing LADWP easement would have a City General Plan land use designation of Open Space and City zoning designations of OS-1XL-RIO and PF-1XL-RIO. The portions of the new trunk line within the LADWP easement would be located entirely underground and existing paved surface conditions temporarily disturbed during construction would be restored to pre-construction conditions. The proposed project would be a covered activity under LADWP's easement and would not conflict with the City's General Plan or Zoning Code as no change in land uses would occur from implementation of the proposed project. Implementation of the proposed project would also not result in a change to the adjacent properties' land uses.

Therefore, the proposed project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect conflict with existing land use or zoning designations. No impact would occur.

XII. MINERAL RESOURCES

Would the project:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact. The project site is entirely within an area designated as MRZ-1, meaning an area where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence.[42] Thus, there are no mineral resources of value to the region and the residents of the state identified within the project site. Therefore, the proposed project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impact would occur.

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

No Impact. The project site is not delineated as a locally important mineral resource recovery site in the General Plan.[43] The project alignment is entirely within an MRZ-1 area. Therefore, implementation of the proposed project would not result in the loss of availability of a locally important mineral resource recovery site. No impact would occur.

XIII. NOISE

Potential impacts related to noise resulting from implementation of the proposed project were determined from the results presented in the Noise and Vibration Assessment prepared by TAHA for the proposed project, which is included in Appendix F of this IS/MND.

The standard unit of measurement for noise is the decibel (dB). Because the human ear is not equally sensitive to sound at all frequencies, the noise measurements reflected in this analysis are given in dB reflecting the normal hearing sensitivity range of the human

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[42] State of California The Resources Agency Department of Conservation, Generalized Aggregate Resource Classification Map, San Fernando Valley and Adjacent Production-Consumption Regions, Special Report I43 Plate 2.1. May 25, 1979. Accessed April 2023.

[43] City of Los Angeles, Department of City Planning. *City of Los Angeles General Plan – Conservation Element*, available at: https://planning.lacity.org/odocument/28af7e21-ffdd-4f26-84e6-dfa967b2a1ee/Conservation_Element.pdf. Accessed April 2023.

ear, known as the A-weighted decibel scale (dBA). On this scale, the range of human hearing extends from approximately 3 to 140 dBA. The noise analysis discusses sound levels in terms of Equivalent Noise Level (L_{eq}). L_{eq} is the average noise level on an energy basis for any specific time period. For example, the L_{eq} for 1 hour is the energy average noise level during the hour. The average noise level is based on the energy content (acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise that has the same energy content as the fluctuating noise level.

The noise and vibration analyses consider construction phase sources. Noise levels associated with typical construction equipment were obtained from the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM). This model predicts noise from construction based on a compilation of empirical data and the application of acoustical propagation formulas. Maximum equipment noise levels were adjusted based on anticipated percent of use. Combined construction activity noise levels were estimated by combining anticipated equipment for each activity using RCNM. The projected noise level during the construction phase at receptors was calculated based on the distance of the receptor and the presence of intervening rows of buildings. Note the existing noise level, derived from observed noise measurements, is independent of the project noise level. Regarding vibration, the projected vibration levels were estimated using example vibration levels and propagation formulas provided by the Federal Transit Authority's Transit Noise and Vibration Impact Assessment. Refer to Appendix F for further discussion of the methodology used for the noise and vibration analyses.

Would the project result in:

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of applicable standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant Impact After Mitigation Incorporated.

Construction

Noise impacts from construction of the proposed project would fluctuate depending on the construction phase, equipment type and duration of use, distance between the noise source and receptor, and presence or absence of noise attenuation barriers. Construction activities typically require the use of numerous pieces of noise-generating equipment. Typical noise levels from various types of equipment that would be used during construction are listed in Table 8. Noise levels from individual pieces of equipment typically are between 63.2 and 82.6 dBA L_{eq} at 50 feet. The MTBM would not generate aboveground noise.

Table 8: Noise Level Ranges of Typical Construction Equipment

Construction Equipment	Noise Level at 50 Feet (dBA)
Auger Drill Rig	77.4
Carry Deck	70.3
Concrete Mixer Truck	74.8
Concrete Saw	82.6
Crane	72.6
Excavator	76.7
Forklift	63.2
Front End Loader	75.1
Gang Truck	70.3
Generator	77.6
Haul Truck	72.5
Hydraulic Pump in Pipe Jacking Plant	66.3
Microtunneling Boring Machine (MTBM)	0.0
Paver	74.2
Roller Compactor	73.0
Skid Steer	75.1
Slurry Separator Plant	78.0
Vacuum Excavator (Vac-truck)	81.3
Vacuum Street Sweeper	71.6
Ventilation Fan	78.9
Vibratory or Press in Driver	78.9
Welder/Torch	70.0

Source: TAHA, 2023.

To more accurately characterize construction-period noise, the noise levels shown in Table 9 reflect the combined noise levels that would be expected considering the likelihood that multiple pieces of construction equipment would be operating simultaneously. Some pieces of equipment would be used only for certain tasks (e.g., concrete saw to cut pavement, or an excavator to excavate trenches and shafts), and they would not operate continuously during the day and generally would not operate simultaneously. Therefore, the combined noise levels consider only construction equipment that would likely be operated simultaneously.

The TTLR, the 12-inch diameter distribution mainline, and the 16-inch diameter distribution mainline would be installed using an open-trench method of construction. During open-trench construction, a concrete saw would generate the loudest noise levels at approximately 82.6 dBA L_{eq}. However, the concrete saw would only be used for very brief periods of time and during the early stages of open-trench construction. Therefore, the reference noise level for open-trench construction would be more typically represented by the operations of an excavator and front loader simultaneously, which would result in a combined noise level of approximately 79.9 dBA L_{eq}.

Table 9: Phased Construction Noise Levels

Construction Phases and Equipment	Noise Level at 50 feet (dBA, L_{eq})
Open-Trench Site Preparation	
Excavator[a.]	76.7
Front End Loader[a.]	75.1
Auger Drill Rig	77.4
Concrete Saw	82.6
Crane	72.6
Forklift	63.2
Skid Steer Loader	75.1
Haul Truck	72.5
Vacuum Excavator (Vac-truck)	81.3
Open-Trench Site Preparation Combined	**79.0**
Open-Trench Excavation and Shoring	
Crane[a.]	72.6
Excavator[a.]	76.7
Front End Loader[a.]	75.1
Auger Drill Rig	77.4
Open-Trench Excavation and Shoring Combined	**79.9**
Open-Trench Pipe Installation	
Crane[a.]	72.6
Generator[a.]	77.6
Concrete Mixer Truck	74.8
Gang Truck	70.3
Carry Deck	70.3
Haul Truck	72.5
Vacuum Street Sweeper	71.6
Open-Trench Pipe Installation Combined	**78.8**
Open-Trench Roadway Restoration	
Paver[a.]	74.2
Roller Compactor[a.]	73.0
Forklift	63.2
Open-Trench Roadway Restoration Combined	**76.7**
Trunk Line Microtunneling Site Preparation	
Excavator[a.]	76.7
Front End Loader[a.]	75.1
Auger Drill Rig	77.4
Concrete Saw	82.6
Crane	72.6
Forklift	63.2
Haul Truck	72.5
Vacuum Excavator (Vac-truck)	81.3
Trunk Line Microtunneling Site Preparation Combined	**79.0**
Trunk Line Microtunneling Shaft Excavation	
Crane[a.]	72.6
Vibratory or Press in Driver[a.]	78.9
Excavator	76.7
Front End Loader	75.1

Construction Phases and Equipment	Noise Level at 50 feet (dBA, L_{eq})
Trunk Line Microtunneling Shaft Excavation Combined	**79.8**
Trunk Line Microtunneling	
Generator[a.]	77.6
Hydraulic Pump in Pipe Jacking Plant[a.]	66.3
Slurry Separator Plant[a.]	78.0
Ventilation Fan[a.]	78.9
Crane	72.6
Microtunneling Boring Machine (MTBM)	0.0
Trunk Line Microtunneling Combined	**83.1**
Trunk Line Microtunneling Shaft Backfilling	
Concrete Mixer Truck[a.]	74.8
Crane[a.]	72.6
Trunk Line Microtunneling Backfilling Combined	**76.8**
Trunk Line Microtunneling Roadway Restoration	
Paver[a.]	74.2
Roller Compactor[a.]	73.0
Forklift	63.2
Trunk Line Microtunneling Roadway Restoration Combined	**76.7**

Note:
a. Construction equipment that would be used simultaneously during construction phase and that would create the loudest noise level associated with the phase.
Source: TAHA, 2023.

Table 10 presents the estimated maximum construction noise levels related to open-trench construction for the TTLR, 12-inch distribution mainline, and 16-inch distribution mainline. Construction activities for the TTLR would occur between 7:00 a.m. and 6:00 p.m., Monday through Friday. For the 12-inch and 16-inch distribution mainlines, construction activities would occur between 9:00 a.m. and 3:30 p.m., Monday through Friday, but some nighttime construction may be required. Construction activity would therefore typically comply with the allowable hours of construction in the LAMC, including 7:00 a.m. to 9:00 p.m. Monday through Friday, 8:00 a.m. to 6:00 p.m. on Saturday or federal holidays, and no construction activity on Sundays. However, some nighttime construction may be required that would occur outside the allowable hours of construction. Per LAMC Section 41.40 (d), the provisions of LAMC Section 41.40, including the allowable hours of construction, would not apply to major public works construction by the City of Los Angeles or its proprietary departments. LADWP would be granted a variance to construct outside of the allowable hours of construction during nighttime hours if required. The LAMC also limits construction equipment noise levels to 75 dBA L_{eq} unless technically infeasible. Construction activity noise levels associated with the TTLR would exceed 75 dBA at the nearest sensitive receptors, but the threshold would typically not be exceeded at distances of 150 feet or greater. Therefore, without mitigation, the proposed project would result in a significant impact related to on-site construction noise.

Table 10: Open Trench Construction Noise Levels at Receptors

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a.]	Project Noise Level (dBA)	Exceed Threshold (75 dBA, L_{eq})
First Building Row Receptors				
Residences to the south between Victory Blvd. and Corbin Ave.	50	68.9	79.9	Yes
Residences to the south between Boyle Ave. and Calvin Ave.	50	68.9	79.9	Yes
Residences to the south between Lindley Ave. and White Oak Ave.	50	61.5	79.9	Yes
Residences to the south between White Oak Ave. and Encino Ave.	50	61.5	79.9	Yes
Columbia College Hollywood	50	67.2	79.9	Yes
St. John's Lutheran Church	50	68.9	79.9	Yes
Residences along Tampa Ave. to the west and east between Topham St. and U.S. 101 Hwy.	50	68.9	79.9	Yes
Residences along Mason Ave.	50	54.1	79.9	Yes
Tarzana Treatment Center, Inc.	60	67.2	78.3	Yes
Residences to the north between Sylvia Ave. and Topeka Dr.	70	49.1	72.0	No
Residences to the north between Boyle Ave. and Calvin Ave.	80	49.2	70.8	No
Residences to the north between Victory Blvd. and Corbin Ave.	100	54.1	68.9	No
Residences to the south between Sylvia Ave. and Topeka Dr.	100	68.9	73.9	No
Synagogue Beit Midrash Ohel Rachel	100	68.9	73.9	No
Woodcrest School	100	68.9	73.9	No
Residences to the north between De Soto Ave. and Oso Ave.	120	54.1	67.3	No
Miss Elizabeth’s Piano Studio	120	68.9	67.3	No
Playa Music Lessons	120	68.9	72.3	No
Residences to the north between Canby Ave. and Etiwanda Ave.	150	49.1	65.4	No
Residences to the north between Lindley Ave. and White Oak Ave.	150	54.0	65.4	No

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a.]	Project Noise Level (dBA)	Exceed Threshold (75 dBA, L_{eq})
Residences to the north between White Oak Ave. and Encino Ave.	150	54.0	65.4	No
Chabad at Pierce Religious Institution	150	56.0	65.4	No
Renewal Health Group Sanctuary	150	68.9	70.4	No
Residences along Tampa Ave. to the south of Ventura Blvd.	160	61.5	69.8	No
Azar Garden	170	54.0	69.3	No
Residences to the north between Wilbur Ave. and Yolanda Ave.	180	52.2	68.8	No
Child's World School	180	61.5	63.8	No
Discovery School	320	52.2	63.8	No
LA Pierce College Child Development Center	360	56.0	62.8	No
Second Building Row Receptors				
Residences to the south between Victory Blvd. and Corbin Ave.	150	52.2	65.9	No
Residences along Tampa Ave. to the East between Topham and U.S. 101 Hwy	170	54.0	64.8	No
Residences along Mason Ave.	180	54.1	64.3	No
Residences to the south between Boyle Ave. and Calvin Ave.	200	49.2	63.4	No
Residences to the south between Sylvia Ave. and Topeka Dr.	220	49.1	62.5	No
Residences to the south between Lindley Ave. and White Oak Ave.	220	54.0	62.5	No
Residences to the south between White Oak Ave. and Encino Ave.	220	54.0	62.5	No
Gem Educare Daycare/Preschool	250	61.5	61.4	No
Residences along Tampa Ave. to the west between Topham St. and U.S. 101 Hwy.	250	54.0	61.4	No
Residences along Tampa Ave. to the south of Ventura Blvd.	320	61.5	59.3[b.]	No

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a.]	Project Noise Level (dBA)	Exceed Threshold (75 dBA, L_{eq})
Be Well Senior Living	320	54.0	59.3	No
California Zoroastrian Center	450	54.1	56.3	No
Third Building Row Receptors				
Bandrika Studios	400	56.0	55.8	No

Notes:

[a.] The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.

[b.] As noted previously, the existing noise level, derived from observed noise measurements, is independent of the project noise level. The project noise level represents the modeled dBA at each location resulting from the construction method. The project noise level is calculated based on the distance of the receptor and the presence of intervening rows of buildings. Thus, it is possible for the modeled project noise level to be quieter than the observed existing noise level, as shown here for residences along Tampa Avenue to the south of Ventura Boulevard.

Source: TAHA, 2023.

Microtunneling would be initiated in certain segments to avoid conflicts with existing substructures, which include major sewer, storm, and water lines. Microtunneling would be required along Topham Street at the intersections with Winnetka Avenue, Tampa Avenue, Corbin Avenue, and White Oak Avenue. Microtunneling would require excavating shafts at either end of the span with work zones of approximately 35 feet around the shafts. Noise generation would be concentrated around the shafts, which would be open air and would include some pieces of equipment (e.g., crane, slurry separator plant) aboveground. The underground component of the microtunneling would use a MTBM. The MTBM would not generate aboveground noise. Microtunneling would typically be represented by the simultaneous operation of a generator, hydraulic pump associated with the pipe jacking plant, slurry separator plant, and a ventilation fan that would generate a combined noise level of approximately 83.1 dBA L_{eq}. Table 11 through Table 17 present the estimated noise levels at the sensitive receptors nearest to each microtunneling shaft location. Noise levels would exceed 75 dBA at the nearest sensitive receptors, and the threshold would typically not be exceeded at distances of 150 feet or greater. Therefore, without mitigation, the proposed project would result in a significant impact related to on-site construction noise.

Table 11: Microtunneling Construction Noise Levels at Receptors – Winnetka Avenue

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a.]	Project Noise Level (dBA)	Exceed Threshold (75 dBA, L_{eq})
First Building Row Receptors				
Residences to the south along Topham St.	80	71.8	79.0	Yes
Residences to the north between Oso Ave. and Victory Blvd.	120	54.1	70.5	No
LA Pierce College Child Development Center	360	56.0	66.0	No
West Valley Occupational Center	500	56.0	63.1	No
Second Building Row Receptors				
Residences to the south along Penfield Ave.	220	52.2	65.7	No
Residences to the north between Oso Ave. and Victory Blvd.	300	54.1	58.0	No

Note:
[a.] The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
Source: TAHA, 2023.

Table 12: Microtunneling Construction Noise Levels at Receptors – Corbin Avenue

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a.]	Project Noise Level (dBA)	Exceed Threshold (75 dBA, L_{eq})
First Building Row Receptors				
St. John's Lutheran Church	50	68.9	83.1	Yes
Residences to the south of Topham St.	60	68.9	81.5	Yes
Residences to the north of Topham St.	100	49.2	72.1	No
Second Building Row Receptors				
Residences to the south of Topham St.	200	52.2	66.6	No

Note:
[a.] The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
Source: TAHA, 2023.

Table 13: Microtunneling Construction Noise Levels at Receptors – Tampa Avenue

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a]	Project Noise Level (dBA)	Exceed Threshold (75 dBA, L_{eq})
First Building Row Receptors				
Residences to the north of Topham St.	70	49.2	75.2	Yes
Residences to the south of Topham St.	80	68.9	79.0	Yes
Woodcrest School	330	68.9	66.7[b]	No
Second Building Row Receptors				
Residences to the north of Topham St.	230	49.2	60.3	No
Residences to the south of Topham St.	240	49.2	65.0	No

Notes:
a. The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
b. As noted previously, the existing noise level, derived from observed noise measurements, is independent of the project noise level. The project noise level represents the modeled dBA at each location resulting from the construction method. The project noise level is calculated based on the distance of the receptor and the presence of intervening rows of buildings. Thus, it is possible for the modeled project noise level to be quieter than the observed existing noise level, as shown here for Woodcrest School.
Source: TAHA, 2023.

Table 14: Microtunneling Construction Noise Levels at Receptors – Wilbur Avenue

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a]	Project Noise Level (dBA)	Exceed Threshold (75 dBA, L_{eq})
First Building Row Receptors				
Residences to the south of Oxnard St.	70	67.2	80.2	Yes
Residences to the north of Oxnard St.	75	49.1	79.6	Yes
Synagogue Beit Midrash Ohel Rachel	100	68.9	77.1	Yes
Discovery School	450	52.2	64.0	No
Second Building Row Receptors				
Residences to the south of Oxnard St.	200	67.2	66.6[b]	No
Residences to the north of Oxnard St.	240	49.1	65.0	No

Notes:
a. The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
b. As noted previously, the existing noise level, derived from observed noise measurements, is independent of the project noise level. The project noise level represents the modeled dBA at each location resulting from the construction method. The project noise level is calculated based on the distance of the receptor and the presence of intervening rows of buildings. Thus, it is possible for the modeled project noise level to be quieter than the observed existing noise level, as shown here for residences to the south of Oxnard Street.
Source: TAHA, 2023.

Table 15: Microtunneling Construction Noise Levels at Receptors – Reseda Boulevard

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a.]	Project Noise Level (dBA)	Exceed Threshold (75 dBA, L_{eq})
First Building Row Receptors				
Residences to the north of Oxnard St.	260	49.1	63.8	No
Second Building Row Receptors				
Residences to the south of Oxnard St.	450	56.0	59.5	No

Note:
[a.] The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
Source: TAHA, 2023.

Table 16: Microtunneling Construction Noise Levels at Receptors – White Oak Avenue

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a.]	Project Noise Level (dBA)	Exceed Threshold (75 dBA, L_{eq})
First Building Row Receptors				
Residences to the south of Oxnard St.	50	73.3	83.1	Yes
Residences to the north of Oxnard St.	150	73.3	73.6	No
Second Building Row Receptors				
Residences to the south of Oxnard St.	200	73.3	66.6[b.]	No

Notes:
[a.] The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
[b.] As noted previously, the existing noise level, derived from observed noise measurements, is independent of the project noise level. The project noise level represents the modeled dBA at each location resulting from the construction method. The project noise level is calculated based on the distance of the receptor and the presence of intervening rows of buildings. Thus, it is possible for the modeled project noise level to be quieter than the observed existing noise level, as shown here for residences to the south of Oxnard Street.
Source: TAHA, 2023.

Table 17: Microtunneling Construction Noise Levels at Receptors – Oxnard Street

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a.]	Project Noise Level (dBA)	Exceed Threshold (75 dBA, L_{eq})
First Building Row Receptors				
Residences to the south of Oxnard St. along Bullock St.	50	61.5	83.1	Yes
Residences to the north of Oxnard St. along Bessemer St.	130	49.1	69.8	No
Child's World School	180	61.5	72.0	No
Residences to the north of Oxnard St.	185	49.1	71.7	No
Residences to the south of Oxnard St.	300	61.5	67.5	No
Second Building Row Receptors				
Residences to the south of Oxnard St.	150	61.5	69.1	No

Note:
[a.] The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
Source: TAHA, 2023.

In addition to on-site construction activities, noise would be generated off-site by construction-related trucks. Construction of the proposed project would require the hauling and export of debris and excavated material from the site and deliver construction materials, such as pipe segments and backfill. The maximum number of truck trips would be approximately five truck trips per day. Conservatively, a maximum of 12 truck trips per day has been assumed for the analysis. Over an 8-hour workday, the maximum hourly haul truck volume would approximately be three truck trips per hour. A doubling of traffic volumes is typically needed to audibly increase noise levels along a roadway segment. Table 18 shows traffic volumes recorded by the LADOT along Victory Boulevard, Topham Street, Mason Avenue, Tampa Avenue, and Oxnard Street, which would be utilized as the haul route for trucks travelling to and from the project site. Daily traffic along these roadways ranges between 4,197 and 43,164 trips and the AM and PM peak hour traffic ranges between 649 and 3,894 trips. An additional three truck trips per hour would not double the existing volume along any roadway segment. Off-site vehicle activity would not audibly change average daily noise levels due to the low volume of truck trips per day. Therefore, off-site vehicle activity would not audibly change average daily noise levels. The proposed project would result in a less than significant impact related to construction truck noise.

Table 18: Traffic Volumes on Local Streets

Roadway	Daily Traffic	Peak Hour Traffic	
		AM	PM
Victory Blvd. at De Soto Ave.	43,164	3,204	3,477
Victory Blvd. at Winnetka Ave.	35,974	2,393	2,927
Topham St. at Corbin Ave.	7,584	659	763
Topham St. at Tampa Ave.	9,771	838	1,019
Mason Ave. at Victory Blvd.	15,449	1,600	1,500
Tampa Ave. at Hatteras St.	14,134	3,894	2,545
Oxnard St. at Donna Ave. and Topeka Dr.	11,206	1,087	1,037
Oxnard St. at Yolanda Ave.	4,197	649	946
Oxnard St. East of Reseda Blvd.	9,411	1,025	839
Oxnard St. at Lindley Ave.	9,760	1,040	1,010

Source: TAHA, 2023.

Mitigation Measures

NOI-1 Construction equipment shall be properly maintained and equipped with mufflers to manufacturer specifications.

NOI-2 Rubber-tired equipment shall be used rather than tracked equipment when feasible.

NOI-3 Equipment shall be turned off when not in use for an excess of 5 minutes, except for equipment that requires idling to maintain performance.

NOI-4 A public liaison shall be appointed for project construction and will be responsible for addressing public concerns about construction activities, including excessive noise. As needed, the liaison shall determine the cause of the concern (e.g., starting too early, bad muffler) and implement measures to address the concern.

NOI-5 The public shall be notified in advance of the location and dates of construction hours and activities.

NOI-6 Barriers, such as, but not limited to, plywood structures or flexible sound control curtains extending a minimum of 8 feet in height shall be erected around the perimeter of the microtunneling shafts and the slurry separation plants for the microtunneling segments at Winnetka Avenue, Corbin Avenue, Tampa Avenue, Wilbur Avenue, Oxnard Street, and White Oak Avenue. Noise barriers shall be capable of reducing construction noise levels by at least 10 dB. Feasibility includes, but is not limited to, ensuring that the enclosures do not create safety hazards associated with vehicle sight lines or pedestrian activities.

NOI-7 Electrically powered equipment shall be used instead of pneumatic or internal combustion powered equipment, where feasible.

Significance After Mitigation

Mitigation Measures NOI-1 through NOI-7 are designed to reduce construction noise levels. The equipment mufflers associated with Mitigation Measure NOI-1 would reduce construction noise levels by approximately 5 dBA. Mitigation Measures NOI-2 through NOI-5 and NOI-7, although difficult to quantify, would also reduce and/or control construction noise levels. Mitigation Measure NOI-6, noise barriers, when utilized, typically reduce noise by 10 dBA. Potential noise reductions from temporary noise barriers may change due to potential changes in the construction process or possible physical limitation unknown at this time. Mitigation Measures NOI-1 through NOI-7 would reduce noise levels to less than 75 dBA at nearby sensitive receptors, as shown in Table 19 below. Mitigation would be implemented during both daytime and nighttime construction, should it be required. Consistent with the LAMC, all feasible measures would be taken to control construction noise. Therefore, with incorporation of mitigation measures NOI-1 through NOI-7, the proposed project would not result in the generation of a substantial temporary increase in ambient noise levels in the vicinity of the project in excess of applicable standards established in the local general plan or noise ordinance, or applicable standards of other agencies. This impact would be less than significant after mitigation incorporated.

Table 19: Mitigated Typical Construction Noise Levels at Impacted Receptors

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a]	Unmitigated Noise Levels (dBA)	Mitigated Project Noise Level (dBA)[b]	Exceed Threshold (75 dBA, L_{eq})
Open Trench – Victory Blvd., Topham St., Oxnard St., Mason Ave, and Tampa Ave.					
Residences to the south between Victory Blvd. and Corbin Ave.	50	68.9	79.9	74.9	No
Residences to the south between Boyle Ave. and Calvin Ave.	50	68.9	79.9	74.9	No
Residences to the south between Lindley Ave. and White Oak Ave.	50	61.5	79.9	74.9	No
Residences to the south between White Oak Ave. and Encino Ave.	50	61.5	79.9	74.9	No
Columbia College Hollywood	50	67.2	79.9	74.9	No
St. John's Lutheran Church	50	68.9	79.9	74.9	No
Residences along Tampa Ave. to the west and east between Topham St. and U.S. 101 Hwy.	50	68.9	79.9	74.9	No
Residences along Mason Ave.	50	54.1	79.9	74.9	No
Tarzana Treatment Center, Inc.	60	67.2	78.3	73.3	No

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a]	Unmitigated Noise Levels (dBA)	Mitigated Project Noise Level (dBA)[b]	Exceed Threshold (75 dBA, L_{eq})
Residences to the north between Sylvia Ave. and Topeka Dr.	70	49.1	72.0	67.0	No
Residences to the north between Boyle Ave. and Calvin Ave.	80	49.2	70.8	65.8	No
Residences to the north between Victory Blvd. and Corbin Ave.	100	54.1	68.9	63.9	No
Residences to the south between Sylvia Ave. and Topeka Dr.	100	68.9	73.9	68.9	No
Synagogue Beit Midrash Ohel Rachel	100	68.9	73.9	68.9	No
Woodcrest School	100	68.9	73.9	68.9	No
Residences to the north between De Soto Ave. and Oso Ave.	120	54.1	67.3	62.3	No
Miss Elizabeth's Piano Studio	120	68.9	67.3	62.3	No
Playa Music Lessons	120	68.9	72.3	67.3	No
Residences to the north between Canby Ave. and Etiwanda Ave.	150	49.1	65.4	60.4	No
Residences to the north between Lindley Ave. and White Oak Ave.	150	54.0	65.4	60.4	No
Residences to the north between White Oak Ave. and Encino Ave.	150	54.0	65.4	60.4	No
Chabad at Pierce Religious Institution	150	56	65.4	60.4	No
Residences to the south between Victory Blvd. and Corbin Ave.	150	52.2	65.9	60.9	No
Renewal Health Group Sanctuary	150	68.9	70.4	65.4	No
Residences along Tampa Ave. to the south of Ventura Blvd.	160	61.5	69.8	66.4	No
Residences along Tampa Ave. to the east between Topham St. and U.S. 101 Hwy.	170	54.0	64.8	59.8	No
Azar Garden	170	54.0	69.3	64.3	No
Residences to the north between Wilbur Ave. and Yolanda Ave.	180	52.2	68.8	63.8	No
Child's World School	180	61.5	63.8	58.8	No
Residences along Mason Ave.	180	54.1	64.3	59.3	No
Residences to the south between Boyle Ave. and Calvin Ave.	200	49.2	63.4	58.4	No

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a]	Unmitigated Noise Levels (dBA)	Mitigated Project Noise Level (dBA)[b]	Exceed Threshold (75 dBA, L_{eq})
Residences to the south between Sylvia Ave. and Topeka Dr.	220	49.1	62.5	57.5	No
Residences to the south between Lindley Ave. and White Oak Ave.	220	54.0	62.5	57.5	No
Residences to the south between White Oak Ave. and Encino Ave.	220	54.0	62.5	57.5	No
Gem Educare Daycare/Preschool	250	61.5	61.4	56.4	No
Residences along Tampa Ave. to the west between Topham St. and U.S. 101 Hwy.	250	54.0	61.4	56.4	No
Residences along Tampa Ave. to the South of Ventura Blvd.	320	61.5	59.3	54.3	No
Be Well Senior Living	320	54.0	59.3	54.3	No
Discovery School	320	52.2	63.8	58.8	No
LA Pierce College Child Development Center	360	56.0	62.8	57.8	No
Bandrika Studios	400	56.0	55.8	50.8	No
California Zoroastrian Center	450	54.1	56.3	51.3	No
Microtunneling – Winnetka Avenue					
Residences to the south along Topham St.	80	71.8	79.0	64.0	No
Residences to the north between Oso Ave. and Victory Blvd.	120	54.1	70.5	55.5	No
Residences to the south along Penfield Ave.	220	52.2	65.7	50.7	No
Residences to the north between Oso Ave. and Victory Blvd.	300	54.1	58.0	43.0	No
LA Pierce College Child Development Center	360	56.0	66.0	51.0	No
West Valley Occupational Center	500	56.0	63.1	48.1	No
Microtunneling – Corbin Avenue					
St. John's Lutheran Church	50	68.9	83.1	68.1	No
Residences to the south between Corbin Ave. and Melvin Ave.	60	68.9	81.5	66.5	No
Residences to the north between Corbin Ave. and Melvin Ave.	100	49.2	72.1	57.1	No
Residences to the south between Corbin Ave. and Melvin Ave.	200	52.2	66.6	51.6	No

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a]	Unmitigated Noise Levels (dBA)	Mitigated Project Noise Level (dBA)[b]	Exceed Threshold (75 dBA, L_{eq})
Microtunneling – Tampa Avenue					
Residences to the north between Calvin Ave. and Sylvia Ave.	70	49.2	75.2	60.2	No
Residences to the south between Calvin Ave. and Sylvia Ave.	80	68.9	79.0	64.0	No
Woodcrest School	330	68.9	66.7	51.7	No
Residences to the north of Topham St.	230	49.2	60.3	45.3	No
Residences to the south of Topham St.	240	49.2	65.0	50.0	No
Microtunneling – Wilbur Avenue					
Residences to the south of Oxnard St.	70	67.2	80.2	65.2	No
Residences to the north of Oxnard St.	75	49.1	79.6	64.6	No
Synagogue Beit Midrash Ohel Rachel	100	68.9	77.1	62.1	No
Residences to the south of Oxnard St.	200	67.2	66.6	51.6	No
Residences to the north of Oxnard St.	240	49.1	65.0	50.0	No
Discovery School	450	52.2	64.0	49.0	No
Microtunneling – Reseda Boulevard					
Residences to the north of Oxnard St.	260	49.1	63.8	58.8	No
Residences to the south of Oxnard St.	450	56.0	59.5	54.5	No
Microtunneling – White Oak Avenue					
Residences to the south of Oxnard St.	50	73.3	83.1	68.1	No
Residences to the north of Oxnard St.	150	73.3	73.6	58.6	No
Residences to the south of Oxnard St.	200	73.3	66.6	51.6	No
Microtunneling – Oxnard Street					
Residences to the south of Oxnard St. along Bullock St.	50	61.5	83.1	68.1	No
Residences to the north of Oxnard St. along Bessemer St.	130	49.1	69.8	54.8	No
Residences to the south of Oxnard St.	150	61.5	69.1	54.1	No
Child’s World School	180	61.5	72.0	57.0	No
Residences to the north of Oxnard St.	185	49.1	71.7	56.7	No
Residences to the south of Oxnard St.	300	61.5	67.5	52.5	No

a. The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.

[b.] Includes a 5 dB reduction for equipment mufflers (Mitigation Measure NOI-1) for general construction, and includes a 10 dB reduction for a temporary noise barrier (Mitigation Measure NOI-6) around microtunneling shafts.
Source: TAHA, 2023.

Operation

The proposed project would not include a significant source of permanent noise. Most of the proposed project would be located underground with the exception of the flow recorder which would be installed in an aboveground cabinet within the public road ROW and would not create perceptible noise. Activities associated with long-term operations would be minimal, limited to scheduled maintenance or emergency repair. Project operations would not create perceptible noise, and noise-generating maintenance and repair activities would be reduced after project implementation. Therefore, operation of the proposed project would not result in the generation of a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of applicable standards established in the local general plan or noise ordinance, or applicable standards of other agencies. This impact would be less than significant.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Less Than Significant Impact.

Operation of the proposed project would not create perceptible vibration. However, construction of the proposed project would generate varying degrees of vibration. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings in the vicinity of a construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver buildings. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, and to slight damage at the highest levels. In most cases, the primary concern regarding construction vibration relates to damage.

Based on visual characteristics of adjacent structures (e.g., age), residential building foundations are assumed to be constructed of non-engineered timber and masonry, and the larger structures, such as hospitals, are assumed to be constructed of reinforced-concrete, steel, or timber. According to the Federal Transit Administration guidance, buildings constructed of non-engineered timber and masonry can withstand vibration levels up to 0.2 inches per second without experiencing damage. Buildings constructed of reinforced-concrete, steel, or timber can withstand vibration levels up to 0.5 inches per second without experiencing damage. Equipment that would be utilized would be most similar to an excavator, a vibratory pile driver, a small bulldozer, and a caisson drill. Vibration levels for various types of construction equipment with an average source level reported in terms of peak particle velocity (PPV) are shown in Table 20. Construction equipment would largely be stationary on the project site and would not regularly traverse the site resulting in the generation of vibration at off-site uses. Structures adjacent to the open-trench or microtunneling sites would typically be at least 50 feet from the construction activity. At a distance of 50 feet, vibration generating equipment would generate vibration levels below the vibration damage threshold of 0.2 inches per second for non-engineered timber and masonry buildings and 0.5 reinforced-concrete, steel, or timber buildings, respectively.

Table 20: Typical Outdoor Construction Vibration Levels

Equipment	PPV at 25 Feet (inches/second)	PPV at 50 Feet (inches/second)	VdB at 25 Feet (micro-inches/ second)	VdBat 50 Feet (micro-inches/ second)
Caisson Drill	0.089	0.031	87	78
Excavator	0.040	0.014	80	71
Pile Driver (Sonic)	0.170	0.060	93	84
Small Bulldozer	0.003	0.001	58	49

Source: TAHA, 2023.

One historic use structure has been identified within 220 feet of construction activity involving vibratory pile driving. Historic uses can experience a vibration level of 0.12 inches per second before there is risk of damage to the structure. As shown in Table 21, the nearest historic structure is a historical residential structure (6270 North Lubao Avenue, Woodland Hills, CA 91367), which is approximately 220 feet from where construction activity would occur along Topham Street. Vibration at this distance would be approximately 0.0065 inches per second from a vibratory pile driver. In addition to on-site construction activities, construction trucks on the roadway network have the potential to generate vibration. However, rubber-tired vehicles, including trucks, rarely generate perceptible vibration. It is not anticipated that project-related trucks would generate perceptible vibration adjacent to the roadway network. Therefore, the proposed project would result in a less than significant impact related to structure damage from construction vibration.

Table 21: Historic Use Vibrations Analysis

Historic Uses	Address	Distance from Construction Activity (feet)	PPV at Historic Use (inches/second)
Historical Residential Structure 6270 Lubao Ave. Woodland Hills, CA 91367	220	0.170	0.0065

Source: TAHA, 2023.

Vibration annoyance is another concern related to construction activity. However, perceptible vibration is not typically a concern for human health and is a common occurrence within the urban environment. Special uses such as select medical facilities, research facilities, and recording studios would be potentially impacted by construction vibration annoyance due to the presence of sensitive equipment. None of these uses have been identified within the project vicinity. In addition to on-site construction activities, construction trucks on the roadway network have the potential to expose vibration-sensitive land uses. Rubber-tired vehicles, including trucks, rarely generate perceptible vibration. It is anticipated that project-related trucks would not generate perceptible vibration adjacent to the roadway network. Therefore, the proposed project would result in a less than significant impact related to on-site vibration annoyance.

In summary, as discussed above, the proposed project would not result in the generation of excessive groundborne vibration or groundborne noise levels. This impact would be less than significant.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The proposed project is within 2 miles of Van Nuys Airport to the east. However, according to the Los Angeles County Airport Land Use Commission, the proposed project area is not within the Airport Influence Area.[44] As such, the proposed project would not expose people residing or working in the project area to excessive noise levels. No impact would occur.

XIV. POPULATION AND HOUSING

Would the project:

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

No Impact. Construction for the proposed project is estimated to begin in Fall 2023 and would take approximately 7 years to complete. Given the temporary nature of construction industry jobs, the relatively large regional construction industry, and the relatively nominal total number of construction workers needed during any construction phase, the labor force from within the region would be sufficient to complete project construction without an influx of new workers and their families. Accordingly, construction employment generated by the proposed project would not impact population in the heavily populated Los Angeles region. Therefore, construction of the proposed project would not induce substantial unplanned population growth in an area, either directly or indirectly. No impact would occur.

The proposed project does not include construction or operation of any residential or commercial land uses and, therefore, would not result in a direct population increase. The proposed project would replace existing aging water conveyance infrastructure in the project area and would serve existing customers. Because the proposed project would provide no additional water supply to the City, it would not indirectly induce population growth. Therefore, operation of the proposed project would not induce substantial unplanned population growth in an area, either directly or indirectly. No impact would occur.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. The proposed project would occur within existing roadways and the existing LADWP easement located at Metro's Pierce College Station parking lot and immediately north of the baseball fields at Winnetka Avenue and Victory Boulevard. The proposed project would not require the removal of existing housing. In addition, no persons would be displaced as a result of implementation of the proposed project.

[44] TAHA, 2023, Los Angeles Department of Water and Power (LADWP) Topham Trunk Line Replacement Project – Noise and Vibration Assessment. See Appendix F of this IS/MND.

Therefore, the proposed project would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere. No impact would occur.

XV. PUBLIC SERVICES

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

i) Fire protection?

No Impact. Fire protection services in the City are provided by the LAFD. There are several LAFD fire stations serving the project area, including:

- Fire Station 72 at 6811 De Soto Avenue
- Fire Station 93 at 19059 Ventura Boulevard
- Fire Station 100 at 6751 Louise Avenue[45]

The proposed project does not include new housing or non-residential development that would increase the residential or employee populations in the area; thus, the demand for fire protection services would not increase. The proposed project would replace existing aging water conveyance infrastructure in the project area and would serve existing customers. Because the proposed project would provide no additional water supply to the City, it would not generate population growth that would lead to the need for additional fire protection services. As such, the proposed project would not require the construction of additional fire protection facilities or expansion of existing facilities. Therefore, the proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered fire protection facilities, or the need for new or physically altered fire protection facilities. No impact would occur.

ii) Police protection?

No Impact. The LAPD is the local law enforcement agency responsible for providing police protection services in the City. Several LAPD Community Police Stations serve the project area:

- Police Station 10, West Valley, at 19020 Vanowen Street
- Police Station 21, Topanga, at 21501 Schoenborn Street[46]

As previously stated, the proposed project does not include new housing or non-residential development that would increase the residential or employee

45 Los Angeles Fire Department, Find Your Station, available at: https://www.lafd.org/fire-stations/station-results. Accessed April 2023.
46 Los Angeles Police Department, LAPD Divisions by Bureau, available at: https://lapdonlinestrgeacc.blob.core.usgovcloudapi.net/lapdonlinemedia/2021/09/citywide.pdf. Accessed April 2023.

populations in the area; thus, the proposed project would not generate population growth, and the demand for police protection services would not increase. The proposed project would replace existing aging water conveyance infrastructure in the project area and would serve existing customers, and it would not generate population growth that would lead to the need for additional police protection services. As such, the proposed project would not require the construction of additional police protection facilities or expansion of existing facilities. Therefore, the proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered police protection facilities, or the need for new or physically altered police protection facilities. No impact would occur.

iii) Schools?

No Impact. There are two schools located adjacent to the project alignment – Pierce College, located adjacent to the project alignment along Victory Boulevard at 6201 Winnetka Avenue; and Woodcrest Preschool, located adjacent to the project alignment along Tampa Avenue at 6043 Tampa Avenue. However, the demand for new or expanded school facilities is generally associated with an increase in housing or population. The proposed project does not include development of any residential uses, so no direct increase in residential population would occur. Construction workers are anticipated to be drawn from the existing workforce throughout the region. As such, construction of the proposed project would not generate new permanent residents that would increase the demand for schools. No additional workers would be employed for project operations as the trunk line, distribution mainlines, and appurtenant facilities are passive uses. Additionally, because the proposed project would provide no additional water supply to the City, it would not indirectly induce population growth. Therefore, the proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered schools, or the need for new or physically altered schools. No impact would occur.

iv) Parks?

No Impact. The nearest park and recreational facility to the project site are the following: the Sunrise Little League–Woodland Hills baseball field, a private baseball field located immediately north of the existing LADWP easement at 6400 Winnetka Avenue; and, the Tarzana Recreation Center, a public recreation facility located approximately 595 feet east of the project alignment along Tampa Avenue at 5655 Vanalden Avenue.[47] As previously stated, the proposed project does not include development of any residential uses, and would not impact parks in the project vicinity. Construction and operation of the proposed project would not generate new permanent residents that would increase the demand for parks and recreational facilities. Therefore, the proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered parks, or the need for new or physically altered parks. No impact would occur.

[47] Google Earth Pro, 2023.

v) Other public facilities?

No Impact. Demand for other public facilities, such as libraries, is generally associated with increased housing or population. As previously discussed, the proposed project does not include a component that would generate an increase in housing or population. The proposed project would not result in indirect population growth that could increase demand for other public facilities. Therefore, the proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered other public facilities, or the need for new or physically altered other public facilities. No impact would occur.

XVI. RECREATION

Would the project:

a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

No Impact. As discussed above, the nearest park and recreational facility to the project site are the following: the Sunrise Little League–Woodland Hills baseball field, a private baseball field located immediately north of the existing LADWP easement at 6400 Winnetka Avenue; and, the Tarzana Recreation Center, a public recreation facility located approximately 595 feet east of the project alignment along Tampa Avenue at 5655 Vanalden Avenue.[48] The proposed project would not impact parks or recreational facilities in the project vicinity. The proposed project involves the replacement of existing water conveyance with no increase in water supply. Construction workers are anticipated to be largely drawn from the existing workforce in the region, and no additional workers would be required for operation of the proposed project. Neither construction nor operation of the proposed project would generate new permanent residents that would increase the use of existing parks and recreational facilities. Therefore, the proposed project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. No impact would occur.

b) Include recreational facilities or require construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

No Impact. The proposed project does not include development of any recreational facilities. Furthermore, because the proposed project would provide no additional water supply to the City, it would not induce growth that could require the construction or expansion of recreational facilities. No impact would occur.

[48] Google Earth Pro, 2023.

XVII. TRANSPORTATION

Would the project:

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

Less Than Significant Impact. Metro Bus Route Line 164 and the Metro G Line (Orange) 901 are located along Victory Boulevard, Topham Street, and Oxnard Street within the project alignment. The bus line also crosses Mason Avenue and Tampa Avenue's intersection with Victory Boulevard. Stops for Line 164 are located along Victory Boulevard for the project alignment until Topham Street, where the bus stops continue along Victory Boulevard. The Metro G Line (Orange) runs parallel to the project alignment.[49] Pedestrian facilities in the project area include sidewalks and crosswalks on local roadways.

As discussed above, most of the construction activities associated with the proposed project would take place entirely within the existing road ROW along portions of Victory Boulevard, Topham Street, Oxnard Street, Mason Avenue and Tampa Avenue. Project construction activity within the public road ROW would require lane closures, which would disrupt traffic in the area of the construction zones, including automobile, bus, and potentially bicycle traffic. In addition, a portion of the work zone will occur within the existing LADWP easement on Metro's Pierce College Station parking lot, which may require the northern portion of the parking lot to be closed for approximately one year for completion of jacking work.

Per implementation of BMP TRA-1, residences and businesses near the project alignment would be notified prior to the start of construction (e.g., via flyers) of lane closures and parking restrictions in their vicinity. The notices would include a telephone number for comments or questions related to construction activities. In addition, a traffic control plan, as required by LADOT and implemented per BMP TRA-2, would include measures such as signage, restriping of lanes, flag persons, detour plans, and temporary relocation of bus stops if necessary to reduce disruptions. These disruptions would be temporary and relatively short term, and would not represent a conflict with a program plan, ordinance, or policy addressing the circulation system.

Following the completion of construction activities, all road ROW and Metro parking lot would be returned to pre-construction conditions, and operation of the proposed project would require only periodic maintenance activities, which would not represent a conflict with a program plan, ordinance, or policy addressing the circulation system.

In summary, the proposed project would not conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. No impact would occur.

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49 Los Angeles County Metropolitan Transportation Authority, Trip Planner, available at: https://www.metro.net/riding/trip-planner/. Accessed April 2023.

b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

No Impact. CEQA Guidelines Section 15064.3 establishes vehicle miles traveled (VMT) as the most appropriate measure of transportation impacts. VMT refers to the amount and distance of automobile travel attributable to a project. The LADOT Transportation Assessment Guidelines establish instructions and standards for preparation of transportation assessment in the City of Los Angeles.[50] The VMT assessment is intended to focus on the long-term, permanent transportation impacts related to the generation of automobile trips and the opportunities for alternative modes of transportation (public transit, walking, bicycling) associated with a development project. Due to the temporary and relatively low-level nature of traffic generated by the project's construction, VMT assessments are not relevant for the project, especially because there would be no increase in post-construction operational trips. As such, neither construction nor operation of the proposed project would conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b). No impact would occur.

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

Less Than Significant Impact. The proposed project would not include any new or altered roadways. However, during project construction, traffic lanes would temporarily be closed at some street segments along the project alignment. The following street segments may require full closure with local access only:

- Topham Street, between Victory Boulevard and Cahill Avenue
- Oxnard Street, between Cahill Avenue and Wilbur Avenue
- Oxnard Street, between Lindley Avenue and Encino Avenue

In addition, a portion of the work zone will occur within the existing LADWP easement on Metro's Pierce College Station parking lot, which may require the northern portion of the parking lot to be closed for approximately one year for completion of jacking work.

Potential conflicts associated with these lane closures and Metro parking lot closure would be addressed in the traffic control plan required by LADOT as implemented per BMP TRA-2, as discussed in Section 1.9 of this IS/MND, which would include measures such as signage, restriping of lanes, flag persons, and detour plans. With the implementation of the required traffic control plan, hazards associated with lane closures and Metro parking lot closure during project construction would be less than significant. During project operation, all road ROW and Metro parking lot would be returned to pre-construction configuration, and no conflicts would occur.

In summary, the proposed project would not substantially increase hazards due to a geometric design feature or incompatible uses. This impact would be less than significant.

50 City of Los Angeles Department of Transportation, Transportation Assessment Guidelines, July 2020, available at: https://ladot.lacity.org/documents/transportation-assessment. Accessed April 2023.

d) Result in inadequate emergency access?

Less Than Significant Impact. As discussed above, the proposed project would require temporary lane closures during construction activities. As such, construction could potentially hinder emergency access along the pipeline alignments. The primary disaster route in the project vicinity is Ventura Freeway, and the secondary disaster routes are Victory Boulevard and Tampa Avenue. The temporary lane closures could have an effect on designated disaster routes. However, per implementation of BMP TRA-2 discussed in Section 1.9 of this IS/MND, LADWP would coordinate with emergency responders, including the LAFD and LAPD, regarding construction schedule and traffic control plans to coordinate emergency response routing during construction work. Coordination with emergency response agencies would ensure the construction of the proposed project would not result in inadequate emergency access. This impact would be less than significant.

During project operation, roadways would be returned to pre-construction configuration, and emergency access would not be restricted. No impact would occur.

XVIII. TRIBAL CULTURAL RESOURCES

The following analysis is based on information is provided in the Cultural Resources Technical Memorandum prepared by AECOM for the proposed project, which is included in Appendix C to this IS/MND, and Native American consultation by LADWP in accordance with Assembly Bill 52 (AB 52), which requires that a lead agency must consult with California Native American tribes who request formal consultation regarding potential impacts to tribal cultural resources.

Would the project:

a) Cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?

No Impact. Tribal cultural resources include sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe. As discussed in Section V(a) of this IS/MND, based on the assessment of historical resources in relation to the project APE, there would be no adverse change in the significance of a historical resource, including those eligible for listing in the CRHR or a local registrar. While initial consultation between LADWP and tribes with known affiliations to the area have identified a likelihood that tribal cultural resources could be present within the APE - based on the APE's position within or around the known traditional communities or settlements as well as other features such as trails, trade routes, and waterways - no known tribal cultural resources were identified within the project alignment based on the Sacred Lands File search conducted by the Native American Heritage Commission, archival research, and the field surveys of the alignment and surrounding area. Therefore, the proposed project would not result in a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in a state or local register of historical resources. No impact would occur.

b) Cause a substantial adverse change in the significance of a tribal cultural resource that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of the Public Resources Code Section 5024.1?

Less Than Significant Impact After Mitigation Incorporated. As discussed in Section XVIII(a) above, no tribal cultural resources, including sites, places, landscapes, or objects, were identified within the proposed project APE based on the Sacred Lands File search conducted by the Native American Heritage Commission, archival research, and the field surveys of the project alignment and surrounding area; however, initial consultation with Native American tribal representatives pursuant to AB 52 identified a likelihood that tribal cultural resources could be present within the project APE based on the APE's position within or around the known traditional communities or settlements as well as other features such as trails, trade routes, and waterways. As of the publication date of this IS/MND, LADWP has consulted with three tribes that requested consultation on the proposed project: the Gabrielino Tongva Indians of California, the Gabrieleño Band of Mission Indians – Kizh Nation, and the Fernandeño Tataviam Band of Mission Indians; consultation is ongoing. Because no specific tribal cultural resources have been identified within the project alignment, the site is within a heavily disturbed urban area, and the project alignment has been subject to extensive road and underground utility construction activity, there is low potential that significant tribal cultural resources would be encountered during ground-disturbing activities for the proposed project. Nonetheless, during the construction of the proposed project, unknown subsurface archaeological resources, including tribal cultural resources, could potentially be encountered during ground-disturbing activities.

If a potentially significant tribal cultural resource is discovered during construction, Mitigation Measures TCR-1 and TCR-2 would be required to reduce impacts to a less than significant level. With compliance with PRC Section 21083.2(i), implementation of Mitigation Measures TCR-1 and TCR-2 as well as the Cultural Resources Awareness Training BMP CUL-1, as outlined in Section 1.9 of this IS/MND, impacts to tribal cultural resources would be less than significant after mitigation incorporated.

Mitigation Measures

TCR-1 A tribal monitor shall be invited to monitor project-related ground-disturbing activities from Lindley Avenue to the eastern terminus of the proposed project alignment. The tribal monitor shall be ancestrally affiliated with the project area and qualified by their tribe to monitor tribal cultural resources. Before initiating ground-disturbing activities, the tribal monitor shall conduct a brief awareness training session for the benefit of all construction workers and supervisory personnel. The training, which could be held in conjunction with the project's initial on-site safety meeting, shall explain the importance of and legal basis for the protection of significant tribal cultural resources. Each worker shall be notified of the proper procedures to follow in the event that tribal cultural resources or human remains are uncovered during ground-disturbing activities. These procedures include work curtailment or redirection, and immediately contacting the site supervisor and archaeological and tribal monitor.

TCR-2 In the event that an archaeological resource inadvertently discovered during project construction is determined to be potentially of Native American origin based on the initial assessment of the find by a qualified archaeologist pursuant to California PRC Section 21083.2(i), the Native American tribes that consulted on the proposed project pursuant to California Assembly Bill 52 shall be notified and be provided information about the find to allow for early input from the tribal representatives with regards to the potential significance and treatment of the resource.

If, as a result of the resource evaluation and tribal consultation process, the resource is considered to be a tribal cultural resource determined, in accordance with California PRC Section 21074, to be eligible for inclusion in the California Register of Historic Resources or a local register of historical resources or to be significant by LADWP (the CEQA lead agency), the qualified archaeologist shall monitor all remaining ground-disturbing activities in the area of the resource, and a tribal monitor from a consulting Native American tribe shall be afforded the opportunity to observe the ground-disturbing activities. The tribal monitor shall be ancestrally affiliated with the project area and qualified by their tribe to monitor tribal cultural resources.

The input of all consulting tribes shall be taken into account in the preparation of any required treatment plan for the resources prepared by the qualified archaeologist. Work in the area of the discovery may not resume until evaluation and treatment of the resource is completed and/or the resource is recovered and removed from the site. Construction activities may continue on other parts of the construction site while evaluation and treatment of the resource takes place.

XIX. UTILITIES AND SERVICE SYSTEMS

Would the project:

a) **Require or result in relocation or the construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction of which could cause significant environmental effects?**

No Impact. The proposed project involves replacement of an existing aging trunk line and distribution mainlines to improve operation of LADWP's water distribution system. The proposed project would interconnect the 1134SZ at the east end and the 1123SZ at the west end, allowing flow between the two zones, providing operational flexibility and system resiliency. The proposed project would not require any additional supplies to the City's drinking water system. The construction and operation of the proposed project would not result in the need for additional water or wastewater treatment facilities. Construction of the proposed project is preliminarily scheduled to begin in Fall 2023 and would take approximately 7 years to complete. During construction, water would be required for activities such as dust control. However, these activities are limited and temporary and would not consume large amounts of water that would require construction of new water treatment facilities. Sanitary waste related to the temporary increase in on-site workforce during project construction would be handled through the use of portable chemical toilets, the waste from which would be removed by a private contractor and disposed of at an approved off-site location that would comply with the wastewater treatment requirements of the RWQCB. All drainage flows would be routed through existing storm infrastructure serving the project site and surrounding areas. Following construction, storm water flows would be similar to existing conditions. Use of electric power during construction would be provided by generators.

No additional workers are anticipated for project operation. The proposed project would not require new or expanded water, wastewater treatment, electric power, natural gas, or telecommunications facilities. No impact would occur.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

No Impact. Construction of the proposed project would require a limited quantity of water for dust control, excavation, and other construction-related activities. Existing water resources provided by LADWP would be sufficient to meet those needs. Once completed, the proposed project would not require new water supplies or increase the demand for water use. No impact would occur.

c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

No Impact. During construction of the proposed project nominal amounts of wastewater would be generated that would not require an increase in demand for wastewater treatment capacity. Therefore, the proposed project would not result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the proposed project's projected demand in addition to the provider's existing commitments. No impact would occur.

d) Generate solid waste in excess of state or local standards, or in excess of the future capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Less Than Significant Impact. As discussed above, construction of the proposed project would require excavation in existing paved areas (e.g., roadways and parking lot), generating construction waste, including demolished asphalt and soil. The total volume of excavated material over the 7-year construction period is estimated to be approximately 35,000 loose cubic yards (LCY). For impact analysis purposes, it has been assumed that the material would be disposed of in an area landfill approved to accept spoils. Several landfills throughout the County of Los Angeles could serve the proposed project, as listed in Table 22. The total permitted throughput for all these landfills is 43,025 cubic yards per day, and approximately 165.1 million cubic yards of total capacity remain. The estimate of excavated material to be generated and disposed of during project construction represents approximately 0.36 percent of the total remaining capacity of the landfill with the least capacity (Calabasas).[51] In addition, the project would incorporate source reduction techniques and recycling measures, as well as maintain a recycling program to divert waste in accordance

[51] This percentage was calculated as follows: (9,700,000 CY remaining capacity of Calabasas Landfill / 35,000 excavated LCY from the project) * 100 = 0.3608%

with California Assembly Bill 939 and the Citywide Construction and Demolition Debris Recycling Ordinance. These measures would minimize the amount of construction debris generated by the proposed project that would need to be disposed of in an area landfill. Once project construction is complete, the operation of the pipeline would not generate solid waste. Therefore, the proposed project would not generate solid waste in excess of state or local standards, or in excess of the capacity of local landfills, or otherwise impact the attainment of solid waste reduction goals. This impact would be less than significant.

Table 22: Existing Landfills

Landfill	Location	Estimated Closing Year	Maximum Daily Capacity (cubic yards per day)	Current Remaining Capacity (million cubic yards)
Antelope Valley	Palmdale	2041	3,600	14.6
Calabasas Landfill	Unincorporated Area	2027	7,901	9.7
Chiquita Canyon Landfill	Unincorporated Area	2047	12,208	57.9
Lancaster Landfill	Unincorporated Area	2041	4,000	13.2
Sunshine Canyon Landfill	Los Angeles/ Unincorporated Area	2037	15,316	69.7
		Total	**43,025**	**165.1**

Source: County of Los Angeles. 2020. Countywide Integrated Waste Management Plan, 2019 Annual Report, available at: https://dpw.lacounty.gov/epd/swims/ShowDoc.aspx?id=14372&hp=yes&type=PDF, accessed April 2023.

e) **Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?**

No Impact. The proposed project would comply with federal, state, and local statutes and regulations regarding solid waste. As discussed in Section XVIII(d) above, construction debris would be recycled or disposed of according to local and regional standards. No impact would occur.

XX. WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

a) **Substantially impair an adopted emergency response plan or emergency evacuation plan?**

b) **Due to slope, prevailing winds, and other factors, exacerbate wildland fires risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?**

c) **Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may result in temporary or ongoing impacts to the environment?**

d) **Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?**

No Impact (a-d). The project site is within an urban area of the City of Los Angeles and is not within a VHFHSZ within a Local Responsibility Area or State Responsibility Area.[52] No impact would occur.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

Less Than Significant Impact After Mitigation Incorporated. The proposed project would be located within existing paved areas (e.g., roadways and a parking lot) in the fully urbanized communities of Winnetka, Woodland Hills, Tarzana, Encino, and Sepulveda Basin within the western San Fernando Valley in the City of Los Angeles. Vegetation consists primarily of non-native ornamental trees and shrubs that are common in urban environments. The field survey and CNDDB search conducted for the proposed project indicates that no special-status species coincide with the proposed alignment or immediately adjacent area. However, noise and dust generated during construction as well as increased human presence during the construction phase could indirectly impact nesting birds resulting in increased nestling mortality due to nest abandonment or decreased feeding frequency. Such indirect impacts due to construction activities occurring during the nesting bird season, generally considered to extend from February 15 through September 15, would be avoided by complying with existing regulations (i.e., MBTA, CFGC) that protect nesting birds. Because entirely avoiding the nesting bird season is not possible due to the nature of the proposed project, compliance would be achieved through the implementation of pre-construction surveys (BMPs BIO-1 through BIO-4) conducted to ensure compliance with the MBTA and CFCG. With implementation of these BMPs, indirect impacts of construction on nesting birds would be to less than significant.

As discussed above in Section V(a) of this IS/MND, the SCCIC records search identified one previously recorded cultural resources mapped within the study area. This resource is a historic property built in the early 1960s as a gymnasium on the Pierce College Campus. It has been found to not appear eligible for listing in the National Register, California Register, or local listing. This resource is not within the project APE. A total of 225 properties are listed in the BERD adjacent to the project APE. All identified BERD resources were determined ineligible for listing in the National Register and were not evaluated for the California Register or for Local Listing. In addition, a search of resources in the Los Angeles Historic Resources Inventory identified one historic resource. This resource is a single-family residence located outside of the project APE and would not be impacted as a result of the proposed project. Also, while one historical resource meeting the age criterion of 45 years or more was identified during the field surveys (i.e., the Topham Trunk Line),

[52] State of California and the Department of Forestry and Fire Protection (CAL FIRE), Very High Fire Hazard Severity Zone Map, available at: https://osfm.fire.ca.gov/media/5830/los_angeles.pdf. Accessed on: June 3, 2022.

based on results of the NRHP and CRHR eligibility evaluation, it was determined that the Topham Trunk Line would be ineligible for the NRHP and CRHR under all applicable criteria. This impact would be less than significant.

In addition, as discussed in Section V(b) above, no archaeological resources were identified within the APE during the field survey or the archival search. Although not expected to occur due to the low potential in the project APE, in the event of an inadvertent discovery of archaeological resources during construction activities, the proposed project would be subject to California PRC Section 21083.2(i) regarding provisions related to the accidental discovery of archaeological resources. These provisions include immediately halting construction work in the vicinity of the find (within a 50-foot buffer), and LADWP retaining a qualified archaeologist meeting Secretary of the Interior standards to evaluate the significance of and determine appropriate treatment for the resource in accordance with the provisions of CEQA Guidelines Section 15064.5 and the National Historic Preservation Act. If the resource is determined to be potentially of Native American in origin, Mitigation Measure TCR-1 would be required to mitigate potential impacts to a less than significant level (see Section XVIII of this IS/MND). If the resource is determined non-Native American in origin and is determined potentially significant, a treatment or avoidance plan shall be developed within 48 hours of the discovery. Work in the area may not resume until evaluation and treatment of the resource are completed or the resource is recovered and removed from the site. Construction activities may continue on other parts of the construction site while the evaluation and treatment of archaeological resources take place. For non-Native American archaeological resources, compliance with PRC Section 21083.2(i) as well as the implementation of the Cultural Resources Awareness Training BMP CUL-1, as outlined in Section 1.9 of this IS/MND, would ensure that the impact would be less than significant. Therefore, impacts would be less than significant after mitigation incorporated.

Additionally, as initial consultation with Native American tribal representatives pursuant to AB 52 identified a likelihood that tribal cultural resources could be present within the project APE based on the project APE's position within or around the known traditional communities or settlements as well as other features such as trails, trade routes, and waterways, and as AB 52 consultation between LADWP and interested local tribes is ongoing, it is possible – though unlikely – that, the project area is culturally sensitive for tribal cultural resources. Such resources could potentially be encountered during ground-disturbing activities. Mitigation Measure TCR-1 requires inviting a tribal monitor to monitor project-related ground-disturbing activities from Lindley Avenue to the eastern terminus of the proposed project alignment. Additionally, implementation of Mitigation Measure TCR-2 would require inviting a tribal monitor and qualified archaeologist to monitor remaining ground-disturbing activities if a tribal cultural resource in accordance with California PRC Section 21074 is discovered. Work in the area of the discovery may not resume until evaluation and treatment of the resource is completed and/or the resource is recovered and removed from the site. As such, the implementation of Mitigation Measures TCR-1 and TCR-2, as well as the Cultural Resources Awareness Training BMP CUL-1, would ensure impacts remain less than significant after mitigation incorporated.

b) Does the project have environmental effects that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the

incremental effects of a project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Less Than Significant Impact. A significant environmental impact could result from the combined effects of two or more projects that are closely related geographically (i.e., within the same vicinity or greater region, depending on the nature and scope of the project and environmental factor under consideration) and in time (i.e., recently completed projects, projects currently under construction, and/or projects anticipated to be implemented in the near-term future). In general, the effects of a proposed project when combined with the effects of past projects (other than projects recently completed) are accounted for in the baseline conditions for the analysis of the proposed project's environmental impacts.

The analysis of the combined impacts of more than one project under CEQA allows decision-makers to consider the potential consequences of a project(s) in a broader environmental context rather than in isolation. This is necessary because a significant combined impact could result even when the individual impacts of related projects are less than significant. The combined effects of several related projects with individually less than significant impacts may also be determined to be less than significant on a cumulative basis. In addition, even if the combined effects of several related projects are determined to be significant, an individual project's incremental contribution to those significant combined effects may be determined to be less than cumulatively considerable and, therefore, less than significant.

When a project would create no impact related to a particular environmental factor, there would be no potential for the project to contribute to a significant effect created by the combined impacts of closely related projects. Based on the analysis in this IS/MND, the proposed project would create no impact related to agriculture and forestry resources, land use and planning, mineral resources, population and housing, public services, recreation, and wildfire.

Impacts for all other environmental factors considered in this IS/MND were determined to be less than significant without the need for mitigation measures, except for impacts related to noise created by construction activity, impacts related to inadvertent discovery of archaeological resources, and tribal cultural resources not currently listed or identified as eligible for listing in the CRHR, which were determined to be less than significant with the incorporation of project BMPs and mitigation measures.

Air pollutant and GHG emissions, as assessed under CEQA, are inherently recognized as cumulative impacts. Project-level thresholds of significance for these emissions are used in the determination of whether a project's individual emissions would make a cumulatively considerable contribution to a significant impact. Based on the analysis contained in this IS/MND, both air quality and GHG emissions would remain generally substantially below the defined thresholds of significance. Therefore, the proposed project would not make a cumulatively considerable contribution to a wider adverse air quality or GHG impact.

The use of energy is likewise considered an impact with potentially broader effects based on the consumption of limited energy resources. However, it was determined in this IS/MND that project energy consumption would be relatively minor, would not be wasteful, and would be temporary in nature, occurring only during project construction. Therefore, the proposed project would not make a cumulatively considerable contribution to a wider adverse impact related to energy consumption and conservation.

Potential impacts to various resources, including biological resources (nesting birds) and the inadvertent discovery of unknown buried archaeological, paleontological, or tribal cultural resources as well as human remains were determined in this IS/MND to be less than significant through compliance with existing policies or regulations or with the implementation of applicable BMPs established as part of the proposed project or mitigation measures introduced based on the results of the environmental analysis contained in the IS/MND. However, such impacts, should they occur, are site-specific in nature, limited to the project construction footprint, and would not, therefore, make a cumulatively considerable contribution to similar potentially adverse impacts resulting from other closely related projects in the vicinity.

Geology and hydrology impacts related to increased potential for erosion, runoff, siltation, flooding, and pollution discharges would also generally be site-specific in nature, but such impacts could also extend off-site and result in a larger impact when combined with similar impacts from closely related projects in the area. However, given the nature of the proposed project and the existing setting and with the implementation of applicable BMPs established as part of the proposed project, off-site impacts would be largely eliminated and would, therefore, not make a cumulatively considerable contribution to a more widespread impact potentially created by the combined effects of closely related projects.

Geology impacts related to seismic hazards and hazards created by various soil conditions pertain to the potential impacts from the environment upon the proposed project rather than impacts to the environment caused by the project. In this regard the proposed project would not make a cumulatively considerable contribution to similar impacts experienced by closely related projects in the area.

Impacts related to noise and hazardous materials during construction have the potential to affect a limited area beyond the boundary of the project. However, the assessment of such impacts in this IS/MND and the conclusion of a less than significant impact accounted for the combined effect of the proposed project and the surrounding existing setting through compliance with existing policies or regulations and/or with the implementation of applicable BMPs established as part of the proposed project or mitigation measures introduced based on the results of the environmental analysis contained in the IS/MND. Furthermore, no major projects that would contribute to a significant combined impact related to these environmental factors have been identified in the vicinity of the proposed project.[53]

The proposed project would create individually less than significant impacts to transportation systems based on the requirement to close traffic lanes during construction. However, this impact would be temporary and limited in physical extent

[53] Los Angeles Department of City Planning. Major Projects, available at: https://ladcp.maps.arcgis.com/apps/MapJournal/index.html?appid=b06f97ccf94741fdaad27443013eead1. Accessed April 2023.

at a given time, and therefore, would make a less than cumulatively considerable incremental contribution to any combined effect created by other projects. Furthermore, as discussed above, no major projects that would contribute to a significant combined impact related to transportation have been identified in the vicinity of the proposed project.

Impacts to utilities and service systems could contribute to a significant impact from the combined effects of more than one project on the limited capacity of services such as wastewater treatment, water supply, and solid waste disposal. However, as discussed in this IS/MND, the proposed project would create no impacts related to wastewater, storm water, electrical power, natural gas, or telecommunications facilities or supplies, and, therefore, could not make a cumulatively considerable contribution to a wider impact. As discussed, the proposed project would generate solid waste in the form of excavated material. However, this would be temporary, occurring during construction only, and would represent about 0.36 percent of both the allowable daily throughput and total remaining capacity of the regional landfill with the least amount of available capacity, which would represent a less than cumulatively considerable incremental contribution by the proposed project to any combined effect created by other projects. Based on the above, the proposed project would not have environmental effects that are individually limited, but cumulatively considerable, and the impact is less than significant.

c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?

Less Than Significant Impact After Mitigation Incorporated. As discussed throughout Section 3 of this IS/MND, the impacts related to the proposed project would be temporary in nature, driven by construction activities. As such, the proposed project would not result in potentially significant long-term impacts to the environment that would result in substantial adverse effects on human beings, either directly or indirectly. Numerous factors discussed above in Section III pertain to the quality of the human environment. Based on the analysis contained above, the environmental impacts created by the proposed project in relation to most of these factors would be less than significant. As discussed in Section XIII, the proposed project could generate a substantial temporary increase in ambient noise levels and groundborne vibration from the construction activity. Therefore, Mitigation Measures NOI-1 through NOI-7 would be required. With the incorporation of these mitigation measures, substantial adverse effects on human beings would not occur. This impact would be less than significant after mitigation incorporated.

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SECTION 4
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TOPHAM TRUNK LINE REPLACEMENT PROJECT INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

TECHNICAL APPENDICES

TECHNICAL APPENDICES
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APPENDIX A

Air Quality Impacts Assessment

taha environmental planners

Technical Memorandum

TO: Hallie Fitzpatrick, AICP
AECOM

FROM: Terry A. Hayes Associates Inc.

DATE: May 23, 2023

RE: Los Angeles Department of Water and Power (LADWP)
Topham Trunk Line Replacement Project – Air Quality Impacts Assessment

Introduction

Terry A. Hayes Associates Inc. (TAHA) has completed an Air Quality Assessment for the Topham Trunk Line Replacement Project (TTLR project or proposed project) in accordance with the provisions of the California Environmental Quality Act (CEQA) Statutes and Guidelines. This Assessment is organized as follows:

- Introduction
- Project Description
- Air Quality Topical Information
- Regulatory Framework
- Existing Setting
- Significance Thresholds
- Methodology
- Impact Assessment
- References

Project Description

Project Location and Setting

The Los Angeles Department of Water and Power (LADWP) proposes to install approximately 23,300 linear feet (LF) of a 36-inch diameter underground pipe along Victory Boulevard, Topham Street, and Oxnard Street, in the west San Fernando Valley area of the City of Los Angeles. The installation of the new 36-inch diameter trunk line (referred to herein as the Topham Trunk Line Replacement [TTLR] Project, the project, or proposed project) would replace the aging and deteriorating existing 24-inch Topham Trunk Line to provide greater operational flexibility for water flow and delivery and to improve system redundancy and resiliency. The proposed project would also include approximately 6,599 LF of new 12-inch diameter underground distribution mainline that would connect the proposed TTLR Project to the existing distribution system on Mason Avenue, Victory Boulevard, and Topham Street. In addition, the proposed project would include approximately 3,429 LF of new 16-inch diameter underground distribution mainline that would replace the existing 8-inch diameter distribution mainline on Tampa Avenue, south of Topham Street. The TTLR and the distribution mainlines would be installed mostly parallel to their respective existing lines; once installation is completed, the existing lines would be abandoned in place and decommissioned accordingly.

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310.839.4200 fax 310.839.4201

The proposed project would be located in the western San Fernando Valley of the City of Los Angeles within the communities of Winnetka, Woodland Hills, Tarzana, Encino, and the Sepulveda Basin (**Figures 1 through 3**). Approximately 23,300 LF of the new 36-inch diameter trunk line would be installed along Victory Boulevard, Topham Street, and Oxnard Street, beginning just east of the intersection of De Soto Avenue and Victory Boulevard and ending at the intersection of Oxnard Street and Encino Avenue. A portion of the new 36-inch diameter trunk line would be installed within an existing LADWP easement located at the Los Angeles County Metropolitan Transportation Authority (Metro)'s Pierce College Station parking lot and north of the baseball fields at Winnetka Avenue and Victory Boulevard. In addition, approximately 6,599 LF of the new 12-inch diameter distribution would be installed along Mason Avenue (from Kittridge Street to Victory Boulevard), Victory Boulevard (at the intersection of Mason Avenue and Victory Boulevard), and Topham Street (from Victory Boulevard to Tampa Avenue). Approximately 3,429 LF of the new 16-inch diameter distribution mainline would be installed along Topham Street (from Tampa Avenue to Evenhaim Lane) and Tampa Avenue (from Topham Street to Ventura Boulevard). As described previously, the TTLR and the distribution mainlines would be installed mostly parallel to their respective existing lines; once installation is completed, the existing lines would be abandoned in place and decommissioned accordingly.

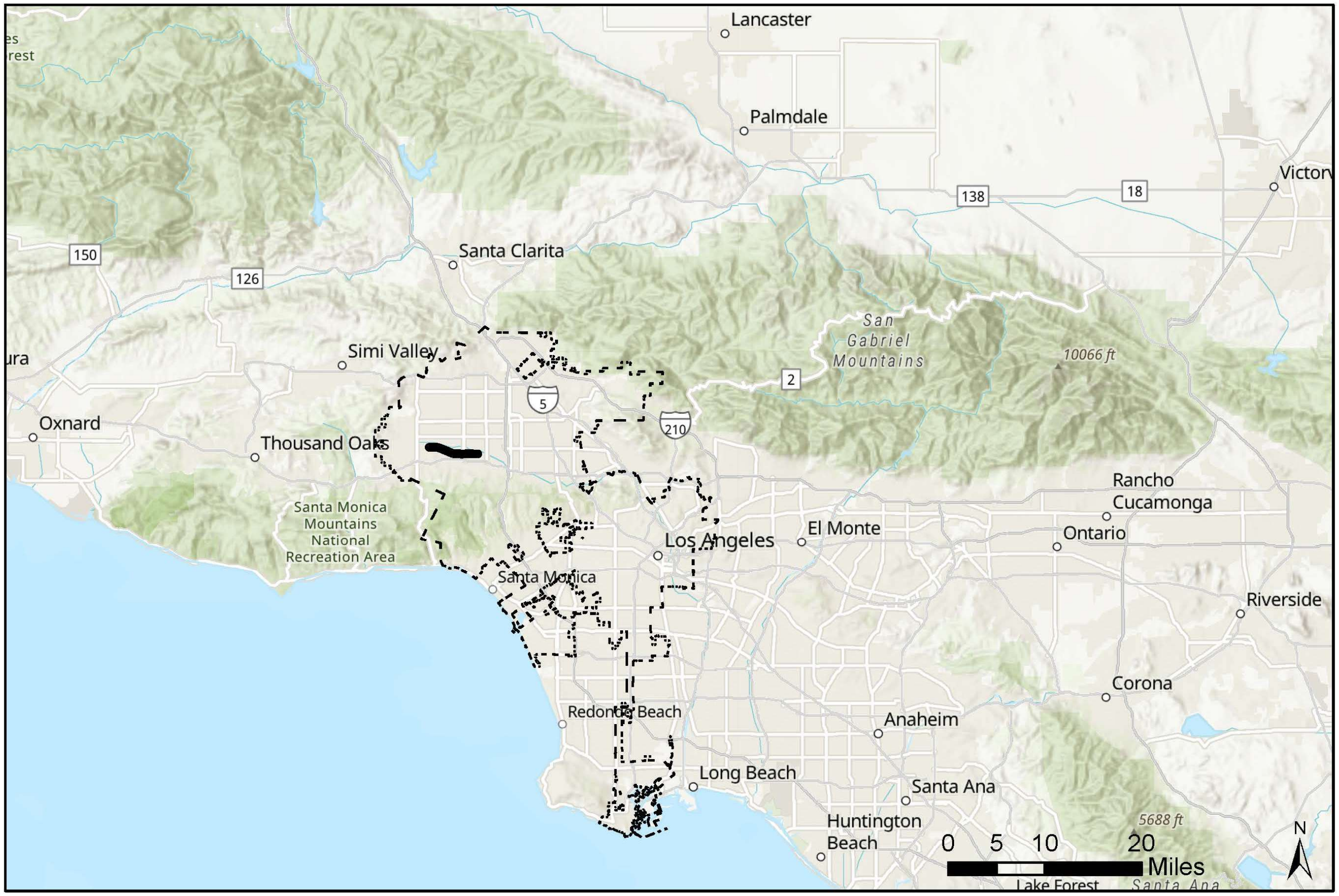
Land uses along Victory Boulevard, Topham Street, Oxnard Street, and Tampa Avenue are mixed and include residential, religious, commercial, public transit (Los Angeles County Metropolitan Transportation Authority [Metro] Orange Line), one private school (Woodcrest Preschool), limited manufacturing, open space, and public facilities including Pierce College. The Los Angeles River runs east-west, approximately 0.25 to 0.5 mile north of the proposed project.

Proposed TTLR Components and Location

The primary component of the proposed project is a new 36-inch diameter underground trunk line, which would replace the existing Topham Trunk Line. As previously discussed, the replacement line would be routed mainly within Victory Boulevard, Topham Street, and Oxnard Street. On the east, the TTLR would connect directly to the existing Encino Inlet Line, identified as the 1134SZ at Encino Avenue. On the west, the TTLR would connect directly to the De Soto Trunk Line, identified as the 1123SZ at De Soto Avenue. Because the existing Topham Trunk Line must remain in service until the proposed project is completed, the TTLR would be installed in an alignment parallel to, rather than removing and replacing, the existing trunk line.

The TTLR would consist of WSP, which is considered a continuous pipeline because the joints between pipe segments are welded together. Seismic loads created by ground displacement from a seismic event are accommodated by the capability of the walls of the WSP to stretch and bend.

Because the TTLR would interconnect directly to the 1123SZ and 1134SZ to provide system redundancy and operational flexibility, the proposed project would also include the installation of approximately 6,599 LF of new 12-inch diameter underground distribution mainline and approximately 3,429 LF of new 16-inch diameter underground distribution mainline. The 12-inch diameter distribution mainline and 16-inch diameter distribution mainline would be connected to existing distribution mainlines throughout the alignment to provide direct service to the 1123SZ. Both distribution mainlines would consist of earthquake resistant ductile iron pipe (ERDIP) to provide resilience during seismic events. Segments of ERDIP are joined with a gasket rather than being fused together, which provides flexibility at the joints to accommodate seismic loads by allowing the pipeline not only to bend laterally but also expand and contract lengthwise.



Legend

Proposed Topham Trunk Line Project

City of Los Angeles Boundary

Figure 1
Project Vicinity Map

County of Los Angeles, California State Parks, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, Esri, USGS

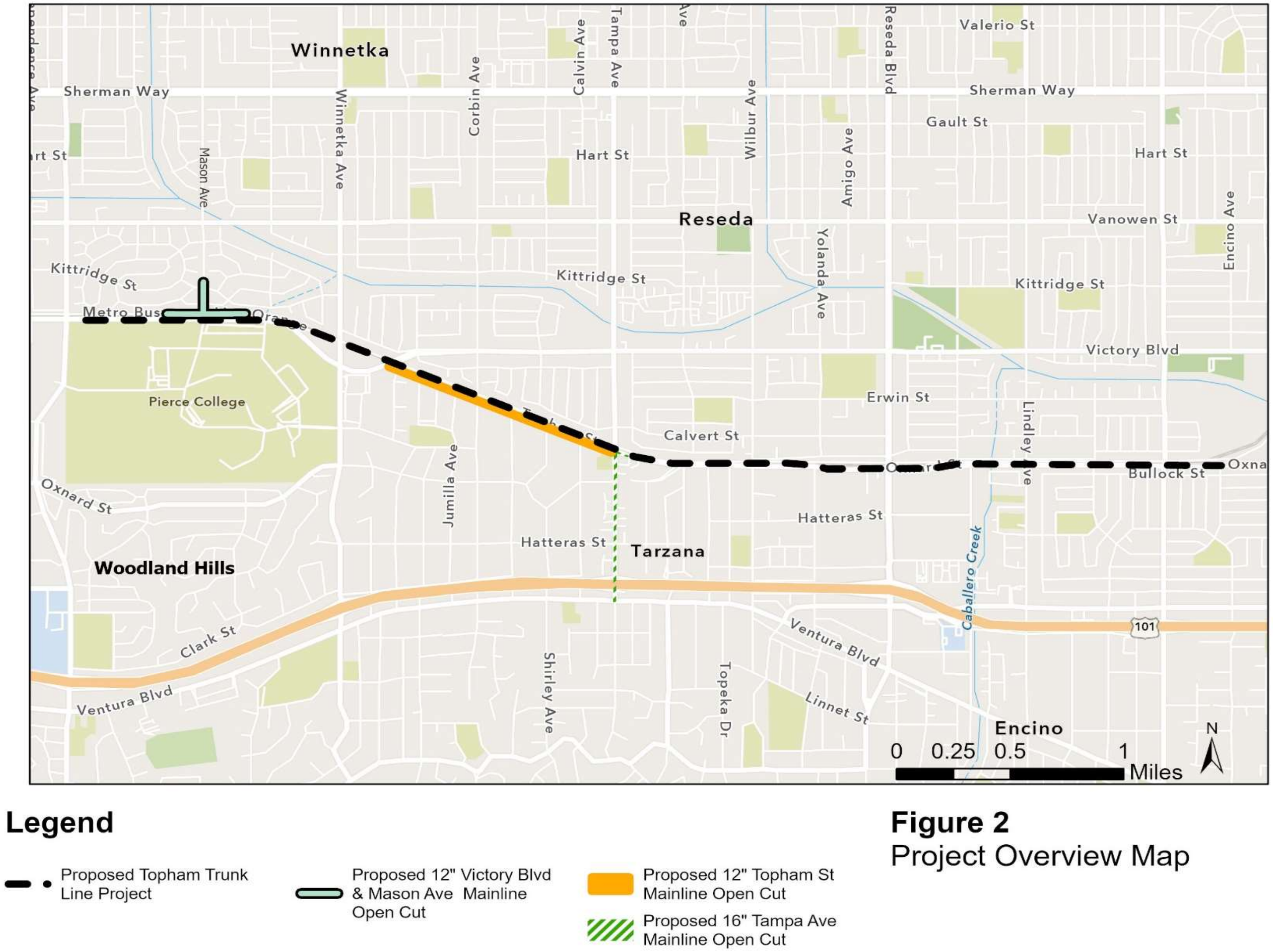
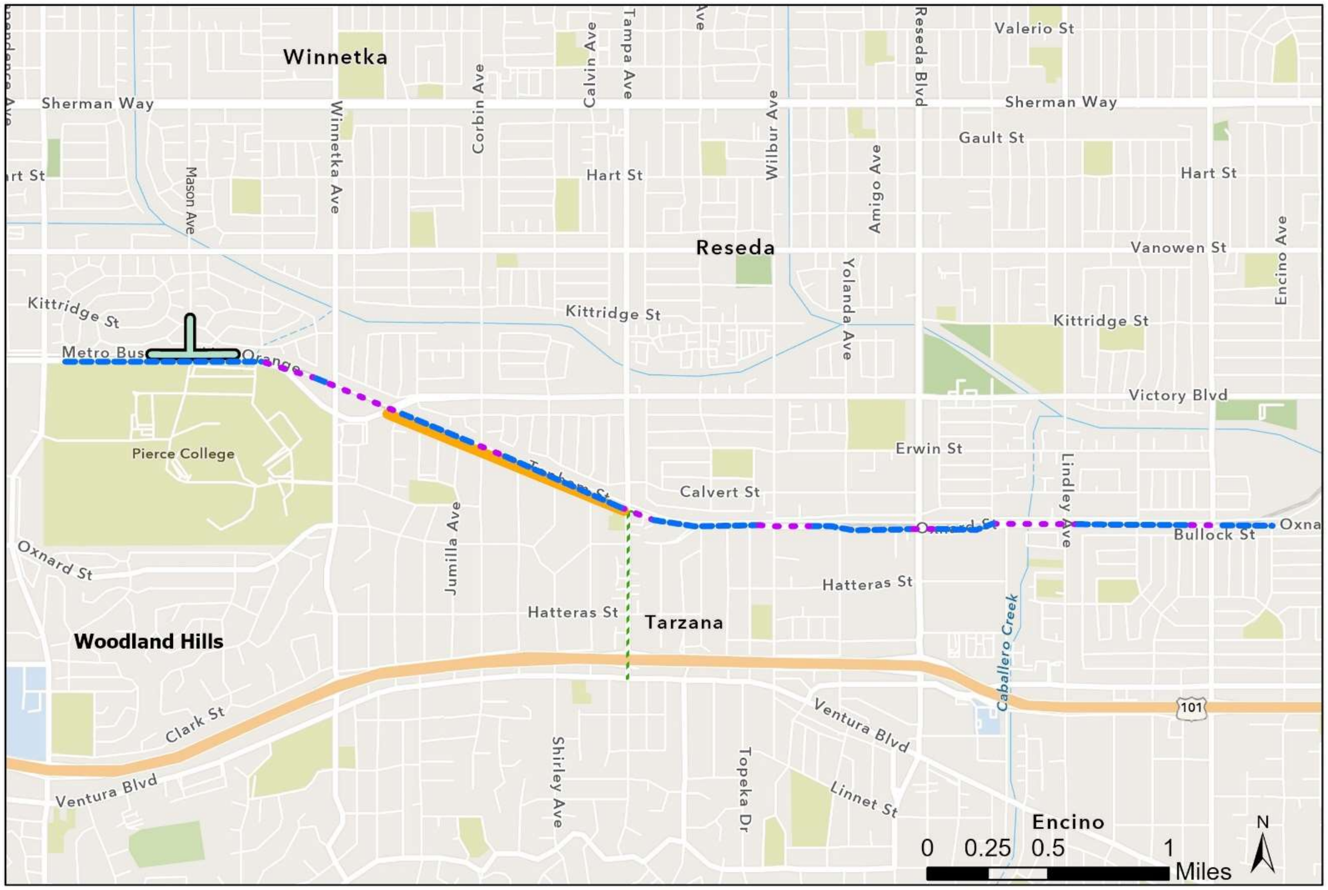


Figure 2
Project Overview Map

County of Los Angeles, California State Parks, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA



Legend

Construction Method

- Proposed Topham Tunk Line Jacking
- Proposed Topham Tunk Line Open Cut
- Proposed 12" Victory Blvd & Mason Ave Mainline Open Cut
- Proposed 12" Topham St Mainline Open Cut
- Proposed 16" Tampa Ave Mainline Open Cut

Figure 3
Project Construction Methods Overview

County of Los Angeles, California State Parks, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA

In addition to the above, several appurtenant facilities necessary to support the operation of the proposed trunk line and mainline would be installed. These include isolation valves, a flow meter, and a flow recorder. The isolation valves and flow meter would be located underground within the public road ROW. The flow recorder would be installed in an aboveground cabinet (72 inches tall, 48 inches wide, and 24 inches deep) located on the western end of the project alignment on Victory Boulevard (just east of De Soto Avenue). After the TTLR is operational, the existing Topham Trunk Line would be isolated from the drinking water system and abandoned in place.

Project Construction – Construction Schedule

Construction for the proposed project is estimated to begin in Fall 2023 and would take approximately 7 years to complete (**Figure 4**).

Figure 4
Project Construction Schedule

As shown above in Figure 4, the 12-inch diameter distribution mainline would be installed first from approximately third quarter 2023 to third quarter 2024, followed by the 16-inch diameter distribution mainline, which would be installed from approximately third quarter 2024 to second quarter 2025. The TTLR would be installed a few months after the 16-inch diameter distribution mainline is completed from approximately third quarter 2025 to third quarter 2030.

Construction activities for the TTLR would occur between 7:00 a.m. and 6:00 p.m., Monday through Friday. For the 12-inch and 16-inch diameter distribution mainlines, construction activities would occur between 9:00 a.m. and 3:30 p.m., Monday through Friday, but some nighttime construction may be required.

Trunk Line and Mainline Open-Trench Construction

The 12-inch and 16-inch diameter distribution mainlines as well as the majority of the TTLR would be installed through an open-trench method of construction whereby a trench is excavated in the roadway, pipeline segments are placed in the trench, the trench is backfilled, and the road is repaved. In order to achieve the open-trench construction in an effective, efficient, and safe manner, work zones would be established in the roadway within which open-trench construction activities could proceed unimpeded. Preliminarily, the work zones for the 12-inch and 16-inch diameter distribution mainlines would total approximately 2,400 feet in length, and the work zones for the TTLR would total approximately 3,000 feet in length. These work zones would include the active construction work area (400 feet for the 12-inch and 16-inch diameter distribution mainlines and 1,000 feet for the TTLR), and traffic control tapering on each end of the work area, at 1,000 feet in length at each end.

The work zones would be the minimum width required to accommodate barriers or cones separating traffic from construction activities, safety setbacks adjacent to the trench, shoring required to stabilize the trench walls (for the TTLR installation), the trench itself, and adequate area to safely and effectively operate equipment and trucks, as well as the flexibility to avoid existing substructures in the road. With these measures, the work zones would be approximately 25 to 30 feet in width for the 12-inch and 16-inch diameter distribution mainlines, and 30 to 40 feet in width for the TTLR. Based on the width of the work zone, some street segments along the proposed project alignment may allow only for one traffic lane in each direction and no parking. For the TTLR construction, the following street segments may require full closure with local access only, due to the narrow curb to curb dimensions:

- Topham Street, between Victory Boulevard and Cahill Avenue
- Oxnard Street, between Cahill Avenue and Wilbur Avenue
- Oxnard Street, between Lindley Avenue and Encino Avenue

These work zones would allow for the continuous installation of the TTLR pipeline in longer spans without the requirement to frequently disassemble and relocate barriers, equipment, and construction support facilities and modify traffic control elements, all of which would hamper the pipeline installation process but not substantially improve the flow of traffic in the vicinity of the construction. In addition to the actual work zones, lane transition zones would be required extending outward from the work zone along Mason Avenue, Victory Boulevard, Topham Street, Oxnard Street, and Tampa Avenue to channel approaching traffic into the travel lanes adjacent to the work zone.

The open-trench construction process for the TTLR would involve several steps. The initial step of the installation would be establishing the construction work zone. This would be accomplished by first installing traffic controls, including restriping of lanes, signage, and traffic signal modifications, as necessary, to merge traffic and direct it safely around the work zone. K-rails and other traffic barriers or markers would then be installed around the actual work zone to demarcate the zone and provide a safe working area. Placing the K-rail barriers would require the use of a forklift or other type of construction equipment. Mobilization would include delivering construction equipment and materials to the work zone and establishing field offices and other personnel and construction support facilities necessary for trunk line installation to proceed.

Once the work zone has been established, subsurface utility exploration would be conducted to verify the vertical and horizontal location of underground utilities that must be avoided, protected, or relocated during pipeline installation. This would involve core drilling a small-diameter hole in the pavement and removing soil with a vacuum truck to expose the utilities. Once the precise alignment of the trunk line has been established based on this exploration, the pavement would be cut along both edges of a given length of the trench using a pavement saw, and the pavement over the trench would be stripped using an excavator and a front loader. The pavement would be loaded on trucks and hauled from the site and either reclaimed for use as paving material or road base material, or it would be taken to a landfill as inert debris that can be recycled as road base for internal landfill use.

Because of the depth of excavation for the trunk line, shoring to support the walls of the trench may be required to provide a stable and safe working environment. Cantilever or braced shoring methods would be utilized, but are dependent on soil investigation results. No impact pile-driving would be involved. Installing the piles would be accomplished using a drill rig and a hydraulic crane with various attachments, depending on the method of installation. These steps, from traffic control to installing the shoring piles, would be completed before any of the actual pipeline installation tasks would begin and would take approximately two months.

After the shoring piles are in place, work would begin on installing individual pipe segments. For the 36-inch diameter trunk line, the trench would be excavated approximately 5 to 6 feet wide and 8 to 15 feet deep. These depths are necessary to accommodate the 36-inch diameter trunk line, bedding material under the pipe, and the minimum of five feet of cover required over the trunk line.

The steel shoring plates would be lowered between the H-beams as the depth of the trench excavation increases. Approximately 250 to 300 LF of trench could be excavated and shored in a month for the TTLR. The excavated material would be loaded onto trucks parked adjacent to the trench and hauled from the work zone. While some of the excavated material may be utilized at other construction sites within the region, it is assumed for environmental analysis purposes that all material would be hauled to a local landfill.

In addition to the pipe segments, various appurtenances, such as valves, meters, and maintenance holes, would also be installed as required. The general process for installation of these appurtenances would be similar to the pipe segments and would occur within the designated work zones.

After completion of the work within a given work zone, equipment, materials, and facilities would be removed from the zone, the pavement would be restored and restriped, and the traffic barriers would be removed. Depending on the length of the work zone and actual conditions, active construction within an individual work zone may range for approximately 3 to 4 months. The entire process would then be repeated for the next construction work zone, which may or may not be in an adjacent section of the roadway.

The open-trench construction process for the 12-inch and 16-inch diameter distribution mainlines would be simpler than the TTLR. All traffic control materials would be set up prior to the start of every work shift and would be removed after work is completed for the day. The Underground Service Alert system will be utilized to map underground utilities along the alignment. The pavement cutting and excavation process would involve excavating will be similar as that of the TTLR except for the trench dimensions. For the 12-inch diameter distribution mainline, the trench would be excavated approximately 30 inches wide and 4 to 5 feet deep. For the 16-inch diameter distribution mainline, the trench would be excavated approximately 3 feet wide and 5 feet deep. For these depths, no shoring would be needed. These depths are necessary to accommodate the 12-inch and 16-inch diameter distribution mainlines, bedding material under the lines, and the minimum of 3 feet of cover required over the mainlines. At the end of every work shift, any open trench would be covered with steel plates for the safety of the public. For the 12-inch diameter distribution mainline, approximately 20 to 40 LF of trench could be installed in a day. For the 16-inch diameter distribution mainline, approximately 20 to 25 LF of trench could be installed in a day.

Various pieces of construction equipment would be used to accomplish the open-trench installation of the TTLR as well as the 12-inch and 16-inch diameter distribution mainlines. For the TTLR, the construction equipment would include the following: drill rig, front loader, hydraulic cranes, pavement saw, sweeper, forklift, excavator, backhoe, blower, skid steer, wheel loader, carry deck, utility trucks (water truck, gang truck, slurry truck, flat bed pipe truck, four pick-up trucks, two axle dump trucks, and three axle dump trucks), and trailers (dump trailer, low bed trailer, weld truck with trailer). For the 12-inch and 16-inch diameter distribution mainlines, the construction equipment would include the following: backhoe, crane (or carry deck if overhead power is present or the work zone is within a narrow street), utility trucks (two axle dump truck, three axle dump truck, gang truck, flatbed for pipe), skid steer, sweeper truck, and carrier for backhoe (or trailer attached to a dump truck). However, these pieces of equipment serve specialized purposes during the pipeline installation and would generally only be operated for brief periods when required. For example, the saw would be used to cut the edges of the trench at the beginning of the construction process, the excavator would be used during trench excavation, and a crane would be used when installing the H-beam piles and the trunk line or mainline pipe segments. Therefore, individual pieces of equipment would not operate continuously during the day and generally would not operate simultaneously.

Trucks would haul debris and excavated material from the site and deliver construction materials, such as pipe segments and backfill material, to the site. The peak of haul truck trips would occur during the excavation of the trench, which may require an average of three dump trucks trips in a single day, assuming a 10-cubic yard truck capacity for the TTLR and a 20-cubic yard truck capacity for the 12-inch and 16-inch distribution mainlines. The peak of delivery trucks would occur during the backfilling of the trench with the soil-cement slurry. Assuming a 10-cubic yard concrete truck capacity for the TTLR, this may require an average of one to two concrete trucks per day to backfill the trench within 5 feet of the surface after the installation of the trunk line. Also, assuming a 20-cubic yard dump truck capacity for the 12-inch and 16-inch distribution diameter mainlines, this may require an average of three to four dump trucks per day to backfill the trench within 3 feet of the surface after the installation of these distribution mainlines. These excavation and backfilling operations may occur simultaneously in different sections of the trench, which may result in a peak of approximately five truck trips per day within a given work zone.

Within a given work zone, the open-trench construction would require approximately 20 daily construction personnel for the trunk line and 8 daily construction personnel for the 12-inch and 16-inch diameter distribution mainlines installation. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

Project Construction – Trunk Line Microtunneling (Jacking)

While the majority of the TTLR would be installed using the above described open-trench method of construction, in certain areas, a microtunneling (also referred to as jacking) method would be employed to install the trunk line. The microtunneling method would use a cutting head that loosens the soil, then the soil is transported out. Microtunneling would be utilized where large substructures exist that cannot be easily relocated for the TTLR. These structures include major sewer, storm, natural gas, or water lines or other structures. Microtunneling involves installing the trunk line beneath these substructures at a depth sufficient to avoid direct conflicts as well as indirect impacts related to settlement of soil material above the tunnel. As the tunnel is bored, steel pipe casing is continually pushed forward into the tunnel by a hydraulic jacking system.

The total length of microtunneling is preliminarily estimated at approximately 6,161 LF of the total 23,300-LF TTLR (Figure 3). Microtunneling would occur at the following locations along the TTLR alignment: Victory Boulevard (just south of Oso Avenue) to the existing LADWP easement located at Metro's Pierce College Station parking lot and immediately north of the baseball fields at Winnetka Avenue and Victory Boulevard; Topham Street (at Corbin Avenue and Tampa Avenue, respectively); and, Oxnard Street (between Topeka Drive and Yolanda Avenue, at Reseda Boulevard, between Etiwanda Avenue and Lindley Avenue, and between Balcom Avenue and White Oak Avenue, respectively).

The microtunneling method requires excavating shafts at either end of the span. Similar to open-trench construction, the microtunneling would require a work zone to accommodate various pieces of equipment involved in the jacking process, delivery and haul trucks, and other construction support functions. Based on the width of these work zones, some street segments along the proposed project alignment may allow only for one traffic lane in each direction and no parking. The work zones for the End Tunnel Pit on Oxnard Street east of Lindley Avenue, the Jacking Pit on Oxnard Street west of Topeka Drive, or the pits on Topham Street, may require complete road closures and signage for detours would be posted accordingly. In addition, a portion of the work zone that occurs within the existing LADWP easement on Metro's Pierce College Station parking lot may require the northern portion of the parking lot to be closed for approximately one year for completion of the microtunneling work. The work zones surrounding each shaft would total approximately 3,000 feet in length. This would include the two launching and receiving work areas for the pits (approximately 12 feet wide, 35 feet long, and 30 feet deep), approximately 1,000 feet of spacing between the pits, and the traffic control tapering that extends about 1,000 feet beyond both sides of the work areas. They would overlap in location with the adjacent open-trench work zone but both work zones would not be active at the same time.

Cantilever or braced shoring methods would be utilized, but are dependent on soil investigation results. No impact pile-driving would be involved. After the piles have been installed, the shafts would be excavated, and the excavated material would be loaded onto trucks parked adjacent to the shaft and hauled from the construction work zone to a local landfill. The establishment of the shafts and installation of microtunneling equipment may take several weeks.

Several types of microtunnel boring machines may be utilized for pipeline installations. However, for the purposes of environmental analysis, it has been assumed that a closed-face slurry shield microtunneling boring machine (MTBM) would be employed. This type of MTBM permits microtunneling where groundwater may be encountered and limits groundwater intrusion into the launching and receiving shafts, minimizing the need for dewatering.

The microtunneling process would involve the installation of a steel casing pipe between the launching and receiving shafts. The MTBM process does not require construction personnel to enter the tunnel, as the machines are controlled from outside the tunnel. The MTBM would be lowered into the launching shaft and pushed forward by the hydraulic jacking frame as the cutter head of the MTBM removes soil at the leading edge of the tunnel. The slurry shield MTBM provides a closed environment within which soil particles are transferred into the interior of the cutter head, mixed with water that is pumped from the surface to the MTBM, and pumped through discharge lines to the surface as a slurry mixture. This process allows the MTBM to be advanced toward the receiving shaft by the hydraulic jack, with pipe casing segments, which are nominally 35 feet in length, continually lowered into the launching shaft and pushed forward behind the MTBM. Each new casing segment would be welded to the previous segment to extend the casing. The slurry mixture pumped to the surface would be processed in a separation plant to remove the spoils and recycle the water through the MTBM. The spoils would be transferred to a dump truck to be hauled off site.

The work zones surrounding each shaft would total approximately 4,000 feet in length. This would include the two launching and receiving work areas for the pits, approximately 2,000 feet of spacing between the pits, and the traffic control tapering that extends about 1,000 feet beyond both sides of the work areas. The work zones for the End Tunnel Pit on Oxnard Street east of Lindley Avenue may require complete road closure due to the narrow curb to curb width.

The average pace of installation for microtunneling would be approximately 40 feet per day, which would not include pit excavation or pipe installation. The actual time to complete a microtunneling installation for a given span would depend on factors such as soil conditions as well as the length of the span, with the total length of individual spans ranging from about 350 feet to 1,550 feet for microtunneling. However, the entire microtunneling operation at a given shaft location would be expected to be approximately 6 months.

Various pieces of construction equipment would be used to accomplish the microtunneling installation, including an excavator, front loader, hydraulic crane, utility truck, tunnel ventilation systems, slurry separator plant, tunnel boring machine, power generators, electrical systems, and high pressure water pump. Trucks would haul excavated material from the shaft and the spoils from the boring operation as well as deliver construction materials. The peak of haul truck trips would occur during the excavation of the launching and receiving shafts, which may require up to about two to three trucks per day, which may result in a peak of approximately three truck trips per day within a given work zone.

For microtunneling operations, the peak of delivery trucks would occur during the backfilling of the shafts with the soil-cement slurry. Assuming a 10-cubic yard truck capacity, this may require up to about three concrete trucks per day to backfill both shafts. Microtunneling would require approximately 28 construction personnel. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

Connections

As mentioned above, the existing Topham Trunk Line must remain in service during project construction. Therefore, the proposed project, including the 12-inch and 16-inch diameter distribution mainlines, would first be placed in service and supplied via a connection to the new De Soto Trunk Line Replacement at De Soto Avenue and Victory Boulevard at the west end. The existing Topham Trunk Line would remain in service and supplied by the existing Encino Inlet Line at Oxnard Street and Encino Avenue at the east end. This would allow connections from the 12-inch and 16-inch diameter distribution mainlines to the distribution system to be done with minimal impact to normal operations in the 1123SZ. Once these distribution connections have been made, the TTLR connection to the Encino Inlet Line at Oxnard Street and Encino Avenue would be made. The shutdown of the existing Topham Trunk Line would take place during the winter months when water demand is low to avoid potential supply issues. The existing Topham Trunk Line would be isolated from the drinking water system and abandoned in place once these final connections have been made.

Project Operations

The TTLR would interconnect the 1134SZ at the east end and the 1123SZ at the west end, allowing flow between the two zones, providing operational flexibility and system resiliency. The TTLR would be located entirely underground and would not be visible. Activities associated with long-term operations and maintenance would be minimal, limited to scheduled maintenance or emergency repair. No additional permanent LADWP workforce would be required to operate the TTLR.

Best Management Practices

The following best management practices (BMPs) would be employed during construction of the proposed project, to help minimize or eliminate potential impacts to the environment. BMPs are distinguished from mitigation measures because they are based on existing regulatory requirements and/or are standard practices and procedures of LADWP and/or its contractors not unique to the proposed project.

Air Quality

- **BMP-AQ-1:** The proposed project would comply with South Coast Air Quality Management District (SCAQMD) Rule 401 (Visible Emissions) and Rule 402 (Nuisance) to prevent the occurrence of public nuisances and visible dust plumes traveling off-site, and would implement Rule 403 dust control measures and Rule 1166 measures to control the emission of Volatile Organic Compounds (VOCs) from excavating, grading, handling and treating VOC-contaminated soil as required by the SCAQMD, including but not limited to the following:
    - Water shall be applied to exposed surfaces at least two times per day to prevent generation of dust plumes.
    - The construction contractor shall utilize at least one of the following measures at each vehicle egress from the project site to a paved public road:
        - Pave the surface extending at least 100 feet and at least 20 feet wide;

  - ▪ Utilize a wheel shaker/wheel spreading device consisting of raised dividers at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages; or
  - ▪ Install a wheel washing system to remove bulk material from tires and vehicle undercarriages.

- o All trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
- o Construction activity on exposed or unpaved dirt surfaces shall be suspended when wind speed exceeds 25 miles per hour (mph).
- o A community liaison shall be identified concerning on-site construction activity including resolution of issues related to dust generation.
- o Non-toxic soil stabilizers shall be applied according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more).
- o Streets shall be swept at the end of the day if visible soil is carried onto adjacent public paved roads. If feasible, water sweepers with reclaimed water shall be used.

Biological Resources

Because project construction activities would be continuous during the 7-year construction period, nesting bird season (which generally occurs February 15 through September 15, and as early as January for raptors) could not be avoided. Therefore, the following BMPs shall be employed to avoid and minimize impacts to nesting birds protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGC):

- **BMP-BIO-1:** A pre-construction nesting bird survey shall be conducted by a qualified biologist within 3 days prior to the start of construction activities during the nesting season to determine whether active nests are present within or directly adjacent to the construction zone. All nests found shall be recorded.

- **BMP-BIO-2:** In the event an active nest is detected, a qualified biologist shall monitor the nest to determine if a nest avoidance buffer zone is necessary to restrict construction activities in proximity to the nest to protect the nest from failing. Any buffer zone, within which construction activities may not occur, shall be established in coordination with the qualified biologist, who shall take into account existing baseline conditions (e.g., topography, buffering buildings or other structures, etc.). In addition, observed avian response to ambient conditions (e.g., existing traffic noise and human activity) shall factor into the requirement for and size of a nest avoidance buffer.

- **BMP-BIO-3**: The qualified biologist shall monitor all active nests, including those with and without an established buffer, at least once per week to determine whether birds are being disturbed. If signs of disturbance or stress are observed, the qualified biologist shall implement adaptive measures to reduce disturbance. These measures could include establishing or increasing buffer distances, or placing visual screens or sound dampening structures between the nest and construction activity until fledging is confirmed. The qualified biologist shall monitor each active nest until they determine that nestlings have fledged and dispersed, or the nest is no longer active.

- **BMP-BIO-4:** Should an active nest of any federal or state-listed bird species be detected during pre-construction surveys or subsequent construction monitoring, construction activity in the immediate area shall not commence or shall cease if already underway, and the applicable federal and/or state agency (e.g., United States Fish and Wildlife Service [USFWS], California Department of Fish and Wildlife [CDFW], etc.) shall be notified. Work in other areas of the project site may continue until the active nests has been evaluated.

Cultural Resources

- **BMP-CUL-1:** All field supervisors and all construction workers shall participate in training on cultural resources awareness prior to the initiation of project construction on project sites that involve ground-disturbing activities. The training shall include a description of the types of cultural resources (including tribal cultural resources and human remains) that could inadvertently be encountered during ground-disturbing activities, the sensitivity of the resources, the legal basis for protection of the resources, and the penalties for unauthorized collection of or knowingly damaging the resources. The training shall address the proper procedures in the event of an inadvertent discovery of a cultural resource, including the immediate halting of work in the area of the discovery, notification of appropriate individuals of the discovery, the establishment of appropriate protective buffer zones around the discovery, and the continued avoidance of the protected area until the resource has been evaluated by qualified individuals and an appropriate treatment plan has been developed and implemented. These procedures shall be documented in a cultural resources monitoring plan (CRMP) that shall establish, in the event of inadvertent discovery of cultural resources, monitoring procedures (including potential Native American monitors), notification procedures, key staff, and preliminary treatment measures for potential discoveries. The CRMP shall be written to ensure compliance with appropriate state and federal laws. The training presentation and CRMP shall be available to additional supervisory or construction personnel who may join after project construction has begun.

Paleontological Resources

- **BMP-GEO-1:** In the event previously unknown paleontological resources are encountered, the construction manager would halt construction activities in the immediate area in accordance with CEQA Guidelines Section 15064.5(f). LADWP would retain a qualified paleontologist to make an immediate evaluation of the significance and appropriate treatment of the resource. Construction activities may continue on other parts of the construction site while evaluation and any necessary treatment of paleontological resources take place.

Stormwater and Erosion Control

- **BMP-WQ-1:** A Storm Water Pollution Prevention Plan (SWPPP), which will include erosion and sedimentation BMPs, shall be developed and implemented for construction activities. The SWPPP may include, but would not be limited to, the following:

- Minimizing the extent of disturbed areas and duration of exposure;
- Stabilizing and protecting disturbed areas;
- Keeping runoff velocities low; and
- Retaining sediment within the construction area.

- **BMP-WQ-2:** Construction erosion and sediment control BMPs may include, but are not limited, to the following:
  - Temporary desilting basins;
  - Silt fences;
  - Gravel bag barriers;
  - Temporary soil stabilization with mattresses and mulching;
  - Temporary drainage inlet protection; and
  - Diversion dikes and interceptor swales.

Transportation

- **BMP-TRA-1**: Residences and businesses near the pipeline alignment would be notified prior to the start of construction (e.g., via flyers) of lane closures and parking restrictions in their vicinity. The notices would include a telephone number for comments or questions related to construction activities.
- **BMP-TRA-2** LADWP would coordinate with all applicable agencies regarding construction schedules and worksite traffic control and detour plans, including but not limited to the City of Los Angeles Department of Transportation, the City of Los Angeles Department of Public Works, Bureau of Engineering, the City of Los Angeles Fire Department, and the City of Los Angeles Police Department.

Utilities and Service Systems

- **BMP-UTL-1:** The proposed project construction would incorporate source reduction techniques and recycling measures and maintain a recycling program to divert waste in accordance with the Citywide Construction and Demolition Debris Recycling Ordinance.

Air Quality Topical Information

Air quality is typically characterized by ambient air concentrations of seven specific pollutants identified by the United States Environmental Protection Agency (USEPA) to be of concern with respect to health and welfare of the general public. These specific pollutants, known as criteria air pollutants, are pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. These pollutants are common byproducts of human activities and have been documented through scientific research to cause adverse health effects. The federal ambient concentration criteria are known as the National Ambient Air Quality Standards (NAAQS), and the California ambient concentration criteria are referred to as the California Ambient Air Quality Standards (CAAQS). Federal criteria air pollutants include ground-level ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), respirable particulate matter ten microns or less in diameter (PM_{10}), fine particulate matter 2.5 microns or less in diameter ($PM_{2.5}$), and lead. In addition to the federal criteria pollutants, the state regulates visibility-reducing particles, sulfates, hydrogen sulfide, and vinyl chloride.

Air toxics are generally defined as those contaminants that are known or suspected to cause serious health problems, but do not have a corresponding ambient air quality standard. Air toxics are also defined as an air pollutant that may increase a person's risk of developing cancer and/or other serious health effects; however, the emission of a toxic chemical does not automatically create a health hazard. Air toxics include, but are not limited to, diesel PM, metals, gases absorbed by particles, and certain vapors from fuels and other sources.

Regulatory Framework

The following discussion includes relevant regulations, policies, and programs that have been adopted by federal, state, and local agencies to protect air quality and public health.

Federal

The Clean Air Act (CAA) governs air quality at the national level and the USEPA is responsible for enforcing the regulations provided in the CAA. Under the CAA, the USEPA is authorized to establish NAAQS that set protective limits on concentrations of air pollutants in ambient air. Enforcement of the NAAQS is required under the 1977 CAA and subsequent amendments. As required by the CAA, NAAQS have been established for the seven criteria air pollutants: O_3, NO_2, CO, SO_2, PM_{10}, $PM_{2.5}$, and Pb. These pollutants are common byproducts of human activities and have been documented through scientific research to cause adverse health effects. The CAA grants the USEPA authority to designate areas as attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant based on whether the NAAQS concentrations have been met on a regional scale relying upon air monitoring data from the most recent three-year period. The NAAQS are summarized in **Table 1**.

State

Air quality in California is also governed by more stringent regulations under the California Clean Air Act (CCAA). The CCAA is administered by the California Air Resources Board (CARB) at the state level and by the air quality management districts at the regional and local levels. The CCAA requires all areas of the state to achieve and maintain the CAAQS by the earliest feasible date, which is determined in the most recent State Implementation Plan (SIP) based on existing emissions and reasonably foreseeable control measures that will be implemented in the future. The CAAQS are also summarized in **Table 1**, which also presents the attainment status designations for the Los Angeles County portion of the South Coast Air Basin (SCAB).

TABLE 1: AMBIENT AIR QUALITY STANDARDS AND ATTAINMENT STATUS DESIGNATIONS

Pollutant	Averaging Period	California		Federal	
		Standards (CAAQS)	Attainment Status	Standards (NAAQS)	Attainment Status
Ozone (O_3)	1-Hour Average	0.09 ppm (180 μg/m^3)	Nonattainment	--	--
	8-Hour Average	0.070 ppm (137 μg/m^3)	Nonattainment	0.070 ppm (137 μg/m^3)	Nonattainment – Extreme
Carbon Monoxide (CO)	1-Hour Average	20 ppm (23 mg/m^3)	Attainment	35.0 ppm (40 mg/m^3)	Attainment
	8-Hour Average	9.0 ppm (10 mg/m^3)	Attainment	9.0 ppm (10 mg/m^3)	Attainment
Nitrogen Dioxide (NO_2)	1-Hour Average	0.18 ppm (338 μg/m^3)	Attainment	0.10 ppm (188 μg/m^3)	Attainment
	Annual Arithmetic Mean	0.03 ppm (57 μg/m^3)	Attainment	0.053 ppm (100 μg/m^3)	Attainment
Sulfur Dioxide (SO_2)	1-Hour Average	0.25 ppm (655 μg/m^3)	Attainment	0.075 ppm (196 μg/m^3)	Attainment
	24-Hour Average	0.04 ppm (105 μg/m^3)	Attainment	0.14 ppm (365 μg/m^3)	Attainment
	Annual Arithmetic Mean	--	--	0.030 ppm (80 μg/m^3)	Attainment
Respirable Particulate Matter (PM_{10})	24-Hour Average	50 μg/m^3	Nonattainment	150 μg/m^3	Attainment (Maintenance)
	Annual Arithmetic Mean	20 μg/m^3	Nonattainment	--	--
Fine Particulate Matter ($PM_{2.5}$)	24-Hour Average	--	--	35 μg/m^3	Nonattainment
	Annual Arithmetic Mean	12 μg/m^3	Nonattainment	12.0 μg/m^3	Nonattainment
Lead (Pb)	30-day Average	1.5 μg/m^3	Attainment	--	--
	Calendar Quarter	--	--	1.5 μg/m^3	Unclassified/ Attainment
	Rolling 3-Month Average	--	--	0.15 μg/m^3	Unclassified/ Attainment
Sulfates	24-Hour Average	25 μg/m^3	Attainment	**No Federal Standards**	
Hydrogen Sulfide	1-Hour Average	0.03 ppm (42 μg/m^3)	Attainment		
Vinyl Chloride	24-Hour Average	0.01 ppm (26 μg/m^3)	Attainment		

CAAQS = California Ambient Air Quality Standard; NAAQS = National Ambient Air Quality Standard; ppm = parts per million; μg/m^3 = micrograms per cubic meter.
SOURCE: SCAQMD, *NAAQS and CAAQS Attainment Status for South Coast Air Basin*, October 2018.

The CARB's statewide comprehensive air toxics program was established in the early 1980s. The Toxic Air Contaminant Identification and Control Act created California's program to reduce exposure to air toxics. Under the Toxic Air Contaminant Identification and Control Act, the CARB is required to prioritize the identification and control of air toxics emissions. In selecting substances for review, the CARB must consider criteria relating to the risk of harm to public health, such as amount or potential amount of emissions, manner of and exposure to usage of the substance in California, persistence in the atmosphere, and ambient concentrations in the community.

Regional

The 1977 Lewis Air Quality Management Act established the SCAQMD in order to coordinate air quality planning efforts throughout Southern California. The SCAQMD has jurisdiction over a total area of 10,743 square miles, consisting of the SCAB—which comprises 6,745 square miles including Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties—and the Riverside County portion of the Salton Sea and Mojave Desert Air Basins. The proposed project would be located in the west San Fernando Valley, which are situated in the SCAB portion of Los Angeles County and are within the jurisdiction of the SCAQMD.

The SCAQMD is tasked with preparing regional programs and policies designed to improve air quality within the SCAB, which are assessed and published in the form of the Air Quality Management Plan (AQMP). The AQMP is updated every four years to evaluate the effectiveness of the adopted programs and policies and to forecast attainment dates for nonattainment pollutants to support the SIP based on measured regional air quality and anticipated implementation of new technologies and emissions reductions. The most recent publication is the 2022 AQMP, which is intended to serve as a regional blueprint for achieving the federal air quality standards and healthful air.

The 2022 AQMP represents a thorough analysis of existing and potential regulatory control options, and includes available, proven, and cost-effective strategies to pursue multiple goals in promoting reductions in greenhouse gas (GHG) emissions and toxic risk, as well as efficiencies in energy use, transportation, and goods movement. The 2022 AQMP focuses on delineating NAAQS attainment dates for the 2015 eight-hour O_3 standard, which must be achieved by 2037 in following the USEPA's designation of the SCAB as an "Extreme" nonattainment area in 2018. Extreme nonattainment areas have a 20-year horizon to demonstrate how emissions reductions can be achieved to meet the nonattainment standard. The 2022 AQMP acknowledged that the most significant air quality challenge in the SCAB is the reduction of nitrogen oxides (NO_X) emissions, which must be reduced by 67 percent beyond what would be achieved with current regulatory programs. The 2022 AQMP builds on previous AQMPs and includes a variety of new strategies such as regulation, accelerated deployment of available cleaner technologies (e.g., zero emissions technologies, when cost effective and feasible, and low-NO_X technologies in other applications), best management practices, co-benefits from existing programs (e.g., climate and energy efficiency), incentives, and other CAA measures to achieve the 2015 eight-hour O_3 standard.

The 2022 AQMP also includes an element that is related to transportation and sustainable communities planning. Pursuant to California Health and Safety Code Section 40450, the Southern California Association of Governments (SCAG) is designated as a Regional Transportation Planning Agency and a Council of Governments, and has the responsibility of preparing and approving the portions of the AQMP that addresses transportation control measures, land use, and growth projections. The analysis incorporated into the 2022 AQMP is based on the forecasts contained within the SCAG Connect SoCal 2020–2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). SCAG formally adopted the Connect SoCal RTP/SCS on September 3, 2020, and the subsequent amendments have demonstrated conformity.

The SCAQMD has also established various rules to manage and improve air quality in the SCAB. The proposed project proponent shall comply with all applicable SCAQMD Rules and Regulations pertaining to construction activities, including, but not limited to:

- Rule 402 (Nuisance) states that a person should not emit air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.
- Rule 403 (Fugitive Dust) controls fugitive dust through various requirements including, but not limited to, applying water in sufficient quantities to prevent the generation of visible dust plumes, applying soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the project site, limiting vehicle speeds on unpaved roads to 15 miles per hour, and maintaining effective cover over exposed areas. Rule 403 also prohibits the release of fugitive dust emissions from any active operation, open storage piles, or disturbed surface area beyond the property line of the emission source and prohibits particulate matter deposits on public roadways.

Existing Setting

The SCAB is subject to high levels of air pollution due to the immense magnitude of emissions sources and the combination of topography, low mean atmospheric mixing height, and abundant sunshine. Although the SCAB has a semiarid climate, air near the surface is generally moist because of the presence of a shallow marine layer. With very low average wind speeds, there is a limited capacity to disperse air contaminants horizontally. The mountains and hills surrounding the SCAB contribute to the variation of rainfall, temperature, and winds throughout the region. During the spring and early summer, pollution produced during any one day is typically blown out of the region through mountain passes or lifted by warm, vertical currents adjacent to mountain slopes. The vertical dispersion of air pollutants in the SCAB is limited by temperature inversions in the atmosphere close to the Earth's surface. The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are lowest. During periods of low inversions and low wind speeds, air pollutants become more concentrated in urbanized areas with pollution sources of greater magnitude.

Air quality within the SCAB region is characterized by concentrations of air pollutants measured at 37 monitoring stations located throughout the SCAQMD jurisdiction. The SCAQMD jurisdiction is divided geographically into 38 source receptors areas (SRAs), each of which contains an air quality monitoring station except for SRA 7. The SRA boundaries were drawn based on proximity to the nearest air monitoring station, the local land use patterns, and surrounding topography. The project site is located in SRA 6 – West San Fernando Valley¸ which is depicted on **Figure 4**. Air quality conditions in the vicinity of the project site are best represented by monitoring data collected at the Reseda station approximately 1.5 miles north of the TTLR corridor. **Table 2** displays the air quality data statistics for pollutants measured at the Reseda station during the monitoring period 2019–

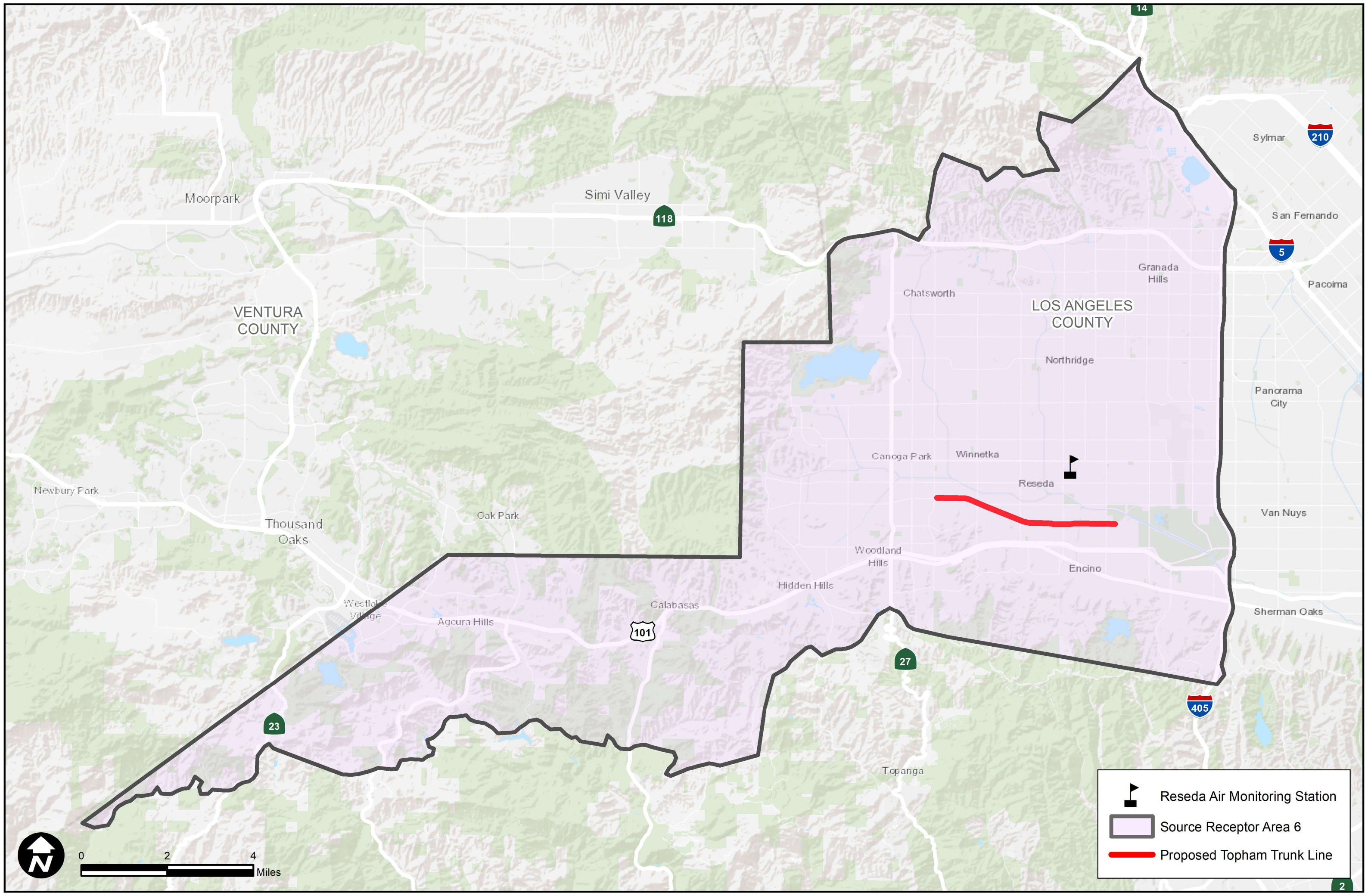
2021, including the maximum pollutant concentrations and frequencies of exceeded air quality standards in each year. Since the Reseda station does not measure concentrations of PM_{10}, the data are supplemented from the Santa Clarita station located approximately 12.5 miles north of the TTLR corridor that is the most representative of local air quality.

TABLE 2: SUMMARY OF AMBIENT AIR QUALITY DATA IN WEST SAN FERNANDO VALLEY

Pollutant	Air Quality Standards	Project Area Statistics	2019	2020	2021
Ozone (O_3)	1-hr. Average (ppm)	Maximum 1-hr. Concentration	0.122	0.142	0.110
	State Standard: 0.090 ppm	Frequency Std. Exceeded	14	33	4
	8-hr. Average (ppm)	Maximum 8-hr. Concentration	0.094	0.115	0.083
	State Standard: 0.070 ppm	Frequency Std. Exceeded	34	62	33
Nitrogen Dioxide (NO_2)	1-hr. Average (ppm)	Maximum 1-hr. Concentration	0.064	0.057	0.054
	State Standard: 0.18 ppm	Frequency Std. Exceeded	0	0	0
	National Standard: 0.10 ppm	Frequency Std. Exceeded	0	0	0
Carbon Monoxide (CO)	1-hr. Average (ppm)	Maximum 1-hr. Concentration	2.6	2.0	2.6
	State Standard: 20.0 ppm	Frequency Std. Exceeded	0	0	0
	National Standard: 35.0 ppm	Frequency Std. Exceeded	0	0	0
	8-hr. Average (ppm)	Maximum 8-hr. Concentration	2.2	1.7	1.9
	State Standard: 9.0 ppm	Frequency Std. Exceeded	0	0	0
	National Standard: 9.0 ppm	Frequency Std. Exceeded	0	0	0
Respirable Particulate Matter (PM_{10})	24-hr. Average (μg/m^3)	Maximum 24-hr. Concentration	62.9	64.7	48.0
	State Standard: 50 μg/m^3	Frequency Std. Exceeded	1	1	0
	National Standard: 150 μg/m^3	Frequency Std. Exceeded	0	0	0
	Annual Average (μg/m^3)	Annual Avg. Concentration	18.4	22.5	20.3
	State Standard: 20 μg/m^3	Annual Std. Exceeded?	No	Yes	Yes
Fine Particulate Matter ($PM_{2.5}$)	24-hr. Average (μg/m^3)	Maximum 24-hr. Concentration	30.0	27.6	55.5
	National Standard: 35 μg/m^3	Frequency Std. Exceeded	0	0	3
	Annual Average (μg/m^3)	Annual Avg. Concentration	9.2	10.1	10.1
	State Standard: 12 μg/m^3	Annual Std. Exceeded?	No	No	No
	National Standard: 12 μg/m^3	Annual Std. Exceeded?	No	No	No

SOURCE: SCAQMD, *Historical Data by Year – Air Quality Data Tables (2019, 2020, 2021)*, https://www.aqmd.gov/home/air-quality/historical-air-quality-data/historical-data-by-year, accessed April 4, 2023.

Recorded data at the Reseda station demonstrate that ambient concentrations of O_3 exceeded the CAAQS for both the one-hour and eight-hour averaging periods numerous times in each year of the monitoring timeframe. The topography of the San Fernando Valley creates atmospheric conditions that lead to especially high levels of near-surface ozone formation. Additionally, annual average concentrations of PM_{10} at the Santa Clarita exceeded the CAAQS in 2020 and 2021, with one day above the state 24-hour standard in 2019 and 2020. The measured concentrations of PM_{10} are consistent with the state-level nonattainment designation and attainment of the NAAQS. In 2021, three days were measured with concentrations of $PM_{2.5}$ above the applicable national 24-hour standard. There were no instances of any state or federal standards being exceeded for NO_2 or CO during the most recent three-year monitoring period in the SRA 6 – West San Fernando Valley.



Source: TAHA, 2022.

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Air Quality Impacts Assessment

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FIGURE 4

SOURCE RECEPTOR AREA AND AIR MONITORING STATION

Regarding air pollutant concentrations, some land uses are considered more sensitive to changes in air quality than others depending on the population subgroups likely to be present and nature of occupant behaviors. The CARB has identified the following subgroups of individuals who are most susceptible to experience adverse health effects due to exposure to air pollution: children less than 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. According to the SCAQMD, land uses that constitute sensitive receptors where these subgroups spend extended periods of time include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. The proposed project is located in a densely developed urban environment and many sensitive receptors are located near construction zones along the TTLR corridor. **Figure 5** identifies the land uses that are considered sensitive receptors that would be within 500 feet of the TTLR area of disturbance during construction activities. Sensitive land use types along the proposed project corridor include residences, schools, churches, and outdoor recreational park space.

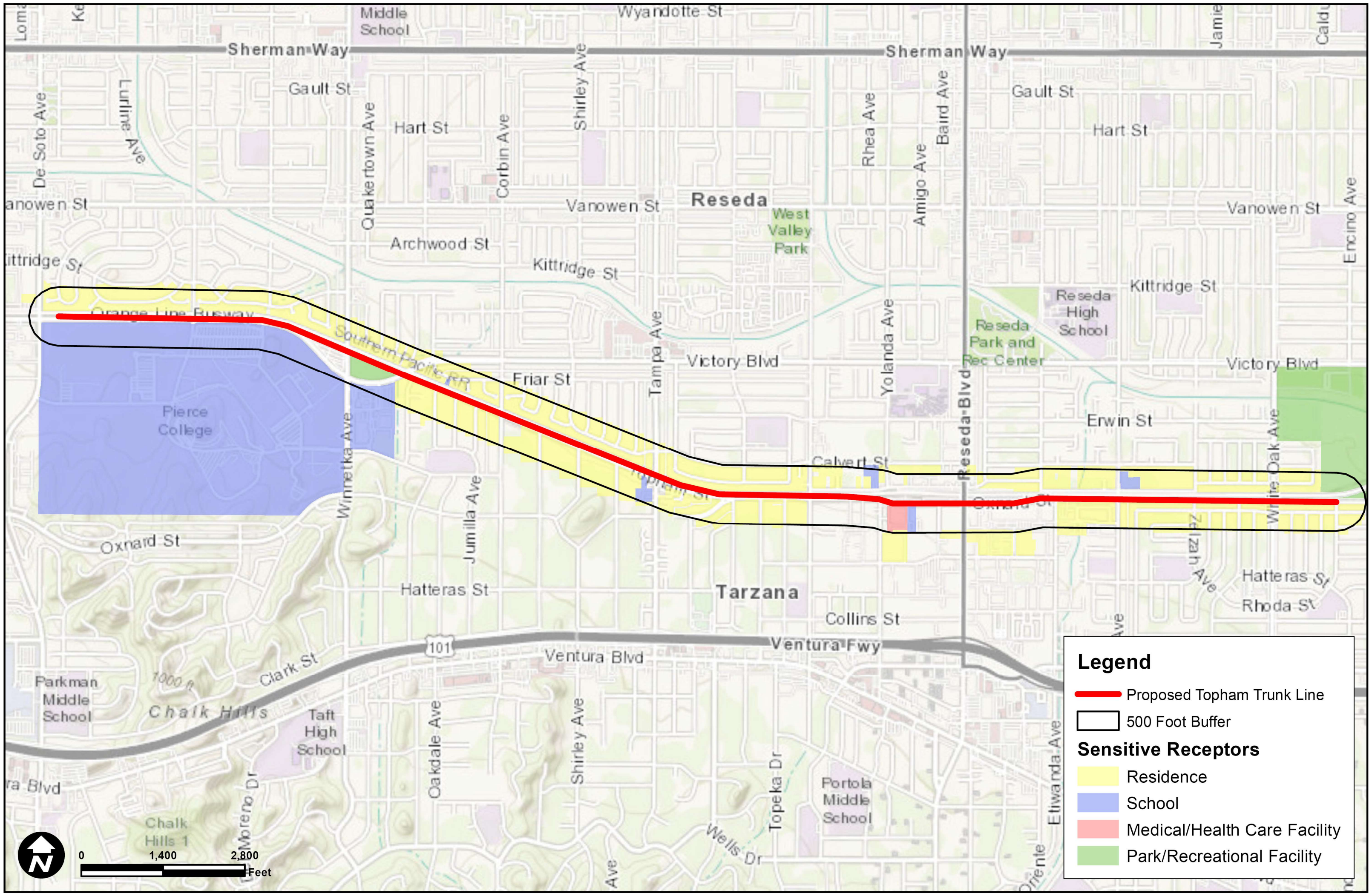
Significance Thresholds

This Assessment was undertaken to determine whether construction or operation of the proposed project would have the potential to result in significant environmental impacts related to Air Quality in the context of the Appendix G Environmental Checklist criteria of the *CEQA Statute and Guidelines*. Implementation of the proposed project may result in a significant environmental impact related to Air Quality if the proposed project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations; and/or,
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Regional emissions refer to all sources of emissions that would be associated with construction and operation of a project, both those located on the project site as well as remote or mobile sources of emissions. In its original 1993 *CEQA Air Quality Handbook*, the SCAQMD established screening thresholds for regional emissions based on maximum allowable mass daily emissions from construction and operation of proposed projects that were derived from previously adopted quarterly and annual USEPA thresholds.

Table 3 shows the regional mass daily thresholds for emissions of volatile organic compounds (VOC), NO_X, CO, sulfur oxides (SO_X), and particulate matter (PM_{10} and $PM_{2.5}$) generated by projects subject to CEQA within the SCAB. The SCAQMD considers any project that would not produce daily emissions in excess of any regional threshold to be less than significant at both the project level and for cumulative impacts. Conversely, if construction or operation of a project would generate daily mass emissions exceeding the regional threshold values presented in **Table 3**, those emissions would be considered significant, and opportunities for mitigation would need to be explored and implemented as feasible.



Source: TAHA, 2022.

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FIGURE 5

SENSITIVE RECEPTORS

TABLE 3: SCAQMD AIR QUALITY SIGNIFICANCE THRESHOLDS – MASS DAILY EMISSIONS						
Pollutant	**VOC**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
CONSTRUCTION						
Regional Threshold (lbs./day)	75	100	550	150	150	55
Localized Threshold (lbs./day)	--	103	426	--	4	3
OPERATIONS						
Regional Threshold (lbs./day)	55	55	550	150	150	55
Localized Threshold (lbs./day)	--	103	426	--	1	1
Note: LST values selected for one-acre daily disturbance based on equipment inventory and 25-meter receptor distance in SRA 6. **SOURCE**: SCAQMD, 2009 and 2019.						

In addition to the regional thresholds, the SCAQMD originally published its guidance on using localized significance thresholds (LSTs) for CEQA impact assessments in 2003 and updated the guidance in 2008. The localized emissions analysis addresses only those sources that would be located on the project site, such as off-road equipment exhaust and fugitive area sources such as dust generation and asphalt off-gassing during construction activities. The SCAQMD LST guidance includes mass-rate lookup tables for daily emissions of NO_X, CO, PM_{10}, and $PM_{2.5}$ that correspond to the SRA in which a project is located, the area of daily disturbance during construction activities or site size during operations, and the proximity of the nearest sensitive receptor(s).[1] Using dispersion modeling and ambient air quality data during the 2000–2002 monitoring period, the SCAQMD developed SRA-specific maximum allowable emissions levels from on-site sources to prevent the occurrence of pollutant hot-spots surrounding CEQA project sites. The LST values presented in **Table 3** are specific to SRA 6 for a construction site up to one acre with sensitive receptors within 80 feet (approximately 25 meters) and were obtained from the SCAQMD LST guidance document.

Regarding emissions of toxic air contaminants (TACs), a significant air quality impact would occur if the proposed project resulted in a carcinogenic risk above 10 excess cancers per million, or an acute hazard index (HI) equal to or greater than 1.0 at any sensitive receptor location.

Methodology

The air quality analysis conducted for the proposed project is consistent with the methods described in the SCAQMD *CEQA Air Quality Handbook* (Version 3, November 2001), as well as the updates to the *CEQA Air Quality Handbook* as provided on the SCAQMD website. Implementation of the TTLR project would not introduce new permanent operational sources of air pollutants to the SCAB, and therefore the quantitative analysis focused on pollutant emissions that would be generated during construction activities. The air quality impacts assessment sought to characterize the maximum daily emissions that would be generated by sources involved in construction of the proposed project. This task involved preparing inventories of the daily personnel, vehicles, and equipment use that would occur during each phase of construction activity for the main components of the TTLR project:

[1]SCAQMD, Final Localized Significance Threshold Methodology, July 2008.

- 12-inch and 16-inch Diameter Distribution Mainline Open-Trench Installation along Victory Boulevard from De Soto Avenue to Topham Street, and on Topham Street from Victory Boulevard to Tampa Avenue (approximately 10,030 LF, comprised of approximately 6,600 LF of 12 inch piping and approximately 3,430 LF of 16 inch piping)
- Trunk Line Open-Trench Construction along Victory Boulevard, Topham Street and Oxnard Street (approximately 17,139 LF)
- Trunk Line Microtunneling along Victory Boulevard, Topham Street, and Oxnard Street (approximately 6,161 LF)

Generally, construction of each TTLR component would involve subsurface exploration to determine existing utility locations, stripping of roadway pavement, excavation of the open trench or microtunnel shafts, installation of the pipelines, backfilling of the excavated areas, and repaving of the roadway segments. The sources of air pollutant emissions associated with construction activities include on-road vehicle trip exhaust and dust generation, off-road equipment exhaust, and fugitive area source emissions such as dust from disturbed unpaved areas and truck loading as well as evaporative off-gassing from asphalt paving. The SCAQMD recommends the use of the California Emissions Estimator Model (CalEEMod, Version 2020.4.0) as a tool for quantifying emissions of air pollutants that will be generated by constructing and operating development projects under CEQA. CalEEMod was developed by the California air districts and contains an interface for entering project information related to land use type, construction schedule, construction equipment and personnel inventories, operational elements, and mitigation measures. The detailed CalEEMod output files disclosing estimated air pollutant emissions during construction of the proposed project can be found in the **Appendix**.

Daily on-road vehicle and off-road equipment activity inventories were populated in CalEEMod to characterize reasonably conservative estimates of maximum daily emissions that would occur during each type of TTLR component construction. Through consultation with the proposed project design team, scenarios were evaluated to determine which types of component construction may be occurring simultaneously during the 7-year construction period beginning in third quarter 2023. CalEEMod includes regionally specific default values for construction vehicle trip lengths, as well as emissions factors for heavy duty equipment and on-road vehicles that have been derived by the CARB through extensive air quality investigations and surveys. The default values for Los Angeles County were used in conjunction with project-specific information (i.e., daily equipment usage rates, daily personnel, daily haul truck and vendor delivery trips) to determine reasonable estimates of daily air pollutant emissions during each phase of construction. Maximum daily emissions during construction of each TTLR project component type were then combined based on anticipated activity overlap to evaluate the maximum regional and localized emissions that could occur in a worst-case scenario.

Maximum daily emissions during construction of the proposed project that were quantified in CalEEMod were used to assess potential environmental impacts related to air quality following the CEQA Guidelines Environmental Checklist criteria. With regards to AQMP consistency and potential conflicts with the attainment demonstrations for the O_3 and $PM_{2.5}$ NAAQS, the evaluation of potential impacts focused on the possibility of the proposed project exacerbating the frequency or severity of air quality violations during construction activities, as implementation of the TTLR project would not introduce any new permanent sources of air pollution to the project area nor would it create or induce growth in population, housing, or employment that could render forecasted projections that are incorporated into the AQMP attainment demonstrations invalid. The magnitude of maximum daily air pollutant emissions during TTLR construction at the regional and localized scales was used to assess whether the proposed project could exacerbate air quality violations or could result in a cumulatively considerable increase in nonattainment pollutant emissions, which include O_3 precursors VOC and NO_X as well as particulate matter (PM_{10} and $PM_{2.5}$). The potential for the proposed project to produce nuisance conditions related to odors or other noxious emissions was evaluated qualitatively.

Impact Assessment

a) Would the proposed project conflict with or obstruct implementation of the applicable air quality plan? (Less-than-Significant Impact)

The following analysis addresses the proposed project's consistency with applicable SCAQMD and SCAG air quality planning, including the SCAQMD's 2022 AQMP and growth projections within the RTP/SCS. In accordance with the procedures established in the SCAQMD's *CEQA Air Quality Handbook*, the following criteria are required to be addressed in order to determine the consistency with applicable SCAQMD and SCAG policies:

1. Would the proposed project result in any of the following?
   - An increase in the frequency or severity of existing air quality violations;
   - Cause or contribute to new air quality violations; or
   - Delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.

2. Would the proposed project exceed the assumptions utilized in preparing the AQMP?
   - Is the project consistent with the population and employment growth projections upon which AQMP forecasted emission levels are based;
   - Does the project include air quality mitigation measures; or
   - To what extent is project development consistent with the AQMP land use policies?

As mentioned above, the proposed project would not introduce any new permanent sources of air pollutant emissions to the SCAB, and would not spur any growth in population, housing, or employment. Therefore, the TTLR project would not result in any potential impacts related to the underlying growth projections that are incorporated into the AQMP attainment demonstration that are addressed in the second portion of the consistency criteria. The analysis of potential air quality impacts related to AQMP consistency that could occur from implementation of the proposed project was based on the possibility of air pollutant emissions during construction activities exacerbating the frequency or severity of air quality violations, which occur when ambient concentrations of air pollutants exceed the established SCAQMD air quality significance thresholds.

Construction

Construction of the proposed project has the potential to create air quality impacts through the use of heavy-duty construction equipment and through vehicle trips by construction workers and haul and delivery trucks traveling to and from the project site. Fugitive dust emissions would primarily result from roadway stripping, excavation, and truck loading activities, as well as vehicle travel on the regional roadway network. NO_X emissions would be generated in off-road equipment exhaust and on-road vehicle exhaust. Fugitive VOC emissions would be associated with repaving of the disturbed roadway areas with fresh asphalt. The assessment of construction air quality impacts considered all of these emissions sources. Throughout the course of the 7-year construction period, the equipment and vehicle activity inventory would vary substantially from day to day, and the analysis invoked reasonably conservative estimates of vehicle travel and equipment usage to address potential impacts.

It is mandatory for all construction projects in the Basin to comply with SCAQMD Rule 403 for Fugitive Dust. Rule 403 control requirements include measures to prevent the generation of visible dust plumes. The proposed project would comply with Rule 403 with implementation of BMP-AQ-1, which would include implementation of Rule 403 dust control measures as well as compliance with SCAQMD Rules 401 (Visible Emissions), Rule 402 (Nuisance), and Rule 1166 (VOCs), which would include the following:

- Water shall be applied to exposed surfaces at least three times per day to prevent generation of dust plumes;
- The construction contractor shall utilize at least one of the following measures at each vehicle egress from the project site to a paved public road:
    - Pave all disturbed surfaces extending at least 100 feet long and at least 20 feet wide;
    - Utilize a wheel shaker/wheel spreading device consisting of raised dividers at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages; or,
    - Install a wheel washing system to remove bulk material from tires and vehicle undercarriages.
- All trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
- Construction activity on exposed or unpaved dirt surfaces shall be suspended when wind speed exceeds 25 miles per hour (mph).
- A community liaison shall be identified concerning on-site construction activity including resolution of issues related to dust generation.
- Non-toxic soil stabilizers shall be applied according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more).
- Streets shall be swept at the end of the day if visible soil is carried onto adjacent public paved roads. If feasible, water sweepers with reclaimed water shall be used.

Implementation of BMP-AQ-1 would ensure compliance with the provisions and BMPs promulgated by Rule 403—such as the application of water as a dust suppressant to exposed stockpiles and disturbed ground surfaces—which would reduce on-site fugitive dust PM_{10} and $PM_{2.5}$ emissions associated with construction activities by approximately 61 percent. Daily emissions of VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ that would be generated during construction of the proposed project were estimated in CalEEMod. **Table 4** through **Table 6** present the maximum daily emissions that would be generated during construction of each proposed project component attributed to a single work zone. **Table 4** presents the maximum daily emissions that would be generated during open-trench construction of the 12-inch and 16-inch diameter distribution mainline components of the proposed project in 2023 and 2024. As shown in the comparative analysis at the bottom of the table, daily emissions of O_3 precursors and criteria pollutants would remain well below the applicable SCAQMD regional thresholds and SRA 6 LST screening values. The CalEEMod files containing the vehicle and equipment activity inventories are provided in the **Appendix**.

TABLE 4: DAILY EMISSIONS – DISTRIBUTION MAINLINES OPEN-TRENCH CONSTRUCTION						
	Maximum Daily Emissions (Pounds Per Day)					
Phase and Source Location	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
(1) SUBSURFACE EXPLORATION AND PAVEMENT REMOVAL						
On-Site Emissions	0.3	2.9	4.3	<0.1	0.6	0.2
Off-Site Emissions	0.1	1.1	1.1	<0.1	0.4	0.1
Total	***0.4***	***4.0***	***5.4***	***<0.1***	***1.0***	***0.3***
(2) TRENCH EXCAVATION						
On-Site Emissions	0.3	2.7	3.5	<0.1	0.1	0.1
Off-Site Emissions	0.1	1.7	1.2	<0.1	0.5	0.1
Total	***0.4***	***4.4***	***4.7***	***<0.1***	***0.6***	***0.3***
(3) PIPELINE INSTALLATION						
On-Site Emissions	0.6	6.1	5.8	<0.1	0.3	0.3
Off-Site Emissions	0.1	1.3	1.1	<0.1	0.4	0.1
Total	***0.7***	***7.4***	***6.9***	***<0.1***	***0.7***	***0.4***
(4) TRENCH BACKFILLING						
On-Site Emissions	0.4	3.7	6.3	<0.1	0.2	0.2
Off-Site Emissions	0.1	1.3	1.1	<0.1	0.4	0.1
Total	***0.5***	***5.0***	***7.4***	***<0.1***	***0.6***	***0.3***
(5) ROADWAY REPAVING						
On-Site Emissions	0.4	3.8	5.5	<0.1	0.2	0.2
Off-Site Emissions	0.1	0.3	0.9	<0.1	0.3	0.1
Total	***0.5***	***4.1***	***6.4***	***<0.1***	***0.5***	***0.3***
DISTRIBUTION MAINLINES SINGLE WORK ZONE ANALYSIS						
Maximum Regional Emissions	**0.7**	**7.4**	**7.4**	**<0.1**	**1.0**	**0.4**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	No	No	No	No	No	No
Maximum Localized Emissions	**0.6**	**6.1**	**6.3**	**<0.1**	**0.6**	**0.3**
SCAQMD LST Screening Value	-	103	426	-	4	3
Threshold Exceeded?	-	No	No	-	No	No

Note: Emissions modeling files can be found in the **Appendix**.
SOURCE: TAHA, 2023.

Table 5, below, displays the daily emissions that would be produced during each activity involved in the TTLR open-trench construction. The primary differences between the TTLR open-trench construction and the distribution mainlines open-trench construction would be the size of the active work zone (approximately 1,000 feet long for the TTLR and approximately 400 feet long for the distribution mainlines), the width and depth of the trench to accommodate the 36-inch diameter trunk line, and the duration of daily construction activities (7:00 AM to 6:00 PM for the TTLR and 9:00 AM to 3:30 PM for the distribution mainlines). As shown below, maximum daily emissions during construction of a single TTLR open-trench work zone would be substantially less than the SCAQMD regional mass daily thresholds and LST screening values for SRA 6.

TABLE 5: ESTIMATED DAILY EMISSIONS – TTLR OPEN-TRENCH CONSTRUCTION WORK ZONE

Phase and Source Location	Maximum Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
(1) SUBSURFACE EXPLORATION AND PAVEMENT REMOVAL						
On-Site Emissions	0.3	2.4	4.3	<0.1	0.5	0.2
Off-Site Emissions	0.2	1.7	1.9	<0.1	0.8	0.2
Total	***0.5***	***4.2***	***6.2***	***<0.1***	***1.3***	***0.4***
(2) SHORING						
On-Site Emissions	0.3	3.0	3.6	<0.1	0.1	0.1
Off-Site Emissions	0.2	0.3	1.5	<0.1	0.6	0.2
Total	***0.5***	***3.3***	***5.1***	***<0.1***	***0.7***	***0.3***
(3) TRENCH EXCAVATION						
On-Site Emissions	0.3	2.9	4.8	<0.1	0.1	0.1
Off-Site Emissions	0.2	1.7	1.9	<0.1	0.8	0.2
Total	***0.5***	***4.6***	***6.7***	***<0.1***	***0.9***	***0.3***
(4) PIPELINE INSTALLATION						
On-Site Emissions	0.6	6.0	6.7	<0.1	0.2	0.2
Off-Site Emissions	0.2	0.3	1.5	<0.1	0.6	0.2
Total	***0.8***	***6.3***	***8.2***	***<0.1***	***0.8***	***0.4***
(5) TRENCH BACKFILLING						
On-Site Emissions	0.4	3.4	7.2	<0.1	0.2	0.1
Off-Site Emissions	0.2	1.3	1.8	<0.1	0.7	0.2
Total	***0.6***	***4.8***	***9.0***	***<0.1***	***0.9***	***0.4***
(6) ROADWAY REPAVING						
On-Site Emissions	0.5	4.3	7.3	<0.1	0.2	0.2
Off-Site Emissions	0.2	0.3	1.5	<0.1	0.6	0.2
Total	***0.7***	***4.5***	***8.8***	***<0.1***	***0.8***	***0.4***
TTLR OPEN-TRENCH SITE SINGLE WORK ZONE ANALYSIS						
Maximum Regional Emissions	**0.8**	**6.3**	**9.0**	**<0.1**	**1.3**	**0.4**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	No	No	No	No	No	No
Maximum Localized Emissions	**0.6**	**6.0**	**7.3**	**<0.1**	**0.5**	**0.2**
SCAQMD LST Screening Value	-	103	426	-	4	3
Threshold Exceeded?	-	No	No	-	No	No

Note: Emissions modeling files can be found in the **Appendix**.
SOURCE: TAHA, 2023.

Construction of the proposed project would require a microtunneling technique along roadway segments and under intersections where substantial subsurface utility structures are present, comprising approximately 6,161 LF. Microtunneling activities would involve the excavation of launching and receiving shafts (approximately 12 feet wide by 35 feet long by 30 feet deep) at either end of the work zone to accommodate the tunnel boring machine. **Table 6** presents the daily emissions for microtunneling activities.

TABLE 6: ESTIMATED DAILY EMISSIONS – TTLR MICROTUNNEL CONSTRUCTION						
	Maximum Daily Emissions (Pounds Per Day)					
Phase and Source Location	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
(1) SUBSURFACE EXPLORATION AND ROAD STRIPPING						
On-Site Emissions	0.3	2.7	4.7	<0.1	0.7	0.2
Off-Site Emissions	0.2	1.0	2.2	<0.1	0.9	0.2
Total	***0.5***	***3.7***	***7.0***	***<0.1***	***1.6***	***0.4***
(2) SHEET PILE SHORING						
On-Site Emissions	0.3	3.2	3.8	<0.1	0.1	0.1
Off-Site Emissions	0.2	0.4	2.1	<0.1	0.8	0.2
Total	***0.6***	***3.6***	***5.9***	***<0.1***	***1.0***	***0.4***
(3) SHAFT EXCAVATION						
On-Site Emissions	0.4	3.4	5.3	<0.1	0.1	0.1
Off-Site Emissions	0.2	1.0	2.2	<0.1	0.9	0.2
Total	***0.6***	***4.3***	***7.6***	***<0.1***	***1.0***	***0.4***
(4) MICROTUNNEL CASING AND PIPING						
On-Site Emissions	1.0	8.3	11.9	<0.1	0.3	0.3
Off-Site Emissions	0.2	0.4	2.1	<0.1	0.8	0.2
Total	***1.2***	***8.7***	***14.0***	***<0.1***	***1.2***	***0.5***
(5) SHAFT BACKFILLING						
On-Site Emissions	0.4	3.2	6.9	<0.1	0.1	0.1
Off-Site Emissions	0.2	1.2	2.3	<0.1	1.1	0.4
Total	***0.6***	***4.4***	***9.3***	***<0.1***	***1.1***	***0.4***
(6) ROADWAY REPAVING						
On-Site Emissions	0.5	4.1	6.3	<0.1	0.2	0.2
Off-Site Emissions	0.2	0.4	2.1	<0.1	0.8	0.2
Total	***0.7***	***4.5***	***8.4***	***<0.1***	***1.0***	***0.4***
MICROTUNNEL SITE WORK ZONE ANALYSIS						
Maximum Regional Emissions	**1.2**	**8.7**	**14.0**	**<0.1**	**1.6**	**0.5**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	No	No	No	No	No	No
Maximum Localized Emissions	**1.0**	**8.3**	**11.9**	**<0.1**	**0.7**	**0.3**
SCAQMD LST Screening Value	-	103	426	-	4	3
Threshold Exceeded?	-	No	No	-	No	No

Note: Emissions modeling files can be found in the **Appendix**.
SOURCE: TAHA, 2023.

Throughout the construction period, multiple crews would be working on different components of the TTLR project simultaneously. Although logistical constraints would preclude concurrent construction of adjacent microtunneling and shallow open-trench distribution mainline installation within the same work zone, it is possible that multiple work zones of each type of activity would be ongoing at the same time at various locations along the four-mile corridor.

Table 7 presents the regional and localized emissions analyses of potentially overlapping activities, assuming up to five work zones could be active on a worst-case day. The first element of the analysis evaluated five concurrent work zones of the distribution mainlines assuming maximum daily emissions at each site. The second element of the analysis evaluated four concurrent TTLR open-trench sites and an additional microtunneling site. As shown below, the combined work zones analyses determined that construction of the proposed project would not generate emissions exceeding any applicable SCAQMD regional or localized threshold, even when assuming maximum possible emissions at each individual site. The combined emissions from five work zones along the TTLR corridor would not exceed the LST screening values that apply to a singular construction site, representing a protectively conservative approach as the work zones would likely be at considerable distances from one another. This impact would be less than significant.

TABLE 7: EMISSIONS ANALYSIS – CONCURRENT PIPELINE INSTALLATION ACTIVITIES

Project Component	Maximum Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
REGIONAL EMISSIONS – INDIVIDUAL SITES						
Distribution Mainlines Construction x5	***3.5***	***36.8***	***37.1***	***<0.1***	***4.9***	***1.9***
TTLR Open-Trench Construction x4	3.1	25.2	35.8	<0.1	5.2	1.6
TTLR Microtunnel Construction x1	1.2	8.7	14.0	<0.1	1.6	0.5
TTLR Open-Trench + Microtunneling	***4.3***	***33.8***	***49.8***	***<0.1***	***6.8***	***2.1***
REGIONAL EMISSIONS ANALYSIS						
Maximum Daily Activities (Five Sites)	**4.3**	**36.8**	**49.8**	**<0.1**	**6.8**	**2.1**
SCAQMD Regional Threshold	75	100	550	150	150	55
Exceed Threshold?	***No***	***No***	***No***	***No***	***No***	***No***
LOCALIZED EMISSIONS – INDIVIDUAL SITES						
Distribution Mainlines Construction x5	***3.0***	***30.3***	***31.4***	***<0.1***	***2.8***	***1.3***
TTLR Open-Trench Construction x4	2.5	24.1	29.2	<0.1	2.1	0.9
TTLR Microtunnel Construction x1	1.0	8.3	11.9	<0.1	0.7	0.3
TTLR Open-Trench + Microtunneling	***3.5***	***32.4***	***41.1***	***<0.1***	***2.8***	***1.3***
LOCALIZED EMISSIONS ANALYSIS						
Maximum Daily Activities (Five Sites)		**32.4**	**41.1**		**2.8**	**1.3**
SCAQMD Localized Threshold	-	103	426	-	4	3
Exceed Threshold?	***-***	***No***	***No***	***-***	***No***	***No***

Note: Emissions modeling files can be found in the **Appendix**.
SOURCE: TAHA, 2023.

Based on the results of the combined activities analysis, construction of the proposed project would not have any potential to conflict with or obstruct implementation of the AQMP based on the air quality violation criterion. When considering five active work zones—each producing its maximum daily emissions—total regional and localized NO_X emissions would remain below half of the applicable corresponding thresholds. Localized particulate matter emissions from the combined sites would remain below the LST values that apply to a singular one-acre construction site within SRA 6. Therefore, this impact would be less than significant, and no mitigation measures are required.

Upon completion of construction activities, vehicle and equipment sources employed to implement the proposed project would no longer be active and producing emissions. The construction workforce would comprise LADWP crews and contractors assembled from the local area and is not anticipated to introduce new permanent job growth to the region. As discussed previously, construction of the proposed project would have no impact related to the second AQMP consistency criterion related to assumptions incorporated into the regional growth forecasts for population, housing, and employment within the City of Los Angeles.

Operations

Operational activities associated with the proposed project would be minimal, and no new permanent sources of air pollutant emissions would be introduced to the project area. The entirety of proposed project facilities would be located underground, and implementation of the proposed project would not expand the LADWP workforce. The occasional vehicle trips would produce negligible emissions of air pollutants at the regional level. Operation of the proposed project would not have any potential to exacerbate the frequency or severity of air quality violations and would result in a less-than-significant air quality impact related to air quality violations.

The second consistency criterion requires that the proposed project not exceed the assumptions in the AQMP, thereby rendering the regional emissions inventory inaccurate. Implementation of the proposed project would not introduce new population, housing, and employment projections for the region would not be affected. The proposed project would not have any potential to result in growth that would exceed the projections incorporated into the AQMP or the RTP/SCS. The proposed project would not interfere with air pollution control measures listed in the 2022 AQMP and would not conflict with the goals of the City of Los Angeles General Plan Air Quality Element.

Mitigation Measures

No mitigation measures are required.

b) Would the proposed project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard? (Less-than-Significant Impact)

The SCAB is currently designated nonattainment for O_3, PM_{10}, and $PM_{2.5}$ under the State standards and nonattainment for O_3 and $PM_{2.5}$ under the federal standards. Therefore, a project may result in a cumulatively considerable air quality impact under this criterion if daily emissions of ozone precursors (VOC and NO_X) or particulate matter (PM_{10} and $PM_{2.5}$) exceed applicable air quality thresholds of significance established by the SCAQMD. The SCAQMD designed the regional mass daily thresholds and LST values to prevent projects from exceeding the ambient air quality standards and potentially resulting in air quality violations that could obstruct or delay implementation of the AQMP. The

SCAQMD suggests that if any quantitative air quality significance threshold is exceeded by an individual project during construction activities or operation, that project is considered cumulatively considerable and would be required to implement effective and feasible mitigation measures to reduce air quality impacts. Conversely, the SCAQMD promulgates that if an individual project would not exceed the regional mass daily thresholds or LST values, then its emissions are generally considered to not be cumulatively considerable, and the impact would be less than significant. This method of impact determination allows for the screening of individual projects that would not represent substantial new sources of emissions in the Basin; it also serves to exclude smaller projects from the responsibility of identifying potentially concurrent new or proposed construction and operation emissions nearby since the incremental contribution to regional emissions is minor.

Construction

As shown in **Table 7**, construction of the proposed project would not generate emissions in excess of any of the applicable regional or localized thresholds established by the SCAQMD. All construction activities would be conducted in accordance with the BMPs pursuant to SCAQMD Rule 403 to minimize fugitive dust emissions. Emissions produced during construction activities associated with the TTLR project would not be cumulatively considerable, and this impact would be less than significant. No mitigation measures are identified as necessary during construction of the proposed project.

Operation

Following the completion of construction activities, all major components of the proposed project would be located underground and would not generate emissions of air pollutants. Implementation of the TTLR project would not introduce any land use developments or LADWP facilities that would generate new vehicle trips or install new stationary sources of emissions. Therefore, the proposed project would not generate cumulatively considerable emissions of ozone precursors or particulate matter and impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

c) Would the proposed project expose sensitive receptors to substantial pollutant concentrations? (Less than-Significant Impact)

Construction

The SCAQMD devised its LST values to prevent the occurrence of localized hot spots of criteria pollutant concentrations at sensitive receptor locations surrounding the project site. The LST values were determined using emissions modeling based on ambient air quality measured throughout the SCAB. If maximum daily emissions remain below the LST values during construction activities, it is highly unlikely that air pollutant concentrations in ambient air would reach substantial levels sufficient to create public health concerns for sensitive receptors. As shown in **Table 7**, maximum daily emissions of criteria pollutants and O_3 precursors from sources located on the project site would not exceed any applicable LST values. Additionally, the use of construction equipment in any particular location would be intermittent and temporary, such that nearby residential, educational, and medical sensitive receptors would not be exposed to recurring high levels of emitted pollutants.

With regards to TAC emissions, off-road equipment exhaust would contain diesel particulate matter, which is the most prevalent air toxic in the greater Los Angeles region. However, each individual piece of equipment would only be in operation for a portion of the workdays. Carcinogenic risks are typically assessed on timescales of several years to multiple decades, as the risk accumulates over extended periods of exposure. Given that construction activities would only be occurring during the daytime when the atmospheric inversion layer is at its highest and the greatest amount of pollutant dispersion occurs, there is little potential for TAC concentrations to reach levels that would be hazardous for nearby sensitive receptors. Therefore, construction of the proposed project would not result in exposure of sensitive receptors to substantial concentrations of air pollution. This impact would be less than significant, and no mitigation is required.

Operations

Following the completion of construction activities, operation of the proposed project would not involve any active sources of air pollutant emissions. There would be no potential for sensitive receptors located along the TTLR project corridor to be exposed to substantial pollutant concentrations resulting from sources associated with the proposed project. Operation of the proposed project would result in no impact related to sensitive receptor exposures to pollutant concentrations, and no mitigation measures would be warranted.

Mitigation Measures

No mitigation measures are required.

d) Would the proposed project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people? (Less-than-Significant Impact)

Construction

Odors are the only potential construction emissions other than the sources addressed above. Potential sources that may produce objectionable odors during construction activities include equipment exhaust, application of asphalt and architectural coatings, and other finishes. Odors from these sources would be localized and generally confined to the immediate area surrounding the project site and would be temporary in nature and would not persist beyond the termination of construction activities. In addition, as construction-related emissions dissipate away from the construction area, the odors associated with these emissions would also decrease and would be quickly diluted. LADWP will ensure that activities comply with SCAQMD Rules 402 (Nuisance) and 401 (Visible Emissions) to prevent the occurrence of public nuisances and visible dust plumes traveling off-site. Therefore, the proposed project would result in a less-than-significant impact related to construction odors and other nuisances.

Operations

Odors are the only potential operational emissions other than the sources addressed above. Given the nature and location of the project facilities, the project has no potential to generate new, adverse odors. Therefore, the proposed project would result in a less-than-significant impact related to operational odors or other emissions that may have the potential to cause a public nuisance.

Mitigation Measures

No mitigation measures are required.

References

California Air Pollution Control Officers Association, *California Emissions Estimator Model (CalEEMod) Version 2020.4.0 User's Guide*, May 2021.

California Air Resources Board, *Ambient Air Quality Standards*, May 2016.

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South Coast Air Quality Management District, *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds*, 2013.

South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology Appendix C Mass Rate Lookup Tables*, updated October 21, 2009.

South Coast Air Quality Management District, *Historical Data By Year – Air Quality Data Tables (2019, 2020, 2021)*, accessed February 9, 2023.

South Coast Air Quality Management District, *South Coast AQMD Air Quality Significance Thresholds*, March 2023.

Southern California Association of Governments, *2016–2040 Regional Transportation Plan/Sustainable Communities Strategy*, April 2016.

Southern California Association of Governments, *Connect SoCal: The 2020–2045 Regional Transportation Plan/Sustainable Communities Strategy of the Southern California Association of Governments*, Adopted September 2020.

United States Environmental Protection Agency, *The Green Book Nonattainment Areas for Criteria Pollutants*, https://www.epa.gov/green-book, December 2020.

Appendix

1. CalEEMod Daily Output Files:
    1. Topham Trunk Line Open-Trench Construction
    2. Topham Trunk Line Microtunnel Construction
    3. Distribution Mainline Shallow Open-Trench Construction

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Topham Trunk Line Replacement Project - Open Trench

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	1.20	1000sqft	0.03	1,200.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2030
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	691.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction Only - Open Trench method for majority of TTLR

Land Use - Representative of daily active work area.

Construction Phase - Representative single-day activities.

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Trips and VMT - Max 6 daily haul+material delivery trucks.

Grading -

Vehicle Emission Factors - X

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Vehicle Emission Factors -

Vehicle Emission Factors -

Area Coating -

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	2.00	1.00
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDays	5.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	4.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripNumber	5.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	13.00	50.00
tblTripsAndVMT	WorkerTripNumber	10.00	50.00

tblTripsAndVMT	WorkerTripNumber	10.00	50.00
tblTripsAndVMT	WorkerTripNumber	1.00	50.00
tblTripsAndVMT	WorkerTripNumber	10.00	50.00
tblTripsAndVMT	WorkerTripNumber	8.00	50.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	0.7773	6.2952	8.9519	0.0207	1.8389	0.2525	1.9578	0.3678	0.2390	0.4785	0.0000	2,080.0924	2,080.0924	0.3763	0.1295	2,119.6266
Maximum	**0.7773**	**6.2952**	**8.9519**	**0.0207**	**1.8389**	**0.2525**	**1.9578**	**0.3678**	**0.2390**	**0.4785**	**0.0000**	**2,080.0924**	**2,080.0924**	**0.3763**	**0.1295**	**2,119.6266**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	0.7773	6.2952	8.9519	0.0207	1.1862	0.2525	1.3051	0.2690	0.2390	0.3946	0.0000	2,080.0924	2,080.0924	0.3763	0.1295	2,119.6266
Maximum	**0.7773**	**6.2952**	**8.9519**	**0.0207**	**1.1862**	**0.2525**	**1.3051**	**0.2690**	**0.2390**	**0.3946**	**0.0000**	**2,080.0924**	**2,080.0924**	**0.3763**	**0.1295**	**2,119.6266**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**35.49**	**0.00**	**33.34**	**26.87**	**0.00**	**17.53**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**0.0000**	**2.8000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**0.0000**	**2.8000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Utility Exploration & Road Stripping (TTLR)	Demolition	8/4/2025	8/4/2025	5	1	Subsurface exploration to identify utilities; Remove pavement from work zone.
2	Shoring (TTLR)	Site Preparation	8/5/2025	8/5/2025	5	1	Install shoring piles.
3	Trench Excavation (TTLR)	Grading	8/6/2025	8/6/2025	5	1	Excavate trench segment.
4	Install Pipeline	Building Construction	8/7/2025	8/7/2025	5	1	Install pipeline segments.
5	Backfill Trench	Trenching	8/8/2025	8/8/2025	5	1	Backfill trench with fill/concrete.
6	Paving	Paving	8/11/2025	8/11/2025	5	1	Roadway Restoration.

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.03

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Utility Exploration & Road Stripping (TTLR)	Bore/Drill Rigs	1	2.00	221	0.50
Utility Exploration & Road Stripping (TTLR)	Concrete/Industrial Saws	1	1.00	81	0.73
Utility Exploration & Road Stripping (TTLR)	Excavators	1	4.00	158	0.38
Utility Exploration & Road Stripping (TTLR)	Forklifts	1	4.00	89	0.20

Utility Exploration & Road Stripping (TTLR)	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Shoring (TTLR)	Bore/Drill Rigs	1	2.00	221	0.50
Shoring (TTLR)	Cranes	1	4.00	231	0.29
Shoring (TTLR)	Excavators	1	4.00	158	0.38
Shoring (TTLR)	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Trench Excavation (TTLR)	Cranes	1	2.00	231	0.29
Trench Excavation (TTLR)	Excavators	1	6.00	158	0.38
Trench Excavation (TTLR)	Forklifts	1	2.00	89	0.20
Trench Excavation (TTLR)	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Install Pipeline	Cranes	1	7.00	231	0.29
Install Pipeline	Generator Sets	1	7.00	84	0.74
Install Pipeline	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Backfill Trench	Cement and Mortar Mixers	1	6.00	9	0.56
Backfill Trench	Excavators	1	6.00	158	0.38
Backfill Trench	Other Material Handling Equipment	1	6.00	168	0.40
Backfill Trench	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Utility Exploration & Road Stripping (TTLR)	5	50.00	0.00	12.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Shoring (TTLR)	4	50.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trench Excavation (TTLR)	4	50.00	0.00	12.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Pipeline	3	50.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill Trench	4	50.00	4.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Paving		3	50.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Utility Exploration & Road Stripping (TTLR) - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0700	0.0000	1.0700	0.1620	0.0000	0.1620			0.0000			0.0000
Off-Road	0.2823	2.4377	4.2761	8.0600e-003		0.1058	0.1058		0.0983	0.0983		778.6080	778.6080	0.2311		784.3860
Total	**0.2823**	**2.4377**	**4.2761**	**8.0600e-003**	**1.0700**	**0.1058**	**1.1758**	**0.1620**	**0.0983**	**0.2603**		**778.6080**	**778.6080**	**0.2311**		**784.3860**

3.2 Utility Exploration & Road Stripping (TTLR) - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0239	1.6289	0.4367	6.7800e-003	0.2101	0.0100	0.2201	0.0576	9.5600e-003	0.0672		747.5370	747.5370	0.0433	0.1188	784.0235
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1747**	**1.7277**	**1.8745**	**0.0112**	**0.7689**	**0.0131**	**0.7820**	**0.2058**	**0.0124**	**0.2182**		**1,192.2063**	**1,192.2063**	**0.0538**	**0.1295**	**1,232.1425**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4173	0.0000	0.4173	0.0632	0.0000	0.0632			0.0000			0.0000
Off-Road	0.2823	2.4377	4.2761	8.0600e-003		0.1058	0.1058		0.0983	0.0983	0.0000	778.6080	778.6080	0.2311		784.3860
Total	**0.2823**	**2.4377**	**4.2761**	**8.0600e-003**	**0.4173**	**0.1058**	**0.5231**	**0.0632**	**0.0983**	**0.1615**	**0.0000**	**778.6080**	**778.6080**	**0.2311**		**784.3860**

3.2 Utility Exploration & Road Stripping (TTLR) - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0239	1.6289	0.4367	6.7800e-003	0.2101	0.0100	0.2201	0.0576	9.5600e-003	0.0672		747.5370	747.5370	0.0433	0.1188	784.0235
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1747**	**1.7277**	**1.8745**	**0.0112**	**0.7689**	**0.0131**	**0.7820**	**0.2058**	**0.0124**	**0.2182**		**1,192.2063**	**1,192.2063**	**0.0538**	**0.1295**	**1,232.1425**

3.3 Shoring (TTLR) - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3253	2.9949	3.5644	8.6200e-003		0.1261	0.1261		0.1160	0.1160		834.4086	834.4086	0.2699		841.1552
Total	**0.3253**	**2.9949**	**3.5644**	**8.6200e-003**	**0.0000**	**0.1261**	**0.1261**	**0.0000**	**0.1160**	**0.1160**		**834.4086**	**834.4086**	**0.2699**		**841.1552**

3.3 Shoring (TTLR) - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1549**	**0.2590**	**1.4968**	**5.1200e-003**	**0.5845**	**3.8400e-003**	**0.5884**	**0.1556**	**3.5700e-003**	**0.1592**		**522.2943**	**522.2943**	**0.0132**	**0.0219**	**529.1461**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3253	2.9949	3.5644	8.6200e-003		0.1261	0.1261		0.1160	0.1160	0.0000	834.4086	834.4086	0.2699		841.1552
Total	**0.3253**	**2.9949**	**3.5644**	**8.6200e-003**	**0.0000**	**0.1261**	**0.1261**	**0.0000**	**0.1160**	**0.1160**	**0.0000**	**834.4086**	**834.4086**	**0.2699**		**841.1552**

3.3 Shoring (TTLR) - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1549**	**0.2590**	**1.4968**	**5.1200e-003**	**0.5845**	**3.8400e-003**	**0.5884**	**0.1556**	**3.5700e-003**	**0.1592**		**522.2943**	**522.2943**	**0.0132**	**0.0219**	**529.1461**

3.4 Trench Excavation (TTLR) - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3244	2.9142	4.8343	8.0400e-003		0.1301	0.1301		0.1197	0.1197		778.5096	778.5096	0.2518		784.8042
Total	**0.3244**	**2.9142**	**4.8343**	**8.0400e-003**	**0.0000**	**0.1301**	**0.1301**	**0.0000**	**0.1197**	**0.1197**		**778.5096**	**778.5096**	**0.2518**		**784.8042**

3.4 Trench Excavation (TTLR) - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0239	1.6289	0.4367	6.7800e-003	0.2101	0.0100	0.2201	0.0576	9.5600e-003	0.0672		747.5370	747.5370	0.0433	0.1188	784.0235
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1747**	**1.7277**	**1.8745**	**0.0112**	**0.7689**	**0.0131**	**0.7820**	**0.2058**	**0.0124**	**0.2182**		**1,192.2063**	**1,192.2063**	**0.0538**	**0.1295**	**1,232.1425**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3244	2.9142	4.8343	8.0400e-003		0.1301	0.1301		0.1197	0.1197	0.0000	778.5096	778.5096	0.2518		784.8042
Total	**0.3244**	**2.9142**	**4.8343**	**8.0400e-003**	**0.0000**	**0.1301**	**0.1301**	**0.0000**	**0.1197**	**0.1197**	**0.0000**	**778.5096**	**778.5096**	**0.2518**		**784.8042**

3.4 Trench Excavation (TTLR) - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0239	1.6289	0.4367	6.7800e-003	0.2101	0.0100	0.2201	0.0576	9.5600e-003	0.0672		747.5370	747.5370	0.0433	0.1188	784.0235
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1747**	**1.7277**	**1.8745**	**0.0112**	**0.7689**	**0.0131**	**0.7820**	**0.2058**	**0.0124**	**0.2182**		**1,192.2063**	**1,192.2063**	**0.0538**	**0.1295**	**1,232.1425**

3.5 Install Pipeline - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6224	6.0362	6.6724	0.0135		0.2486	0.2486		0.2354	0.2354		1,298.4271	1,298.4271	0.2638		1,305.0213
Total	**0.6224**	**6.0362**	**6.6724**	**0.0135**		**0.2486**	**0.2486**		**0.2354**	**0.2354**		**1,298.4271**	**1,298.4271**	**0.2638**		**1,305.0213**

3.5 Install Pipeline - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1549**	**0.2590**	**1.4968**	**5.1200e-003**	**0.5845**	**3.8400e-003**	**0.5884**	**0.1556**	**3.5700e-003**	**0.1592**		**522.2943**	**522.2943**	**0.0132**	**0.0219**	**529.1461**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6224	6.0362	6.6724	0.0135		0.2486	0.2486		0.2354	0.2354	0.0000	1,298.4271	1,298.4271	0.2638		1,305.0213
Total	**0.6224**	**6.0362**	**6.6724**	**0.0135**		**0.2486**	**0.2486**		**0.2354**	**0.2354**	**0.0000**	**1,298.4271**	**1,298.4271**	**0.2638**		**1,305.0213**

3.5 Install Pipeline - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1549**	**0.2590**	**1.4968**	**5.1200e-003**	**0.5845**	**3.8400e-003**	**0.5884**	**0.1556**	**3.5700e-003**	**0.1592**		**522.2943**	**522.2943**	**0.0132**	**0.0219**	**529.1461**

3.6 Backfill Trench - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4367	3.4345	7.1640	0.0111		0.1606	0.1606		0.1486	0.1486		1,059.4401	1,059.4401	0.3343		1,067.7982
Total	**0.4367**	**3.4345**	**7.1640**	**0.0111**		**0.1606**	**0.1606**		**0.1486**	**0.1486**		**1,059.4401**	**1,059.4401**	**0.3343**		**1,067.7982**

3.6 Backfill Trench - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0160	1.0860	0.2911	4.5200e-003	0.1400	6.6600e-003	0.1467	0.0384	6.3800e-003	0.0448		498.3580	498.3580	0.0289	0.0792	522.6823
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1709**	**1.3450**	**1.7879**	**9.6400e-003**	**0.7245**	**0.0105**	**0.7351**	**0.1940**	**9.9500e-003**	**0.2039**		**1,020.6523**	**1,020.6523**	**0.0420**	**0.1011**	**1,051.8284**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4367	3.4345	7.1640	0.0111		0.1606	0.1606		0.1486	0.1486	0.0000	1,059.4401	1,059.4401	0.3343		1,067.7982
Total	**0.4367**	**3.4345**	**7.1640**	**0.0111**		**0.1606**	**0.1606**		**0.1486**	**0.1486**	**0.0000**	**1,059.4401**	**1,059.4401**	**0.3343**		**1,067.7982**

3.6 Backfill Trench - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0160	1.0860	0.2911	4.5200e-003	0.1400	6.6600e-003	0.1467	0.0384	6.3800e-003	0.0448		498.3580	498.3580	0.0289	0.0792	522.6823
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1709**	**1.3450**	**1.7879**	**9.6400e-003**	**0.7245**	**0.0105**	**0.7351**	**0.1940**	**9.9500e-003**	**0.2039**		**1,020.6523**	**1,020.6523**	**0.0420**	**0.1011**	**1,051.8284**

3.7 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4576	4.2908	7.2890	0.0114		0.2093	0.2093		0.1925	0.1925		1,103.3726	1,103.3726	0.3569		1,112.2939
Paving	0.0786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5362**	**4.2908**	**7.2890**	**0.0114**		**0.2093**	**0.2093**		**0.1925**	**0.1925**		**1,103.3726**	**1,103.3726**	**0.3569**		**1,112.2939**

3.7 Paving - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1549**	**0.2590**	**1.4968**	**5.1200e-003**	**0.5845**	**3.8400e-003**	**0.5884**	**0.1556**	**3.5700e-003**	**0.1592**		**522.2943**	**522.2943**	**0.0132**	**0.0219**	**529.1461**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4576	4.2908	7.2890	0.0114		0.2093	0.2093		0.1925	0.1925	0.0000	1,103.3726	1,103.3726	0.3569		1,112.2939
Paving	0.0786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5362**	**4.2908**	**7.2890**	**0.0114**		**0.2093**	**0.2093**		**0.1925**	**0.1925**	**0.0000**	**1,103.3726**	**1,103.3726**	**0.3569**		**1,112.2939**

3.7 Paving - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1549**	**0.2590**	**1.4968**	**5.1200e-003**	**0.5845**	**3.8400e-003**	**0.5884**	**0.1556**	**3.5700e-003**	**0.1592**		**522.2943**	**522.2943**	**0.0132**	**0.0219**	**529.1461**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.529534	0.067658	0.193471	0.126518	0.024260	0.006985	0.011675	0.007885	0.000939	0.000569	0.026493	0.000724	0.003288

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Unmitigated	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	9.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**		**2.8000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	9.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**		**2.8000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Topham Trunk Line Replacement Project - Microtunnel

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	1.20	1000sqft	0.03	1,200.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2031
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	691.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction only - microtunneling (jacking) activities.

Land Use - Representative daily active work area: 15 ft wide x 40 ft long x 2 shafts = 1,200 sf

Construction Phase - Schedule provided by applicant.

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - k

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Trips and VMT - Max three haul loads per work zone

Demolition -

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Grading - Up to 3 haul loads per day (15 CY/load)

Area Coating -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	2.00	1.00
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	PhaseEndDate	8/15/2025	8/4/2025
tblConstructionPhase	PhaseEndDate	8/18/2025	8/5/2025
tblConstructionPhase	PhaseEndDate	8/20/2025	8/6/2025
tblConstructionPhase	PhaseEndDate	1/7/2026	8/7/2025
tblConstructionPhase	PhaseEndDate	8/20/2025	8/8/2025
tblConstructionPhase	PhaseEndDate	1/14/2026	8/11/2025
tblConstructionPhase	PhaseStartDate	8/16/2025	8/5/2025
tblConstructionPhase	PhaseStartDate	8/19/2025	8/6/2025
tblConstructionPhase	PhaseStartDate	8/21/2025	8/7/2025
tblConstructionPhase	PhaseStartDate	8/21/2025	8/8/2025
tblConstructionPhase	PhaseStartDate	1/8/2026	8/11/2025
tblGrading	MaterialExported	0.00	45.00
tblGrading	MaterialExported	0.00	45.00
tblOffRoadEquipment	HorsePower	9.00	81.00
tblOffRoadEquipment	HorsePower	84.00	150.00
tblOffRoadEquipment	LoadFactor	0.56	0.73
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	2.00

tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblTripsAndVMT	HaulingTripNumber	7.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	13.00	70.00
tblTripsAndVMT	WorkerTripNumber	13.00	70.00
tblTripsAndVMT	WorkerTripNumber	13.00	70.00
tblTripsAndVMT	WorkerTripNumber	1.00	70.00
tblTripsAndVMT	WorkerTripNumber	10.00	70.00
tblTripsAndVMT	WorkerTripNumber	10.00	70.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	1.1984	8.6557	14.0134	0.0358	2.4282	0.3438	2.5549	0.4696	0.3306	0.5882	0.0000	3,469.1552	3,469.1552	0.4600	0.0912	3,490.1206
Maximum	**1.1984**	**8.6557**	**14.0134**	**0.0358**	**2.4282**	**0.3438**	**2.5549**	**0.4696**	**0.3306**	**0.5882**	**0.0000**	**3,469.1552**	**3,469.1552**	**0.4600**	**0.0912**	**3,490.1206**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	1.1984	8.6557	14.0134	0.0358	1.4884	0.3438	1.6151	0.3273	0.3306	0.5492	0.0000	3,469.1552	3,469.1552	0.4600	0.0912	3,490.1206
Maximum	**1.1984**	**8.6557**	**14.0134**	**0.0358**	**1.4884**	**0.3438**	**1.6151**	**0.3273**	**0.3306**	**0.5492**	**0.0000**	**3,469.1552**	**3,469.1552**	**0.4600**	**0.0912**	**3,490.1206**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**38.71**	**0.00**	**36.79**	**30.30**	**0.00**	**6.63**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**0.0000**	**2.8000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**0.0000**	**2.8000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Subsurface Exploration & Pavement Removal	Demolition	8/4/2025	8/4/2025	5	1	
2	Install Sheet Pile Shoring	Site Preparation	8/5/2025	8/5/2025	5	1	
3	Shaft Excavation	Grading	8/6/2025	8/6/2025	5	1	
4	Install Casing & Trunk Line	Building Construction	8/7/2025	8/7/2025	5	1	
5	Backfill Shafts	Trenching	8/8/2025	8/8/2025	5	1	
6	Repave Roadway	Paving	8/11/2025	8/11/2025	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.03

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Subsurface Exploration & Pavement Removal	Bore/Drill Rigs	1	2.00	221	0.50
Subsurface Exploration & Pavement Removal	Concrete/Industrial Saws	1	2.00	81	0.73
Subsurface Exploration & Pavement Removal	Excavators	1	4.00	158	0.38
Subsurface Exploration & Pavement Removal	Forklifts	1	4.00	89	0.20

Subsurface Exploration & Pavement Removal	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Install Sheet Pile Shoring	Bore/Drill Rigs	1	2.00	221	0.50
Install Sheet Pile Shoring	Cranes	1	4.00	231	0.29
Install Sheet Pile Shoring	Excavators	1	4.00	158	0.38
Install Sheet Pile Shoring	Forklifts	1	2.00	89	0.20
Install Sheet Pile Shoring	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Shaft Excavation	Bore/Drill Rigs	1	2.00	221	0.50
Shaft Excavation	Cranes	1	2.00	231	0.29
Shaft Excavation	Excavators	1	6.00	158	0.38
Shaft Excavation	Forklifts	1	2.00	89	0.20
Shaft Excavation	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Install Casing & Trunk Line	Bore/Drill Rigs	1	7.00	221	0.50
Install Casing & Trunk Line	Cranes	1	4.00	231	0.29
Install Casing & Trunk Line	Forklifts	1	7.00	89	0.20
Install Casing & Trunk Line	Generator Sets	1	7.00	150	0.74
Install Casing & Trunk Line	Pumps	1	7.00	84	0.74
Backfill Shafts	Cement and Mortar Mixers	1	6.00	81	0.73
Backfill Shafts	Excavators	1	6.00	158	0.38
Backfill Shafts	Other Material Handling Equipment	1	6.00	168	0.40
Backfill Shafts	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Repave Roadway	Cement and Mortar Mixers	1	6.00	9	0.56
Repave Roadway	Pavers	1	7.00	130	0.42
Repave Roadway	Rollers	1	7.00	80	0.38
Repave Roadway	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Subsurface Exploration & Paveme	5	70.00	0.00	6.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Sheet Pile Shoring	5	70.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Shaft Excavation	5	70.00	0.00	6.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Casing & Trunk Line	5	70.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill Shafts	4	70.00	6.00	6.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Repave Roadway	4	70.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Subsurface Exploration & Pavement Removal - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.5407	0.0000	1.5407	0.2333	0.0000	0.2333			0.0000			0.0000
Off-Road	0.3192	2.7213	4.7317	8.8400e-003		0.1174	0.1174		0.1099	0.1099		852.6913	852.6913	0.2344		858.5506
Total	**0.3192**	**2.7213**	**4.7317**	**8.8400e-003**	**1.5407**	**0.1174**	**1.6582**	**0.2333**	**0.1099**	**0.3432**		**852.6913**	**852.6913**	**0.2344**		**858.5506**

3.2 Subsurface Exploration & Pavement Removal - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.8145	0.2184	3.3900e-003	0.1050	5.0000e-003	0.1100	0.0288	4.7800e-003	0.0336		373.7685	373.7685	0.0217	0.0594	392.0117
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2230**	**0.9527**	**2.2312**	**9.5500e-003**	**0.8875**	**9.2900e-003**	**0.8968**	**0.2363**	**8.7300e-003**	**0.2450**		**996.3055**	**996.3055**	**0.0363**	**0.0744**	**1,019.3784**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.6009	0.0000	0.6009	0.0910	0.0000	0.0910			0.0000			0.0000
Off-Road	0.3192	2.7213	4.7317	8.8400e-003		0.1174	0.1174		0.1099	0.1099	0.0000	852.6913	852.6913	0.2344		858.5506
Total	**0.3192**	**2.7213**	**4.7317**	**8.8400e-003**	**0.6009**	**0.1174**	**0.7183**	**0.0910**	**0.1099**	**0.2009**	**0.0000**	**852.6913**	**852.6913**	**0.2344**		**858.5506**

3.2 Subsurface Exploration & Pavement Removal - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.8145	0.2184	3.3900e-003	0.1050	5.0000e-003	0.1100	0.0288	4.7800e-003	0.0336		373.7685	373.7685	0.0217	0.0594	392.0117
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2230**	**0.9527**	**2.2312**	**9.5500e-003**	**0.8875**	**9.2900e-003**	**0.8968**	**0.2363**	**8.7300e-003**	**0.2450**		**996.3055**	**996.3055**	**0.0363**	**0.0744**	**1,019.3784**

3.3 Install Sheet Pile Shoring - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0900e-003	0.0000	5.0900e-003	7.7000e-004	0.0000	7.7000e-004			0.0000			0.0000
Off-Road	0.3470	3.1996	3.8478	9.0000e-003		0.1371	0.1371		0.1261	0.1261		871.4163	871.4163	0.2818		878.4621
Total	**0.3470**	**3.1996**	**3.8478**	**9.0000e-003**	**5.0900e-003**	**0.1371**	**0.1422**	**7.7000e-004**	**0.1261**	**0.1269**		**871.4163**	**871.4163**	**0.2818**		**878.4621**

3.3 Install Sheet Pile Shoring - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2173**	**0.3787**	**2.1014**	**7.2400e-003**	**0.8209**	**5.4700e-003**	**0.8263**	**0.2186**	**5.0700e-003**	**0.2236**		**738.9745**	**738.9745**	**0.0187**	**0.0318**	**748.9072**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.9800e-003	0.0000	1.9800e-003	3.0000e-004	0.0000	3.0000e-004			0.0000			0.0000
Off-Road	0.3470	3.1996	3.8478	9.0000e-003		0.1371	0.1371		0.1261	0.1261	0.0000	871.4163	871.4163	0.2818		878.4621
Total	**0.3470**	**3.1996**	**3.8478**	**9.0000e-003**	**1.9800e-003**	**0.1371**	**0.1390**	**3.0000e-004**	**0.1261**	**0.1264**	**0.0000**	**871.4163**	**871.4163**	**0.2818**		**878.4621**

3.3 Install Sheet Pile Shoring - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2173**	**0.3787**	**2.1014**	**7.2400e-003**	**0.8209**	**5.4700e-003**	**0.8263**	**0.2186**	**5.0700e-003**	**0.2236**		**738.9745**	**738.9745**	**0.0187**	**0.0318**	**748.9072**

3.4 Shaft Excavation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0900e-003	0.0000	5.0900e-003	7.7000e-004	0.0000	7.7000e-004			0.0000			0.0000
Off-Road	0.3767	3.3805	5.3434	0.0104		0.1454	0.1454		0.1338	0.1338		1,007.8221	1,007.8221	0.3260		1,015.9709
Total	**0.3767**	**3.3805**	**5.3434**	**0.0104**	**5.0900e-003**	**0.1454**	**0.1505**	**7.7000e-004**	**0.1338**	**0.1346**		**1,007.8221**	**1,007.8221**	**0.3260**		**1,015.9709**

3.4 Shaft Excavation - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.8145	0.2184	3.3900e-003	0.1050	5.0000e-003	0.1100	0.0288	4.7800e-003	0.0336		373.7685	373.7685	0.0217	0.0594	392.0117
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2230**	**0.9527**	**2.2312**	**9.5500e-003**	**0.8875**	**9.2900e-003**	**0.8968**	**0.2363**	**8.7300e-003**	**0.2450**		**996.3055**	**996.3055**	**0.0363**	**0.0744**	**1,019.3784**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.9800e-003	0.0000	1.9800e-003	3.0000e-004	0.0000	3.0000e-004			0.0000			0.0000
Off-Road	0.3767	3.3805	5.3434	0.0104		0.1454	0.1454		0.1338	0.1338	0.0000	1,007.8221	1,007.8221	0.3260		1,015.9709
Total	**0.3767**	**3.3805**	**5.3434**	**0.0104**	**1.9800e-003**	**0.1454**	**0.1474**	**3.0000e-004**	**0.1338**	**0.1341**	**0.0000**	**1,007.8221**	**1,007.8221**	**0.3260**		**1,015.9709**

3.4 Shaft Excavation - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.8145	0.2184	3.3900e-003	0.1050	5.0000e-003	0.1100	0.0288	4.7800e-003	0.0336		373.7685	373.7685	0.0217	0.0594	392.0117
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2230**	**0.9527**	**2.2312**	**9.5500e-003**	**0.8875**	**9.2900e-003**	**0.8968**	**0.2363**	**8.7300e-003**	**0.2450**		**996.3055**	**996.3055**	**0.0363**	**0.0744**	**1,019.3784**

3.5 Install Casing & Trunk Line - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9811	8.2771	11.9121	0.0286		0.3383	0.3383		0.3256	0.3256		2,730.1808	2,730.1808	0.4413		2,741.2134
Total	**0.9811**	**8.2771**	**11.9121**	**0.0286**		**0.3383**	**0.3383**		**0.3256**	**0.3256**		**2,730.1808**	**2,730.1808**	**0.4413**		**2,741.2134**

3.5 Install Casing & Trunk Line - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2173**	**0.3787**	**2.1014**	**7.2400e-003**	**0.8209**	**5.4700e-003**	**0.8263**	**0.2186**	**5.0700e-003**	**0.2236**		**738.9745**	**738.9745**	**0.0187**	**0.0318**	**748.9072**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9811	8.2771	11.9121	0.0286		0.3383	0.3383		0.3256	0.3256	0.0000	2,730.1808	2,730.1808	0.4413		2,741.2134
Total	**0.9811**	**8.2771**	**11.9121**	**0.0286**		**0.3383**	**0.3383**		**0.3256**	**0.3256**	**0.0000**	**2,730.1808**	**2,730.1808**	**0.4413**		**2,741.2134**

3.5 Install Casing & Trunk Line - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2173**	**0.3787**	**2.1014**	**7.2400e-003**	**0.8209**	**5.4700e-003**	**0.8263**	**0.2186**	**5.0700e-003**	**0.2236**		**738.9745**	**738.9745**	**0.0187**	**0.0318**	**748.9072**

3.6 Backfill Shafts - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3926	3.1583	6.9327	0.0106		0.1498	0.1498		0.1378	0.1378		1,021.5529	1,021.5529	0.3304		1,029.8126
Total	**0.3926**	**3.1583**	**6.9327**	**0.0106**		**0.1498**	**0.1498**		**0.1378**	**0.1378**		**1,021.5529**	**1,021.5529**	**0.3304**		**1,029.8126**

3.6 Backfill Shafts - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.8145	0.2184	3.3900e-003	0.1050	5.0000e-003	0.1100	0.0288	4.7800e-003	0.0336		373.7685	373.7685	0.0217	0.0594	392.0117
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2292**	**1.1932**	**2.3197**	**0.0106**	**0.9259**	**0.0105**	**0.9364**	**0.2474**	**9.8500e-003**	**0.2572**		**1,112.7430**	**1,112.7430**	**0.0403**	**0.0912**	**1,140.9189**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3926	3.1583	6.9327	0.0106		0.1498	0.1498		0.1378	0.1378	0.0000	1,021.5529	1,021.5529	0.3304		1,029.8126
Total	**0.3926**	**3.1583**	**6.9327**	**0.0106**		**0.1498**	**0.1498**		**0.1378**	**0.1378**	**0.0000**	**1,021.5529**	**1,021.5529**	**0.3304**		**1,029.8126**

3.6 Backfill Shafts - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.8145	0.2184	3.3900e-003	0.1050	5.0000e-003	0.1100	0.0288	4.7800e-003	0.0336		373.7685	373.7685	0.0217	0.0594	392.0117
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2292**	**1.1932**	**2.3197**	**0.0106**	**0.9259**	**0.0105**	**0.9364**	**0.2474**	**9.8500e-003**	**0.2572**		**1,112.7430**	**1,112.7430**	**0.0403**	**0.0912**	**1,140.9189**

3.7 Repave Roadway - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4316	4.0922	6.3319	9.6700e-003		0.1864	0.1864		0.1724	0.1724		922.6094	922.6094	0.2901		929.8612
Paving	0.0786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5102**	**4.0922**	**6.3319**	**9.6700e-003**		**0.1864**	**0.1864**		**0.1724**	**0.1724**		**922.6094**	**922.6094**	**0.2901**		**929.8612**

3.7 Repave Roadway - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2173**	**0.3787**	**2.1014**	**7.2400e-003**	**0.8209**	**5.4700e-003**	**0.8263**	**0.2186**	**5.0700e-003**	**0.2236**		**738.9745**	**738.9745**	**0.0187**	**0.0318**	**748.9072**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4316	4.0922	6.3319	9.6700e-003		0.1864	0.1864		0.1724	0.1724	0.0000	922.6094	922.6094	0.2901		929.8612
Paving	0.0786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5102**	**4.0922**	**6.3319**	**9.6700e-003**		**0.1864**	**0.1864**		**0.1724**	**0.1724**	**0.0000**	**922.6094**	**922.6094**	**0.2901**		**929.8612**

3.7 Repave Roadway - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2173**	**0.3787**	**2.1014**	**7.2400e-003**	**0.8209**	**5.4700e-003**	**0.8263**	**0.2186**	**5.0700e-003**	**0.2236**		**738.9745**	**738.9745**	**0.0187**	**0.0318**	**748.9072**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.527779	0.068094	0.194119	0.126693	0.024448	0.007090	0.011744	0.007802	0.000938	0.000564	0.026705	0.000730	0.003294

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Unmitigated	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	9.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**		**2.8000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	9.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**		**2.8000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Topham Trunk Line Replacement Project - 12"/16" Dist. Mainlines

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	0.60	1000sqft	0.01	600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2030
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	691.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction Only - Open Trench method for 12" dist. mainline & 16" dist. mainline

Land Use - Representative daily active work zone area.

Construction Phase - Single representative construction day.

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Trips and VMT - Max 12 construction vehicles/day.
Max 6 hauling disposal loads/day.
Max 3 material delivery trucks/day.
Max 3 asphalt trucks/day.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Demolition - Max 3 haul load disposals/day.

Grading - Max 3 haul disposal loads per day.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Area Coating -

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	2.00	1.00
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDays	5.00	1.00
tblGrading	MaterialExported	0.00	45.00
tblGrading	MaterialExported	0.00	45.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Backfill Trench (12/16 DML)
tblOffRoadEquipment	PhaseName		Trench Excavation (12/16 DML)
tblOffRoadEquipment	PhaseName		Trench Excavation (12/16 DML)

tblOffRoadEquipment	PhaseName		Backfill Trench (12/16 DML)
tblOffRoadEquipment	PhaseName		Trench Excavation (12/16 DML)
tblOffRoadEquipment	PhaseName		Install Pipeline (12/16 DML)
tblOffRoadEquipment	PhaseName		Backfill Trench (12/16 DML)
tblOffRoadEquipment	PhaseName		Paving (12/16 DML)
tblOffRoadEquipment	PhaseName		Backfill Trench (12/16 DML)
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	4.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblTripsAndVMT	HaulingTripNumber	5.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	13.00	24.00
tblTripsAndVMT	WorkerTripNumber	10.00	24.00
tblTripsAndVMT	WorkerTripNumber	10.00	24.00
tblTripsAndVMT	WorkerTripNumber	0.00	24.00
tblTripsAndVMT	WorkerTripNumber	10.00	24.00
tblTripsAndVMT	WorkerTripNumber	8.00	24.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.6890	6.1092	7.4160	0.0173	1.4782	0.2742	1.6245	0.2715	0.2599	0.4076	0.0000	1,743.5339	1,743.5339	0.3295	0.1285	1,781.3315
Maximum	**0.6890**	**6.1092**	**7.4160**	**0.0173**	**1.4782**	**0.2742**	**1.6245**	**0.2715**	**0.2599**	**0.4076**	**0.0000**	**1,743.5339**	**1,743.5339**	**0.3295**	**0.1285**	**1,781.3315**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.6890	6.1092	7.4160	0.0173	0.8256	0.2742	0.9718	0.1727	0.2599	0.3311	0.0000	1,743.5339	1,743.5339	0.3295	0.1285	1,781.3315
Maximum	**0.6890**	**6.1092**	**7.4160**	**0.0173**	**0.8256**	**0.2742**	**0.9718**	**0.1727**	**0.2599**	**0.3311**	**0.0000**	**1,743.5339**	**1,743.5339**	**0.3295**	**0.1285**	**1,781.3315**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**44.15**	**0.00**	**40.18**	**36.39**	**0.00**	**18.77**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.6000e-004	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		1.3000e-004	1.3000e-004	0.0000		1.4000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.6000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**1.3000e-004**	**1.3000e-004**	**0.0000**	**0.0000**	**1.4000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.6000e-004	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		1.3000e-004	1.3000e-004	0.0000		1.4000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.6000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**1.3000e-004**	**1.3000e-004**	**0.0000**	**0.0000**	**1.4000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Utility Exploration & Road Stripping (12/16 DML)	Demolition	8/7/2023	8/7/2023	5	1	Subsurface exploration to identify utilities; Remove pavement from work zone.
2	Shoring (12/16 DML)	Site Preparation	8/8/2023	8/8/2023	5	1	Install shoring piles.
3	Trench Excavation (12/16 DML)	Grading	8/9/2023	8/9/2023	5	1	Excavate trench segment.
4	Install Pipeline (12/16 DML)	Building Construction	8/10/2023	8/10/2023	5	1	
5	Backfill Trench (12/16 DML)	Trenching	8/11/2023	8/11/2023	5	1	
6	Paving (12/16 DML)	Paving	8/14/2023	8/14/2023	5	1	Roadway Restoration

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.01

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Utility Exploration & Road Stripping (12/16 DML)	Bore/Drill Rigs	1	2.00	221	0.50
Utility Exploration & Road Stripping (12/16 DML)	Concrete/Industrial Saws	1	1.00	81	0.73
Utility Exploration & Road Stripping (12/16 DML)	Excavators	1	4.00	158	0.38
Utility Exploration & Road Stripping (12/16 DML)	Forklifts	1	4.00	89	0.20

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Utility Exploration & Road Stripping (12/16 DML)	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Shoring (12/16 DML)	Bore/Drill Rigs	1	2.00	221	0.50
Shoring (12/16 DML)	Cranes	1	4.00	231	0.29
Shoring (12/16 DML)	Excavators	1	4.00	158	0.38
Shoring (12/16 DML)	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Trench Excavation (12/16 DML)	Cranes	1	2.00	231	0.29
Trench Excavation (12/16 DML)	Excavators	1	4.00	158	0.38
Trench Excavation (12/16 DML)	Forklifts	1	2.00	89	0.20
Trench Excavation (12/16 DML)	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Install Pipeline (12/16 DML)	Cranes	1	6.00	231	0.29
Install Pipeline (12/16 DML)	Generator Sets	1	6.00	84	0.74
Install Pipeline (12/16 DML)	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Backfill Trench (12/16 DML)	Cement and Mortar Mixers	1	4.00	9	0.56
Backfill Trench (12/16 DML)	Excavators	1	4.00	158	0.38
Backfill Trench (12/16 DML)	Other Material Handling Equipment	1	6.00	168	0.40
Backfill Trench (12/16 DML)	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Paving (12/16 DML)	Pavers	1	6.00	130	0.42
Paving (12/16 DML)	Paving Equipment	1	6.00	132	0.36
Paving (12/16 DML)	Rollers	1	6.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Utility Exploration & Road Stripping (12/16	5	24.00	0.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Shoring (12/16 DML)	4	24.00	6.00	6.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trench Excavation (12/16 DML)	4	24.00	0.00	12.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Pipeline (12/16 DML)	3	24.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill Trench (12/16 DML)	4	24.00	4.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Paving (12/16 DML)		3	24.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Utility Exploration & Road Stripping (12/16 DML) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0700	0.0000	1.0700	0.1620	0.0000	0.1620			0.0000			0.0000
Off-Road	0.3168	2.8549	4.2823	8.0500e-003		0.1380	0.1380		0.1282	0.1282		777.7905	777.7905	0.2312		783.5716
Total	**0.3168**	**2.8549**	**4.2823**	**8.0500e-003**	**1.0700**	**0.1380**	**1.2080**	**0.1620**	**0.1282**	**0.2902**		**777.7905**	**777.7905**	**0.2312**		**783.5716**

3.2 Utility Exploration & Road Stripping (12/16 DML) - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.0988**	**1.1491**	**1.0797**	**6.9300e-003**	**0.4083**	**8.2100e-003**	**0.4165**	**0.1095**	**7.8100e-003**	**0.1173**		**742.0349**	**742.0349**	**0.0344**	**0.0877**	**769.0141**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4173	0.0000	0.4173	0.0632	0.0000	0.0632			0.0000			0.0000
Off-Road	0.3168	2.8549	4.2823	8.0500e-003		0.1380	0.1380		0.1282	0.1282	0.0000	777.7905	777.7905	0.2312		783.5716
Total	**0.3168**	**2.8549**	**4.2823**	**8.0500e-003**	**0.4173**	**0.1380**	**0.5553**	**0.0632**	**0.1282**	**0.1914**	**0.0000**	**777.7905**	**777.7905**	**0.2312**		**783.5716**

3.2 Utility Exploration & Road Stripping (12/16 DML) - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.0988**	**1.1491**	**1.0797**	**6.9300e-003**	**0.4083**	**8.2100e-003**	**0.4165**	**0.1095**	**7.8100e-003**	**0.1173**		**742.0349**	**742.0349**	**0.0344**	**0.0877**	**769.0141**

3.3 Shoring (12/16 DML) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0900e-003	0.0000	5.0900e-003	7.7000e-004	0.0000	7.7000e-004			0.0000			0.0000
Off-Road	0.3617	3.5759	3.6121	8.6100e-003		0.1530	0.1530		0.1408	0.1408		833.7074	833.7074	0.2696		840.4483
Total	**0.3617**	**3.5759**	**3.6121**	**8.6100e-003**	**5.0900e-003**	**0.1530**	**0.1581**	**7.7000e-004**	**0.1408**	**0.1416**		**833.7074**	**833.7074**	**0.2696**		**840.4483**

3.3 Shoring (12/16 DML) - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0122	0.8175	0.2118	3.5100e-003	0.1050	4.9500e-003	0.1100	0.0288	4.7400e-003	0.0335		386.0025	386.0025	0.0212	0.0613	404.7995
Vendor	6.6700e-003	0.2411	0.0920	1.1200e-003	0.0384	1.1600e-003	0.0396	0.0111	1.1100e-003	0.0122		120.3722	120.3722	4.0100e-003	0.0173	125.6347
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.1014**	**1.1177**	**1.1011**	**6.8800e-003**	**0.4117**	**7.7200e-003**	**0.4195**	**0.1110**	**7.3400e-003**	**0.1183**		**733.7395**	**733.7395**	**0.0314**	**0.0845**	**759.7156**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.9800e-003	0.0000	1.9800e-003	3.0000e-004	0.0000	3.0000e-004			0.0000			0.0000
Off-Road	0.3617	3.5759	3.6121	8.6100e-003		0.1530	0.1530		0.1408	0.1408	0.0000	833.7074	833.7074	0.2696		840.4483
Total	**0.3617**	**3.5759**	**3.6121**	**8.6100e-003**	**1.9800e-003**	**0.1530**	**0.1550**	**3.0000e-004**	**0.1408**	**0.1411**	**0.0000**	**833.7074**	**833.7074**	**0.2696**		**840.4483**

3.3 Shoring (12/16 DML) - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0122	0.8175	0.2118	3.5100e-003	0.1050	4.9500e-003	0.1100	0.0288	4.7400e-003	0.0335		386.0025	386.0025	0.0212	0.0613	404.7995
Vendor	6.6700e-003	0.2411	0.0920	1.1200e-003	0.0384	1.1600e-003	0.0396	0.0111	1.1100e-003	0.0122		120.3722	120.3722	4.0100e-003	0.0173	125.6347
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.1014**	**1.1177**	**1.1011**	**6.8800e-003**	**0.4117**	**7.7200e-003**	**0.4195**	**0.1110**	**7.3400e-003**	**0.1183**		**733.7395**	**733.7395**	**0.0314**	**0.0845**	**759.7156**

3.4 Trench Excavation (12/16 DML) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0900e-003	0.0000	5.0900e-003	7.7000e-004	0.0000	7.7000e-004			0.0000			0.0000
Off-Road	0.2835	2.7360	3.4893	5.9700e-003		0.1305	0.1305		0.1200	0.1200		577.5536	577.5536	0.1868		582.2234
Total	**0.2835**	**2.7360**	**3.4893**	**5.9700e-003**	**5.0900e-003**	**0.1305**	**0.1356**	**7.7000e-004**	**0.1200**	**0.1208**		**577.5536**	**577.5536**	**0.1868**		**582.2234**

Topham Trunk Line Replacement Project - 12"/16" Dist. Mainlines - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Trench Excavation (12/16 DML) - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0244	1.6349	0.4237	7.0300e-003	0.2101	9.9000e-003	0.2200	0.0576	9.4700e-003	0.0671		772.0050	772.0050	0.0424	0.1226	809.5991
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.1069**	**1.6941**	**1.2209**	**9.2800e-003**	**0.4783**	**0.0115**	**0.4898**	**0.1287**	**0.0110**	**0.1397**		**999.3699**	**999.3699**	**0.0486**	**0.1285**	**1,038.8804**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.9800e-003	0.0000	1.9800e-003	3.0000e-004	0.0000	3.0000e-004			0.0000			0.0000
Off-Road	0.2835	2.7360	3.4893	5.9700e-003		0.1305	0.1305		0.1200	0.1200	0.0000	577.5536	577.5536	0.1868		582.2234
Total	**0.2835**	**2.7360**	**3.4893**	**5.9700e-003**	**1.9800e-003**	**0.1305**	**0.1325**	**3.0000e-004**	**0.1200**	**0.1203**	**0.0000**	**577.5536**	**577.5536**	**0.1868**		**582.2234**

3.4 Trench Excavation (12/16 DML) - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0244	1.6349	0.4237	7.0300e-003	0.2101	9.9000e-003	0.2200	0.0576	9.4700e-003	0.0671		772.0050	772.0050	0.0424	0.1226	809.5991
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.1069**	**1.6941**	**1.2209**	**9.2800e-003**	**0.4783**	**0.0115**	**0.4898**	**0.1287**	**0.0110**	**0.1397**		**999.3699**	**999.3699**	**0.0486**	**0.1285**	**1,038.8804**

3.5 Install Pipeline (12/16 DML) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6065	6.0501	5.8013	0.0116		0.2726	0.2726		0.2585	0.2585		1,112.5727	1,112.5727	0.2293		1,118.3042
Total	**0.6065**	**6.0501**	**5.8013**	**0.0116**		**0.2726**	**0.2726**		**0.2585**	**0.2585**		**1,112.5727**	**1,112.5727**	**0.2293**		**1,118.3042**

3.5 Install Pipeline (12/16 DML) - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.0825**	**0.0592**	**0.7972**	**2.2500e-003**	**0.2683**	**1.6100e-003**	**0.2699**	**0.0711**	**1.4900e-003**	**0.0726**		**227.3649**	**227.3649**	**6.1400e-003**	**5.9200e-003**	**229.2814**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6065	6.0501	5.8013	0.0116		0.2726	0.2726		0.2585	0.2585	0.0000	1,112.5727	1,112.5727	0.2293		1,118.3042
Total	**0.6065**	**6.0501**	**5.8013**	**0.0116**		**0.2726**	**0.2726**		**0.2585**	**0.2585**	**0.0000**	**1,112.5727**	**1,112.5727**	**0.2293**		**1,118.3042**

3.5 Install Pipeline (12/16 DML) - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.0825**	**0.0592**	**0.7972**	**2.2500e-003**	**0.2683**	**1.6100e-003**	**0.2699**	**0.0711**	**1.4900e-003**	**0.0726**		**227.3649**	**227.3649**	**6.1400e-003**	**5.9200e-003**	**229.2814**

3.6 Backfill Trench (12/16 DML) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4300	3.6826	6.2750	9.6100e-003		0.1872	0.1872		0.1728	0.1728		921.2509	921.2509	0.2924		928.5610
Total	**0.4300**	**3.6826**	**6.2750**	**9.6100e-003**		**0.1872**	**0.1872**		**0.1728**	**0.1728**		**921.2509**	**921.2509**	**0.2924**		**928.5610**

3.6 Backfill Trench (12/16 DML) - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	4.4500e-003	0.1608	0.0614	7.5000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.4000e-004	8.1200e-003		80.2481	80.2481	2.6700e-003	0.0116	83.7564
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.1032**	**1.3098**	**1.1411**	**7.6800e-003**	**0.4339**	**8.9900e-003**	**0.4429**	**0.1169**	**8.5500e-003**	**0.1255**		**822.2830**	**822.2830**	**0.0371**	**0.0992**	**852.7705**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4300	3.6826	6.2750	9.6100e-003		0.1872	0.1872		0.1728	0.1728	0.0000	921.2509	921.2509	0.2924		928.5610
Total	**0.4300**	**3.6826**	**6.2750**	**9.6100e-003**		**0.1872**	**0.1872**		**0.1728**	**0.1728**	**0.0000**	**921.2509**	**921.2509**	**0.2924**		**928.5610**

3.6 Backfill Trench (12/16 DML) - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	4.4500e-003	0.1608	0.0614	7.5000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.4000e-004	8.1200e-003		80.2481	80.2481	2.6700e-003	0.0116	83.7564
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.1032**	**1.3098**	**1.1411**	**7.6800e-003**	**0.4339**	**8.9900e-003**	**0.4429**	**0.1169**	**8.5500e-003**	**0.1255**		**822.2830**	**822.2830**	**0.0371**	**0.0992**	**852.7705**

3.7 Paving (12/16 DML) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3873	3.8219	5.4691	8.5500e-003		0.1913	0.1913		0.1760	0.1760		827.8441	827.8441	0.2677		834.5376
Paving	0.0262					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4135**	**3.8219**	**5.4691**	**8.5500e-003**		**0.1913**	**0.1913**		**0.1760**	**0.1760**		**827.8441**	**827.8441**	**0.2677**		**834.5376**

3.7 Paving (12/16 DML) - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.6700e-003	0.2411	0.0920	1.1200e-003	0.0384	1.1600e-003	0.0396	0.0111	1.1100e-003	0.0122		120.3722	120.3722	4.0100e-003	0.0173	125.6347
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.0892**	**0.3003**	**0.8893**	**3.3700e-003**	**0.3067**	**2.7700e-003**	**0.3095**	**0.0822**	**2.6000e-003**	**0.0848**		**347.7370**	**347.7370**	**0.0102**	**0.0232**	**354.9160**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3873	3.8219	5.4691	8.5500e-003		0.1913	0.1913		0.1760	0.1760	0.0000	827.8441	827.8441	0.2677		834.5376
Paving	0.0262					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4135**	**3.8219**	**5.4691**	**8.5500e-003**		**0.1913**	**0.1913**		**0.1760**	**0.1760**	**0.0000**	**827.8441**	**827.8441**	**0.2677**		**834.5376**

3.7 Paving (12/16 DML) - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.6700e-003	0.2411	0.0920	1.1200e-003	0.0384	1.1600e-003	0.0396	0.0111	1.1100e-003	0.0122		120.3722	120.3722	4.0100e-003	0.0173	125.6347
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.0892**	**0.3003**	**0.8893**	**3.3700e-003**	**0.3067**	**2.7700e-003**	**0.3095**	**0.0822**	**2.6000e-003**	**0.0848**		**347.7370**	**347.7370**	**0.0102**	**0.0232**	**354.9160**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.529534	0.067658	0.193471	0.126518	0.024260	0.006985	0.011675	0.007885	0.000939	0.000569	0.026493	0.000724	0.003288

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.6000e-004	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		1.3000e-004	1.3000e-004	0.0000		1.4000e-004
Unmitigated	2.6000e-004	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		1.3000e-004	1.3000e-004	0.0000		1.4000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	5.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.1000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		1.3000e-004	1.3000e-004	0.0000		1.4000e-004
Total	**2.7000e-004**	**0.0000**	**6.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.3000e-004**	**1.3000e-004**	**0.0000**		**1.4000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	5.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.1000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		1.3000e-004	1.3000e-004	0.0000		1.4000e-004
Total	**2.7000e-004**	**0.0000**	**6.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.3000e-004**	**1.3000e-004**	**0.0000**		**1.4000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX B

Biological Resources Technical Memorandum

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May 24, 2023
Marshall Styers
Los Angeles Department of Water and Power
111 N. Hope Street, Room 1044
Los Angeles, CA 90012

Subject: Topham Trunk Line Replacement Project, Final Biological Resources Technical Memorandum

1. INTRODUCTION

The Los Angeles Department of Water and Power (LADWP) proposes to install approximately 23,300 linear feet (LF) of a 36-inch diameter underground pipe along Victory Boulevard, Topham Street, and Oxnard Street, in the west San Fernando Valley area of the City of Los Angeles. The installation of the new 36-inch diameter trunk line (referred to herein as the Topham Trunk Line Replacement [TTLR] Project, the project, or proposed project) would replace the aging and deteriorating existing 24-inch Topham Trunk Line to provide greater operational flexibility for water flow and delivery and to improve system redundancy and resiliency. The proposed project would also include approximately 6,599 LF of new 12-inch diameter underground distribution mainline that would connect the proposed TTLR Project to the existing distribution system on Mason Avenue, Victory Boulevard, and Topham Street. In addition, the proposed project would include approximately 3,429 LF of new 16-inch diameter underground distribution mainline that would replace the existing 8-inch diameter distribution mainline on Tampa Avenue, south of Topham Street. The TTLR and the distribution mainlines would be installed mostly parallel to their respective existing lines; once installation is completed, the existing lines would be abandoned in place and decommissioned accordingly.

AECOM was retained by LADWP to prepare a biological resource assessment of the Topham Trunk Line Replacement Project in support of the California Environmental Quality Act (CEQA). In addition, LADWP is currently pursuing funding through the State Water Resources Control Board (SWRCB) Clean Water State Revolving Fund (SRF) for the project. Per requirements of the SRF Environmental Package application, a biological resources assessment prepared in support of the project is required. Therefore, this memorandum has been prepared in accordance with CEQA and the requirements of the SRF application.

This memorandum summarizes the results of database searches and a site survey conducted by AECOM to document existing biological conditions within the project site, evaluate the presence and potential for special-status species and sensitive habitats to occur in the project area, and evaluate the need for any Best Management Practices (BMP) or mitigation measures to minimize and avoid potential impacts to biological resources.

2. PROJECT DESCRIPTION

2.1 Project Location and Setting

The proposed project would be located in the western San Fernando Valley of the City of Los Angeles within the communities of Winnetka, Woodland Hills, Tarzana, Encino, and the

Sepulveda Basin (Figures 1 through 3). Approximately 23,300 LF of the new 36-inch trunk line would be installed along Victory Boulevard, Topham Street, and Oxnard Street, beginning just east of the intersection of De Soto Avenue and Victory Boulevard and ending at the intersection of Oxnard Street and Encino Avenue. A portion of the new 36-inch trunk line would be installed within an existing LADWP easement located at the Los Angeles County Metropolitan Transportation Authority (Metro)'s Pierce College Station parking lot and north of the baseball fields at Winnetka Avenue and Victory Boulevard. In addition, approximately 6,599 LF of the new 12-inch diameter distribution would be installed along Mason Avenue (from Kittridge Street to Victory Boulevard), Victory Boulevard (at the intersection of Mason Avenue and Victory Boulevard), and Topham Street (from Victory Boulevard to Tampa Avenue). Approximately 3,429 LF of the new 16-inch diameter distribution mainline would be installed along Topham Street (from Tampa Avenue to Evenhaim Lane) and Tampa Avenue (from Topham Street to Ventura Boulevard). As described previously, the TTLR and the distribution mainlines would be installed mostly parallel to their respective existing lines; once installation is completed, the existing lines would be abandoned in place and decommissioned accordingly.

Land uses along Victory Boulevard, Topham Street, Oxnard Street, and Tampa Avenue are mixed and include residential, religious, commercial, public transit (Metro Orange Line), one private school (Woodcrest Preschool), limited manufacturing, open space, and public facilities including Pierce College. The Los Angeles River runs east-west, approximately 0.25 to 0.5 mile north of the proposed project.

2.2 Project Background

The existing Topham Trunk Line, which was installed in 1917, consists of approximately 14,160 feet of 24-inch diameter riveted-steel pipe beginning at De Soto Avenue and Victory Boulevard and terminating at Tampa Avenue and Ventura Boulevard. The portion of Ventura Trunk Line connecting Topham Trunk Line to Encino Inlet Line was installed in 1937 and consists of approximately 11,210 feet of 24-inch diameter welded-steel pipe (WSP) and 1,370 feet of 24-inch diameter ductile iron (DI) pipe.

The existing Topham Trunk Line and a portion of Ventura Trunk Line connects De Soto Trunk Line, identified as the 1,123-foot water distribution service zone (SZ)[1] (1123SZ) and Encino Inlet Line, identified as the 1,134-foot service zone (1134SZ). The Ventura and Wilbur Seasonal Gate, located on Ventura Trunk Line, serves as the system boundary

[1] LADWP's water distribution SZs are also known as system elevation zones and are classified by the elevation of the downstream valve setting or base elevation of a tank. Trunk lines supply service zones either through their associated mainlines, or through direct service connections from the trunk line to a customer.

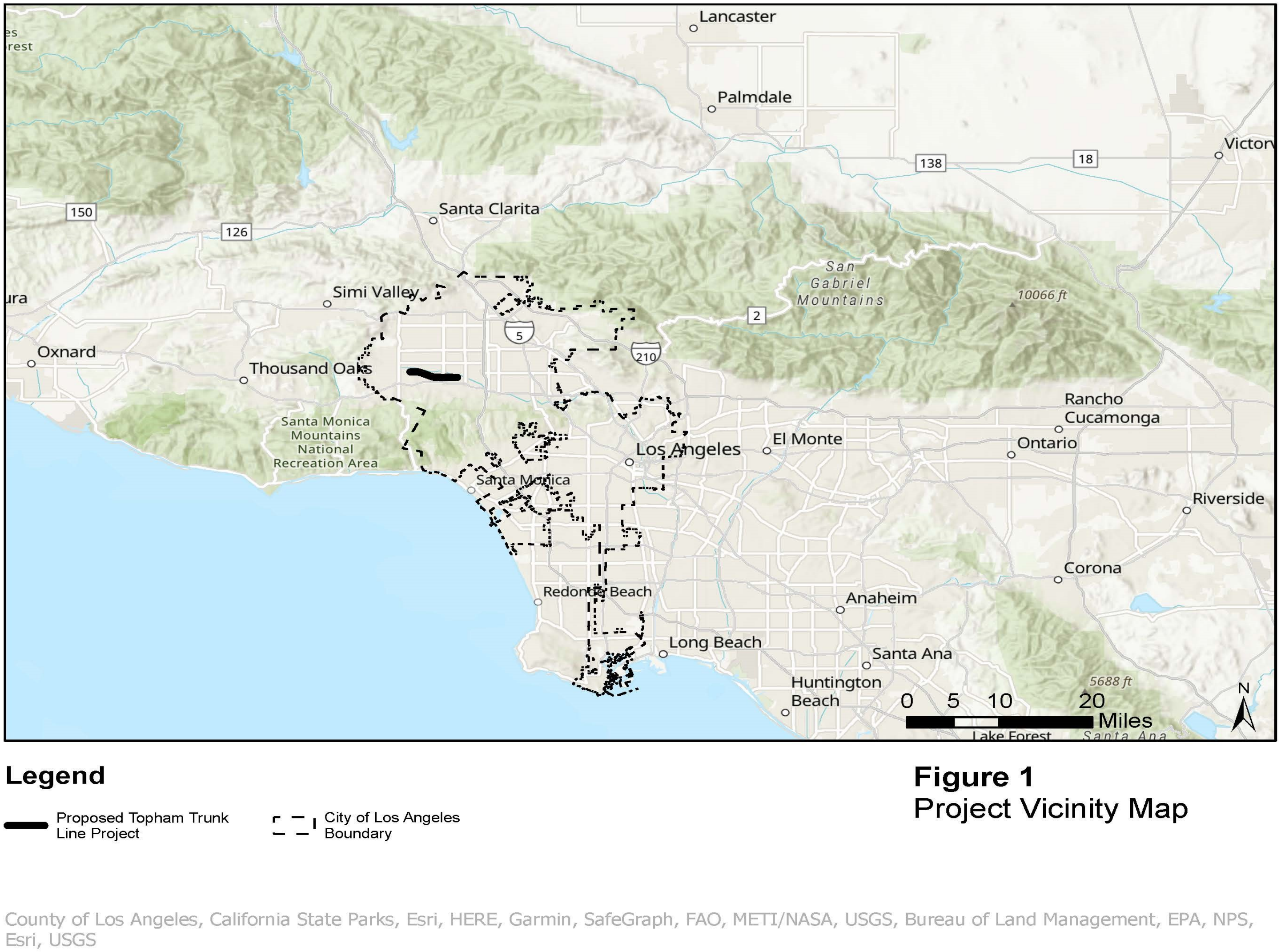
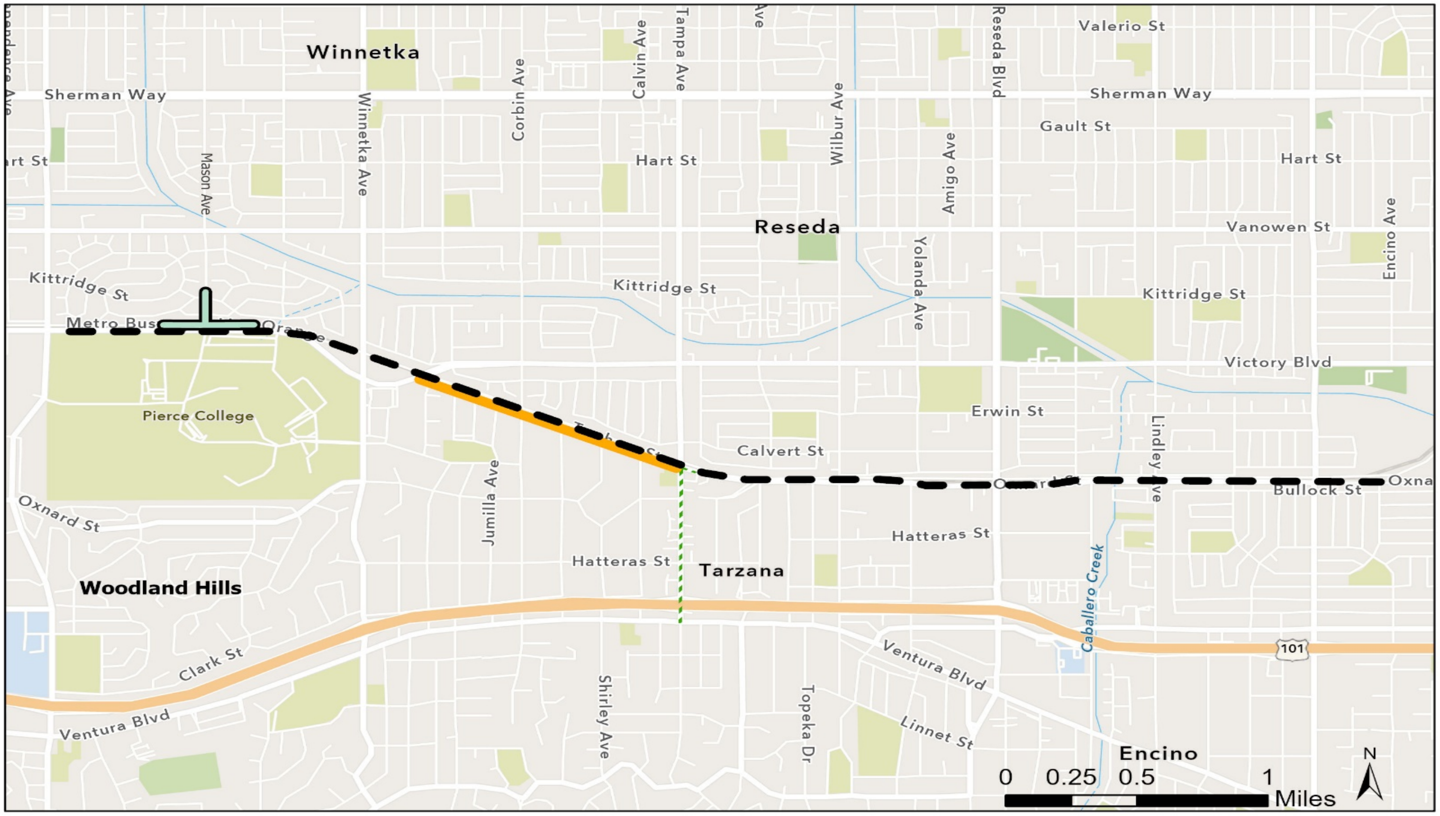


Figure 1
Project Vicinity Map

Marshall Styers
Los Angeles Department of Water and Power
May 24, 2023



Legend

- Proposed Topham Trunk Line Project
- Proposed 12" Victory Blvd & Mason Ave Mainline Open Cut
- Proposed 12" Topham St Mainline Open Cut
- Proposed 16" Tampa Ave Mainline Open Cut

Figure 2
Project Overview Map

County of Los Angeles, California State Parks, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA

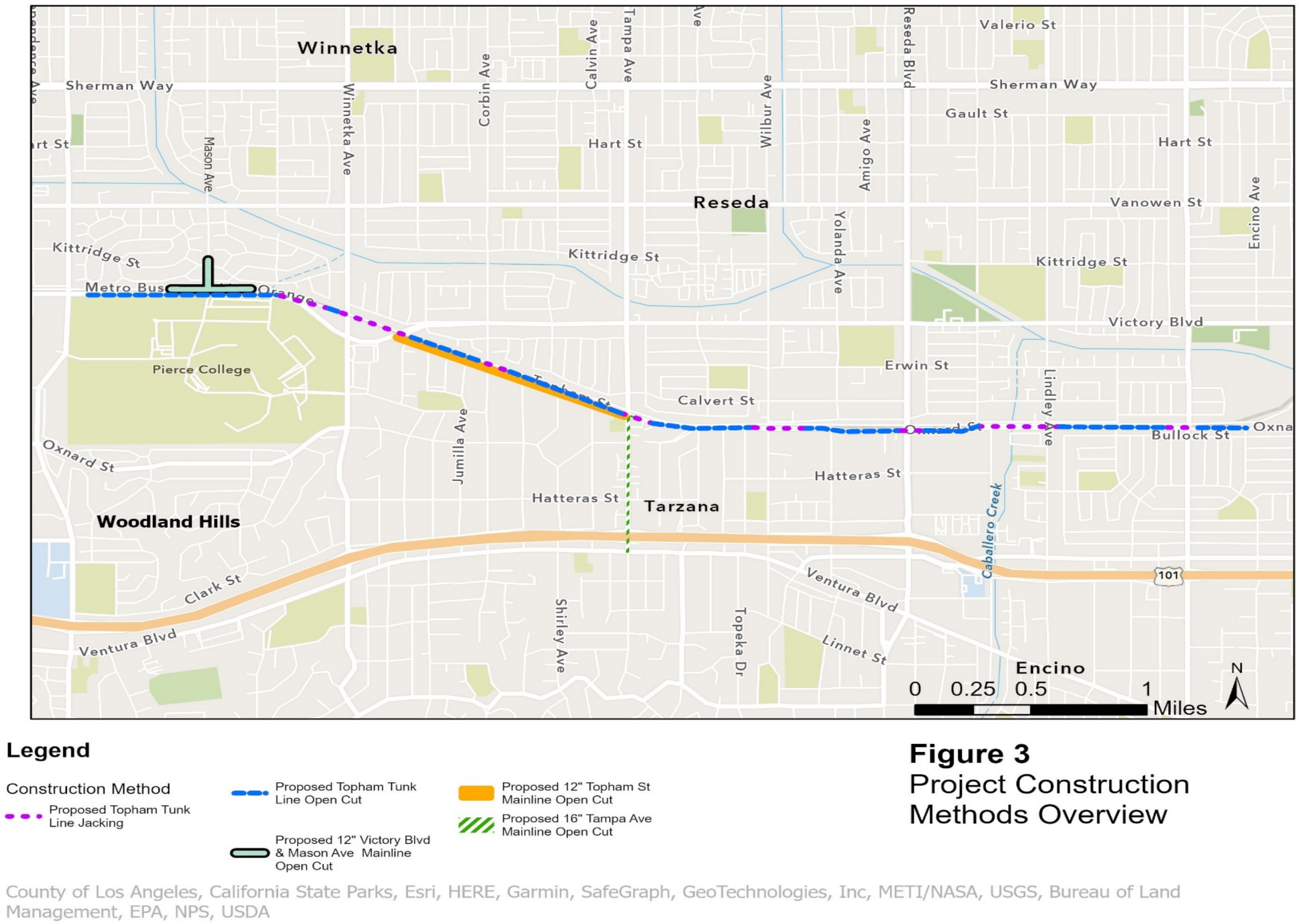


Figure 3
Project Construction Methods Overview

between the 1123SZ and 1134SZ. Under normal operations, Topham Trunk Line supplies the southeastern 1123SZ and the 1123SZ portion of Ventura Trunk Line with water from the Rinaldi and De Soto Regulator Station (1196SZ and 1123SZ). The Encino Inlet Line supplies the southwestern 1134SZ through the 1134SZ portions of Ventura Trunk Line with water from the Los Angeles Reservoir. However, when the Ventura and Wilbur Seasonal Gate is open, Topham Trunk Line conveys Los Angeles Reservoir water from Ventura Trunk Line to De Soto Trunk Line.

LADWP has identified the proposed project as a requirement to enhance water supply resiliency and redundancy in the San Fernando Valley area. The proposed project would replace approximately 10,500 feet of an aging and deteriorating trunk line, which has been identified as likely to be susceptible to operational failure. In addition, the proposed project would:

- Provide operational flexibility for the east-west flows between the 1134SZ and 1123SZ;
- Allow for existing and future service connections to mainlines instead of the existing Topham Trunk Line;
- Allow for greater operational flexibility on Tampa Avenue by upsizing the existing 8-inch mainline to 16-inch;
- Eliminate the system boundary between the 1134SZ and 1123SZ for improved system resiliency;
- Maintain pressures in the 1134SZ and 1123SZ during periods of high demand;
- Allow the 1134SZ to supply a majority of the 1123SZ during a planned or emergency outage of De Soto Reservoir or Rinaldi Trunk Line; and
- Increase seismic resiliency of system.

2.2 Project Objectives

The primary objective of the proposed project is to replace the aging and deteriorating existing Topham Trunk Line to provide greater operational flexibility for potable water flow between the 1134SZ and 1123SZ. In addition, the proposed project would improve system redundancy and resiliency by providing potable water supply to the 1123SZ during a planned or emergency outage of the De Soto Reservoir or Rinaldi Trunk Line, increasing overall reliability in the service zones of the west San Fernando Valley.

2.3 Proposed TTLR Components and Location

The primary component of the proposed project is a new 36-inch diameter underground trunk line, which would replace the existing Topham Trunk Line. As previously discussed, the replacement line would be routed mainly within Victory Boulevard, Topham Street, and Oxnard Street. On the east, the TTLR would connect directly to the existing Encino Inlet Line, identified as the 1134SZ at Encino Avenue. On the west, the TTLR would connect directly to the De Soto Trunk Line, identified as the 1123SZ at De Soto Avenue. Because the existing Topham Trunk Line must remain in service until the proposed project is completed, the TTLR would be installed in an alignment parallel to, rather than removing and replacing, the existing trunk line.

The TTLR would consist of WSP, which is considered a continuous pipeline because the joints between pipe segments are welded together. Seismic loads created by ground displacement from a seismic event are accommodated by the capability of the walls of the WSP to stretch and bend.

Because the TTLR would interconnect directly to the 1123SZ and 1134SZ to provide system redundancy and operational flexibility, the proposed project would also include the installation of approximately 6,599 LF of new 12-inch diameter underground distribution mainline and approximately 3,429 LF of new 16-inch diameter underground distribution mainline. The 12-inch distribution mainline and 16-inch distribution mainline would be connected to existing distribution mainlines throughout the alignment to provide direct service to the 1123SZ. Both distribution mainlines would consist of earthquake resistant ductile iron pipe (ERDIP) to provide resilience during seismic events. Segments of ERDIP are joined with a gasket rather than being fused together, which provides flexibility at the joints to accommodate seismic loads by allowing the pipeline not only to bend laterally but also expand and contract lengthwise.

In addition to the above, several appurtenant facilities necessary to support the operation of the proposed trunk line and mainline would be installed. These include isolation valves, a flow meter, and a flow recorder. The isolation valves and flow meter would be located underground within the public road ROW. The flow recorder would be installed in an aboveground cabinet (72 inches tall, 48 inches wide, and 24 inches deep) located on the western end of the project alignment on Victory Boulevard (just east of De Soto Avenue), within the public road ROW. After the TTLR is operational, the existing Topham Trunk Line would be isolated from the drinking water system and abandoned in place.

2.4 Construction Schedule

Construction for the proposed project is estimated to begin in Fall 2023 and would take approximately 7 years to complete (Figure 4).

Figure 4
Project Construction Schedule

As shown above in Figure 4, the 12-inch diameter distribution mainline would be installed first from approximately third quarter 2023 to third quarter 2024, followed by the 16-inch diameter distribution mainline which would be installed from approximately third quarter 2024 to second quarter 2025. The TTLR would be installed a few months after the 16-inch diameter distribution mainline is completed from approximately third quarter 2025 to third quarter 2030.

Construction activities for the TTLR would occur between 7:00 a.m. and 6:00 p.m., Monday through Friday. For the 12-inch and 16-inch diameter distribution mainlines, construction activities would occur between 9:00 a.m. and 3:30 p.m., Monday through Friday, but some nighttime construction may be required.

2.5 Trunk Line and Mainline Open-Trench Construction

The 12-inch and 16-inch diameter distribution mainlines as well as the majority of the TTLR would be installed through an open-trench method of construction whereby a trench is excavated in the roadway, pipeline segments are placed in the trench, the trench is backfilled, and the road is repaved.

In order to achieve the open-trench construction in an effective, efficient, and safe manner, work zones would be established in the roadway within which open-trench construction activities could proceed unimpeded. Preliminarily, the work zones for the 12-inch and 16-inch diameter distribution mainlines would total approximately 2,400 feet in length, and the work zones for the TTLR would total approximately 3,000 feet in length. These work zones would include the active construction work area (400 feet for the 12-inch and 16-inch diameter distribution mainlines and 1,000 feet for the TTLR), and traffic control tapering on each end of the work area, at 1,000 feet in length at each end.

The work zones would be the minimum width required to accommodate barriers or cones separating traffic from construction activities, safety setbacks adjacent to the trench, shoring required to stabilize the trench walls (for the TTLR installation), the trench itself, and adequate area to safely and effectively operate equipment and trucks, as well as the flexibility to avoid existing substructures in the road. With these measures, the work zones would be approximately 25 to 30 feet in width for the 12-inch and 16-inch diameter distribution mainlines, and 30 to 40 feet in width for the TTLR. Based on the width of the work zone, some street segments along the proposed project alignment may allow only for one traffic lane in each direction and no parking. For the TTLR construction, the following street segments may require full closure with local access only, due to the narrow curb to curb dimensions:

- Topham Street, between Victory Boulevard and Cahill Avenue
- Oxnard Street, between Cahill Avenue and Wilbur Avenue
- Oxnard Street, between Lindley Avenue and Encino Avenue

These work zones would allow for the continuous installation of the TTLR pipeline in longer spans without the requirement to frequently disassemble and relocate barriers, equipment, and construction support facilities and modify traffic control elements, all of which would hamper the pipeline installation process but not substantially improve the flow of traffic in the vicinity of the construction. In addition to the actual work zones, lane transition zones would be required extending outward from the work zone along Mason Avenue, Victory Boulevard, Topham Street, Oxnard Street, and Tampa Avenue to channel approaching traffic into the travel lanes adjacent to the work zone.

The open-trench construction process for the TTLR would involve several steps. The initial step of the installation would be establishing the construction work zone. This would be accomplished by first installing traffic controls, including restriping of lanes, signage, and traffic signal modifications, as necessary, to merge traffic and direct it safely around the work zone. K-rails and other traffic barriers or markers would then be installed around the actual work zone to demarcate the zone and provide a safe working area. Placing the K-rail barriers would require the use of a forklift or other type of construction equipment. Mobilization would include delivering construction equipment and materials to the work zone and establishing field offices and other personnel and construction support facilities necessary for trunk line installation to proceed.

Once the work zone has been established, subsurface utility exploration would be conducted to verify the vertical and horizontal location of underground utilities that must be avoided, protected, or relocated during pipeline installation. This would involve core drilling a small-diameter hole in the pavement and removing soil with a vacuum truck to expose the utilities. Once the precise alignment of the trunk line has been established based on this exploration, the pavement would be cut along both edges of a given length of the trench using a pavement saw, and the pavement over the trench would be stripped using an excavator and a front loader. The pavement would be loaded on trucks and hauled from the site and either reclaimed for use as paving material or road base material, or it would be taken to a landfill as inert debris that can be recycled as road base for internal landfill use.

Because of the depth of excavation for the trunk line, shoring to support the walls of the trench may be required to provide a stable and safe working environment. Cantilever or braced shoring methods would be utilized, but are dependent on soil investigation results. No impact pile-driving would be involved. Installing the piles would be accomplished using a drill rig and a hydraulic crane with various attachments, depending on the method of installation. These steps, from traffic control to installing the shoring piles, would be completed before any of the actual pipeline installation tasks would begin and would take approximately two months.

After the shoring piles are in place, work would begin on installing individual pipe segments. For the 36-inch diameter trunk line, the trench would be excavated approximately 5 to 6 feet wide and 8 to 15 feet deep. These depths are necessary to accommodate the 36-inch diameter trunk line, bedding material under the pipe, and the minimum of five feet of cover required over the trunk line.

The steel shoring plates would be lowered between the H-beams as the depth of the trench excavation increases. Approximately 250 to 300 LF of trench could be excavated and shored in a month for the TTLR. The excavated material would be loaded onto trucks parked adjacent to the trench and hauled from the work zone. While some of the excavated material may be utilized at other construction sites within the region, it is assumed for environmental analysis purposes that all material would be hauled to a local landfill.

In addition to the pipe segments, various appurtenances, such as valves, meters, and maintenance holes, would also be installed as required. The general process for installation of these appurtenances would be similar to the pipe segments and would occur within the designated work zones.

After completion of the work within a given work zone, equipment, materials, and facilities would be removed from the zone, the pavement would be restored and restriped, and the traffic barriers would be removed. Depending on the length of the work zone and actual conditions, active construction within an individual work zone may range for approximately 3 to 4 months. The entire process would then be repeated for the next construction work zone, which may or may not be in an adjacent section of the roadway.

The open-trench construction process for the 12-inch and 16-inch diameter distribution mainlines more simple than the TTLR. All traffic control materials would be setup prior to the start of every work shift and would be removed after work is completed for the day. The Underground Service Alert system will be utilized to map underground utilities along the alignment. The pavement cutting and excavation process would involve excavating will be similar as that of the TTLR except for the trench dimensions. For the 12-inch distribution mainline, the trench would be excavated approximately 30 inches wide and 4 to 5 feet deep. For the 16-inch distribution mainline, the trench would be excavated approximately 3 feet wide and 5 feet deep. For these depths, no shoring would be needed. These depths necessary to accommodate the 12-inch and 16-inch distribution mainlines, bedding material under the lines, and the minimum of 3 feet of cover required over the mainlines. At the end of every work shift, any open trench would be covered with steel plates for the safety of the public. For the 12-inch diameter distribution mainline, approximately 20 to 40 LF of trench could be installed in a day. For the 16-inch diameter distribution mainline, approximately 20 to 25 LF of trench could be installed in a day.

Various pieces of construction equipment would be used to accomplish the open-trench installation of the TTLR as well as the 12-inch and 16-inch diameter distribution mainlines. For the TTLR, the construction equipment would include the following: drill rig, front loader, hydraulic cranes, pavement saw, sweeper, forklift, excavator, backhoe, blower, skid steer, wheel loader, carry deck, utility trucks (water truck, gang truck, slurry truck, flat bed pipe truck, four pick-up trucks, two axle dump trucks, and three axle dump trucks), and trailers (dump trailer, low bed trailer, weld truck with trailer). For the 12-inch and 16-inch diameter distribution mainlines, the construction equipment would include the following: backhoe, crane (or carry deck if overhead power is present or the work zone is within a narrow street), utility trucks (two axle dump truck, three axle dump truck, gang truck, flatbed for pipe), skid steer, sweeper truck, and carrier for backhoe (or trailer attached to a dump truck). However, these pieces of equipment serve specialized purposes during the pipeline installation and would generally only be operated for brief periods when required. For example, the saw would be used to cut the edges of the trench at the beginning of the construction process, the excavator would be used during trench excavation, and a crane would be used when installing the H-beam piles and the trunk line or mainline pipe segments. Therefore, individual pieces of equipment would not operate continuously during the day and generally would not operate simultaneously.

Trucks would haul debris and excavated material from the site and deliver construction materials, such as pipe segments and backfill material, to the site. The peak of haul truck trips would occur during the excavation of the trench, which may require an average of three dump trucks trips in a single day, assuming a 10-cubic yard truck capacity for the TTLR and a 20-cubic yard truck capacity for the 12-inch and 16-inch diameter distribution mainlines. The peak of delivery trucks would occur during the backfilling of the trench with the soil-cement slurry. Assuming a 10-cubic yard concrete truck capacity for the TTLR, this may require an average of one to two concrete trucks per day to backfill the trench within 5 feet of the surface after the installation of the trunk line. Also, assuming a 20-cubic yard dump truck capacity for the 12-inch and 16-inch diameter distribution mainlines, this may require an average of three to four dump trucks per day to backfill the trench within 3 feet of the surface after the installation of these distribution mainlines. These excavation and backfilling operations may occur simultaneously in different sections of the trench, which may result in a peak of approximately five truck trips per day within a given work zone.

Within a given work zone, the open-trench construction would require approximately 20 daily construction personnel for the trunk line and 8 daily construction personnel for the 12-inch and 16-inch diameter distribution mainlines installation. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

2.6 Trunk Line Microtunneling (Jacking)

While the majority of the TTLR would be installed using the above described open-trench method of construction, in certain areas, a microtunneling (also referred to as jacking) method would be employed to install the trunk line. The microtunneling method would use a cutting head that loosens the soil, then the soil is transported out. Microtunneling would be utilized where large substructures exist that cannot be easily relocated for the TTLR. These structures include major sewer, storm, natural gas, or water lines or other structures. Microtunneling involves installing the trunk line beneath these substructures at a depth sufficient to avoid direct conflicts as well as indirect impacts related to settlement of soil material above the tunnel. As the tunnel is bored, steel pipe casing is continually pushed forward into the tunnel by a hydraulic jacking system.

The total length of microtunneling is preliminarily estimated at approximately 6,161 LF of the total 23,300-LF TTLR (Figure 3). Microtunneling would occur at the following locations along the TTLR alignment: Victory Boulevard (just south of Oso Avenue) to the existing LADWP easement located at Metro's Pierce College Station parking lot and immediately north of the baseball fields at Winnetka Avenue and Victory Boulevard; Topham Street (at Corbin Avenue and Tampa Avenue, respectively); and, Oxnard Street (between Topeka Drive and Yolanda Avenue, at Reseda Boulevard, between Etiwanda Avenue and Lindley Avenue, and between Balcom Avenue and White Oak Avenue, respectively).

The microtunneling method requires excavating shafts at either end of the span. Similar to open-trench construction, the microtunneling would require a work zone to accommodate various pieces of equipment involved in the jacking process, delivery and haul trucks, and other construction support functions. Based on the width of these work zones, some street segments along the proposed project alignment may allow only for one traffic lane in each direction and no parking. The work zones for the End Tunnel Pit on Oxnard Street east of Lindley Avenue, the Jacking Pit on Oxnard Street west of Topeka Drive, or the pits on Topham Street, may require complete road closures and signage for detours would be posted accordingly. In addition, a portion of the work zone that occurs within the existing LADWP easement on Metro's Pierce College Station parking lot may require the northern portion of the parking lot to be closed for approximately one year for completion of the microtunneling work. The work zones surrounding each shaft would total approximately 3,000 feet in length. This would include the two launching and receiving work areas for the pits (approximately 12 feet wide, 35 feet long, and 30 feet deep), approximately 1,000 feet of spacing between the pits, and the traffic control tapering that extends about 1,000 feet beyond both sides of the work areas. They would overlap in location with the adjacent open-trench work zone but both work zones would not be active at the same time.

Cantilever or braced shoring methods would be utilized, but are dependent on soil investigation results. No impact pile-driving would be involved. After the piles have been installed, the shafts would be excavated, and the excavated material would be loaded onto trucks parked adjacent to the shaft and hauled from the construction work zone to a local landfill. The establishment of the shafts and installation of microtunneling equipment may take several weeks.

Several types of microtunnel boring machines may be utilized for pipeline installations. However, for the purposes of environmental analysis, it has been assumed that a closed-face slurry shield microtunneling boring machine (MTBM) would be employed. This type of MTBM permits microtunneling where groundwater may be encountered and limits groundwater intrusion into the launching and receiving shafts, minimizing the need for dewatering.

The microtunneling process would involve the installation of a steel casing pipe between the launching and receiving shafts. The MTBM process does not require construction personnel to enter the tunnel, as the machines are controlled from outside the tunnel. The MTBM would be lowered into the launching shaft and pushed forward by the hydraulic jacking frame as the cutter head of the MTBM removes soil at the leading edge of the tunnel. The slurry shield MTBM provides a closed environment within which soil particles are transferred into the interior of the cutter head, mixed with water that is pumped from the surface to the MTBM, and pumped through discharge lines to the surface as a slurry mixture. This process allows the MTBM to be advanced toward the receiving shaft by the hydraulic jack, with pipe casing segments, which are nominally 35 feet in length, continually lowered into the launching shaft and pushed forward behind the MTBM. Each new casing segment would be welded to the previous segment to extend the casing. The slurry mixture pumped to the surface would be processed in a separation plant to remove the spoils and recycle the water through the MTBM. The spoils would be transferred to a dump truck to be hauled off site.

The work zones surrounding each shaft would total approximately 4,000 feet in length. This would include the two launching and receiving work areas for the pits, approximately 2,000 feet of spacing between the pits, and the traffic control tapering that extends about 1,000 feet beyond both sides of the work areas. The work zones for the End Tunnel Pit on Oxnard Street east of Lindley Avenue may require complete road closure due to the narrow curb to curb width.

The average pace of installation for microtunneling would be approximately 40 feet per day, which would not include pit excavation or pipe installation. The actual time to complete a microtunneling installation for a given span would depend on factors such as soil conditions as well as the length of the span, with the total length of individual spans ranging from about 350 feet to 1,550 feet for microtunneling. However, the entire microtunneling operation at a given shaft location would be expected to be approximately 6 months.

Various pieces of construction equipment would be used to accomplish the microtunneling installation, including an excavator, front loader, hydraulic crane, utility truck, tunnel ventilation systems, slurry separator plant, tunnel boring machine, power generators, electrical systems, and high pressure water pump. Trucks would haul excavated material from the shaft and the spoils from the boring operation as well as deliver construction materials. The peak of haul truck trips would occur during the excavation of the launching and receiving shafts, which may require up to about two to three trucks per day, which may result in a peak of approximately three truck trips per day within a given work zone.

For microtunneling operations, the peak of delivery trucks would occur during the backfilling of the shafts with the soil-cement slurry. Assuming a 10-cubic yard truck capacity, this may require up to about three concrete trucks per day to backfill both shafts. Microtunneling would require approximately 28 construction personnel. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

2.7 Connections

As mentioned above, the existing Topham Trunk Line must remain in service during project construction. Therefore, the proposed project, including the 12-inch and 16-inch distribution mainlines, would first be placed in service and supplied via a connection to the new De Soto Trunk Line Replacement at De Soto Avenue and Victory Boulevard at the west end. The existing Topham Trunk Line would remain in service and supplied by the existing Encino Inlet Line at Oxnard Street and Encino Avenue at the east end. This would allow connections from the 12-inch and 16-inch diameter distribution mainlines to the distribution system to be done with minimal impact to normal operations in the 1123SZ. Once these distribution connections have been made, the TTLR connection to the Encino Inlet Line at Oxnard Street and Encino Avenue would be made. The shutdown of the existing Topham Trunk Line would take place during the winter months when water demand is low to avoid potential supply issues. The existing Topham Trunk Line would be isolated from the drinking water system and abandoned in place once these final connections have been made.

2.8 Project Operations

The TTLR would interconnect the 1134SZ at the east end and the 1123SZ at the west end, allowing flow between the two zones, providing operational flexibility and system resiliency. The TTLR would be located entirely underground and would not be visible. Activities associated with long-term operations and maintenance would be minimal, limited to scheduled maintenance or emergency repair. No additional permanent LADWP workforce would be required to operate the TTLR.

2.9 Best Management Practices

The following best management practices (BMPs) would be employed during construction of the proposed project, to help minimize or eliminate potential impacts to the environment. BMPs are distinguished from mitigation measures because they are based on existing regulatory requirements and/or are standard practices and procedures of LADWP and/or its contractors not unique to the proposed project.

2.9.1 Air Quality

- **BMP-AQ-1:** The proposed project would comply with South Coast Air Quality Management District (SCAQMD) Rule 401 (Visible Emissions) and Rule 402 (Nuisance) to prevent the occurrence of public nuisances and visible dust plumes traveling off-site, and would implement Rule 403 dust control measures and Rule 1166 measures to control the emission of Volatile Organic Compounds (VOCs) from excavating, grading, handling and treating VOC-contaminated soil as required by the SCAQMD, including but not limited to the following:

- Water shall be applied to exposed surfaces at least two times per day to prevent generation of dust plumes.

- The construction contractor shall utilize at least one of the following measures at each vehicle egress from the project site to a paved public road:

  - Pave the surface extending at least 100 feet and at least 20 feet wide;
  - Utilize a wheel shaker/wheel spreading device consisting of raised dividers at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages; or
  - Install a wheel washing system to remove bulk material from tires and vehicle undercarriages.

- All trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).

- Construction activity on exposed or unpaved dirt surfaces shall be suspended when wind speed exceeds 25 miles per hour (mph).

- A community liaison shall be identified concerning on-site construction activity including resolution of issues related to dust generation.

- Non-toxic soil stabilizers shall be applied according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more).

- Streets shall be swept at the end of the day if visible soil is carried onto adjacent public paved roads. If feasible, water sweepers with reclaimed water shall be used.

2.9.2 Biological Resources

Because project construction activities would be continuous during the 7-year construction period, nesting bird season (which generally occurs February 15 through September 15, and as early as January for raptors) could not be avoided. Therefore, the following BMPs shall be employed to avoid and minimize impacts to nesting birds protected under the MBTA and CFGC:

- **BMP-BIO-1:** A pre-construction nesting bird survey shall be conducted by a qualified biologist within 3 days prior to the start of construction activities during the nesting season to determine whether active nests are present within or directly adjacent to the construction zone. All nests found shall be recorded.

- **BMP-BIO-2:** In the event an active nest is detected, a qualified biologist shall monitor the nest to determine if a nest avoidance buffer zone is necessary to restrict construction activities in proximity to the nest to protect the nest from failing. Any buffer zone, within which construction activities may not occur, shall be established in coordination with the qualified biologist, who shall take into account existing baseline conditions (e.g., topography, buffering buildings or other structures, etc.). In addition, observed avian response to ambient conditions (e.g., existing traffic noise and human activity) shall factor into the requirement for and size of a nest avoidance buffer.

- **BMP-BIO-3**: The qualified biologist shall monitor all active nests, including those with and without an established buffer, at least once per week to determine whether birds are being disturbed. If signs of disturbance or stress are observed, the qualified biologist shall implement adaptive measures to reduce disturbance. These measures could include establishing or increasing buffer distances, or placing visual screens or sound dampening structures between the nest and construction activity until fledging is confirmed. The qualified biologist shall monitor each active nest until they determine that nestlings have fledged and dispersed, or the nest is no longer active.

- **BMP-BIO-4:** Should an active nest of any federal or state-listed bird species be detected during pre-construction surveys or subsequent construction monitoring, construction activity in the immediate area shall not commence or shall cease if already underway, and the applicable federal and/or state agency (United States Fish and Wildlife Service, California Department of Fish and Wildlife) shall be notified. Work in other areas of the project site may continue until the active nests has been evaluated.

2.9.3 Cultural Resources

- **BMP-CUL-1:** All field supervisors and all construction workers shall participate in training on cultural resources awareness prior to the initiation of project construction on project sites that involve ground-disturbing activities. The training shall include a description of the types of cultural resources (including tribal cultural resources and human remains) that could inadvertently be encountered during ground-disturbing activities, the sensitivity of the resources, the legal basis for protection of the resources, and the penalties for unauthorized collection of or knowingly damaging the resources. The training shall address the proper procedures in the event of an inadvertent discovery of a cultural resource, including the immediate halting of work in the area of the discovery, notification of appropriate individuals of the discovery, the establishment of appropriate protective buffer zones around the discovery, and the continued avoidance of the protected area until the resource has been evaluated by qualified individuals and an appropriate treatment plan has been developed and implemented. These procedures shall be documented in a cultural resources monitoring plan (CRMP) that shall establish, in the event of inadvertent discovery of cultural resources, monitoring procedures (including potential Native American monitors), notification procedures, key staff, and preliminary treatment measures for potential discoveries. The CRMP shall be written to ensure compliance with appropriate state and federal laws. The training presentation and CRMP shall be available to additional supervisory or construction personnel who may join after project construction has begun.

2.9.4 Paleontological Resources

- **BMP-GEO-1:** In the event previously unknown paleontological resources are encountered, the construction manager would halt construction activities in the immediate area in accordance with CEQA Guidelines Section 15064.5(f). LADWP would retain a qualified paleontologist to make an immediate evaluation of the significance and appropriate treatment of the resource. Construction activities may continue on other parts of the construction site while evaluation and any necessary treatment of paleontological resources take place.

2.9.5 Stormwater and Erosion Control

- **BMP-WQ-1:** A Storm Water Pollution Prevention Plan (SWPPP), which will include erosion and sedimentation BMPs, shall be developed and implemented for construction activities. The SWPPP may include, but would not be limited to, the following:

  - Minimizing the extent of disturbed areas and duration of exposure;
  - Stabilizing and protecting disturbed areas;
  - Keeping runoff velocities low; and
  - Retaining sediment within the construction area.

- **BMP-WQ-2:** Construction erosion and sediment control BMPs may include, but are not limited, to the following:

  - Temporary desilting basins;
  - Silt fences;
  - Gravel bag barriers;
  - Temporary soil stabilization with mattresses and mulching;
  - Temporary drainage inlet protection; and
  - Diversion dikes and interceptor swales.

2.9.6 Transportation

- **BMP-TRA-1**: Residences and businesses near the pipeline alignment would be notified prior to the start of construction (e.g., via flyers) of lane closures and parking restrictions in their vicinity. The notices would include a telephone number for comments or questions related to construction activities.

- **BMP-TRA-2** LADWP would coordinate with all applicable agencies regarding construction schedules and worksite traffic control and detour plans, including but not limited to the City of Los Angeles Department of Transportation, the City of Los Angeles

Department of Public Works, Bureau of Engineering, the City of Los Angeles Fire Department, and the City of Los Angeles Police Department.

2.9.7 Utilities and Service Systems

- **BMP-UTL-1:** The proposed project construction would incorporate source reduction techniques and recycling measures and maintain a recycling program to divert waste in accordance with the Citywide Construction and Demolition Debris Recycling Ordinance.

2.10 Required Permits and Approvals

Numerous approvals and/or permits would be required to implement the proposed project. The environmental documentation for the project would be used to facilitate compliance with federal and state laws and the granting of permits by various state and local agencies having jurisdiction over one or more aspects of the project. These approvals and permits may include, but may not be limited, to the following:

City of Los Angeles Department of Public Works, Bureau of Engineering
- Excavation Permit
- Peak Hour Exemptions
- Holiday Moratorium Waiver
- Sewer Capacity Availability Request

City of Los Angeles Department of Public Works, Bureau of Sanitation
- Sewer Capacity Availability Request

City of Los Angeles Bureau of Street Services
- Street Closure Building Materials Permit

City of Los Angeles Department of Transportation
- Approval of Traffic and Signal Control Plan
- Approval of temporary road closures

County of Los Angeles, Department of Public Works, Flood Control
- Utility Crossing Permit

Los Angeles County Metropolitan Transportation Authority
- Consult and coordinate with Metro on utilizing Metro's Pierce College Station parking lot in accordance with the City of Los Angeles' Zoning Ordinance No. 1117

State of California Department of Industrial Relations, Division of Occupational Safety and Health, Mining and Tunneling Unit
- Underground Classification Permit for jacking locations

State of California Los Angeles Regional Water Quality Control Board

- National Pollution Discharge Elimination System (NPDES) Permit for stormwater associated with construction activities
- NPDES Permit for groundwater discharge from construction activities and project dewatering to surface waters

US Army Corps of Engineers (USACE)

- 408 Permit for crossing of USACE flood control facilities

3. METHODS FOR ASSESSING BIOLOGICAL RESOURCES

A search of relevant regional databases for special-status biological resources in the vicinity of the project area was conducted prior to conducting a field survey. The proposed project runs east-west along Victory Boulevard and occurs entirely within the southeast portion of the U.S. Geological Survey (USGS)'s Canoga Park 7.5-minute quadrangle. A search of this quadrangle and the surrounding eight quadrangles, including Simi, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills was conducted using the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) and of the California Native Plant Society's (CNPS) on-line Inventory of Rare and Endangered Plants of California. Additionally, the U.S. Fish and Wildlife Service's (USFWS) online Information for Planning and Consultation (IPaC) (USFWS 2022) database was queried for special-status species, sensitive natural communities, and protected areas known from the project vicinity.

The Biological Survey Area (BSA) evaluated included the proposed pipeline alignment, which would be entirely within paved public streets, plus a 500-foot survey buffer around the alignments (see Figure 2). A buffer around the project alignment was evaluated to capture potential indirect effects to biological resources from implementation of the proposed project. Indirect effects could include elevated noise and dust levels, soil compaction, and increased human activity within the BSA. A 500-foot survey buffer is standard for capturing potential indirect impacts from a project on biological resources. It is anticipated that indirect impacts beyond 500 feet would be diffuse and would not significantly impact biological resources, especially because of the urban nature of the surrounding area.

Prior to conducting a field survey, aerial imagery of the BSA was reviewed for the presence of habitats that could potentially support special-status biological resources. Since most of the BSA is developed by hardscape features (i.e., roadways and buildings), the desktop review focused on identifying any significant greenfield or otherwise open spaces that could provide suitable habitat. On April 11, 2022, a field survey of the BSA was conducted by AECOM biologist Vanessa Tucker to document existing biological resources that occur or have the potential to occur within and adjacent to the BSA, and to evaluate the potential for special-status plant and wildlife species to occur within the BSA. Binoculars were utilized to scan for evidence of wildlife activity in the BSA. The entire project alignment was surveyed.

4. EXISTING CONDITIONS

The entire BSA is urbanized or has otherwise been previously disturbed, primarily by residential development, with some areas of commercial development. Photographs depicting conditions within the BSA are provided in Attachment A. Open spaces, parks, or similar areas occur within the BSA on the western portion of the project alignment within Pierce College. Vegetation within the open spaces and the BSA consists primarily of plantings of non-native ornamental trees and shrubs and areas of lawn associated with residential landscapes. The project alignment is transected by Caballero Creek near Lindley Avenue, flowing north to south within a concrete channel under Oxnard Street. The elevation along the project alignment ranges from approximately 792 feet above mean sea level (amsl) at De Soto Avenue to 727 feet amsl near White Oak Avenue to 795 amsl at Tampa Avenue.

4.1 Vegetation Communities and Plants

Vegetation communities are assemblages of plant species that commonly coexist. The classification of vegetation communities is based on the life form of the dominant species within that community and the associated species. No native plant communities occur within or adjacent to the BSA. Non-native ornamental species and occasional native species common to residential and commercial properties within the City occur within the BSA.

Common non-native ornamental and native plant species observed within the BSA are included in Table 1.

Table 1. List of Common Plant Species Observed within BSA

DICOTS (Woody and Herbaceous Plant Species)	
Scientific Name	**Common Name**
ANACARDIACEAE	**SUMAC FAMILY**
*Pistacia chinensis**	Chinese pistache*
*Schinus terebinthifolius**	Brazilian peppertree*
BIGNONIACEAE	**BIGNONIA FAMILY**
*Jacaranda mimosifolia**	jacaranda*
CUPRESSACEAE	**CYPRESS FAMILY**
*Cupressus sempervirens**	Italian cypress*
FABACEAE	**LEGUME FAMILY**
Parkinsonia florida	blue palo verde
LYTHRACEAE	**LOOSESTRIFE FAMILY**
*Lagerstroemia indica**	Crapemyrtle*
MYRTACEAE	**MYRTLE FAMILY**
*Callistemon citrinus**	red bottlebrush*
OLEACEAE	**OLIVE FAMILY**
*Fraxinus uhdei**	shamel ash*
*Ligustrum lucidum**	glossy privet*
*Olea europaea**	olive*
PINACEAE	**PINE FAMILY**
*Pinus pinea**	Italian stone pine*
PLATANACEAE	**SYCAMORE FAMILY**
Platanus racemosa	western sycamore
SAPINDACEAE	**SOAPBERRY FAMILY**
*Cupaniopsis anacardioides**	carrotwood*
ULMACEAE	**ELM FAMILY**
*Ulmus parvifolia**	Chinese elm*
MONOCOTS (Grasses and Grass-like Plant Species)	
Scientific Name	**Common Name**
ARECACEAE	**PALM FAMILY**
*Phoenix canariensis**	Canary Island date palm*
*Washingtonia robusta**	Mexican fan palm*

Notes:
*Non-native species

No special-status plant species were observed within the BSA during the field survey, as discussed further below in Section 5.2 of this memorandum.

4.2 Wildlife

Wildlife species observed during the field survey of the BSA included bird species that are common in and adapted to urban environments. These included the following: common raven (*Corvus corax*), mourning dove (*Zenaida macroura*), rock dove (*Columba livia*), northern mockingbird (*Mimus polyglottos*), house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), house finch (*Haemorhous mexicanus*), red-tailed hawk (*Buteo jamaicensis*), Anna's hummingbird (*Calypte anna*), American robin (*Turdus migratorius*) and western gull (*Larus occidentalis*).

No special-status wildlife species were observed during the field survey, as discussed further below in Section 5.2 of this memorandum.

4.3 Wildlife Corridor

In an urban context, a wildlife migration corridor can be defined as a linear landscape feature of sufficient width and buffer to allow animal movement between two comparatively undisturbed habitat fragments, or between a habitat fragment and some vital resource that encourages population growth and diversity. Habitat fragments are isolated patches of habitat separated by otherwise foreign or inhospitable areas, such as urban tracts or highways. Two types of wildlife migration corridors seen in urban settings are regional corridors, defined as those linking two or more large areas of natural open space, and local corridors, defined as those allowing resident wildlife to access critical resources (food, cover, and water) in a smaller area that might otherwise be isolated by urban development.

The proposed project is located within a completely urbanized area of the San Fernando Valley. The BSA does not occur within or intersect a recognized/established regional wildlife corridor; however, the proposed alignment intersects Caballero Creek. This channel may provide opportunities for localized wildlife movement within the urbanized San Fernando Valley. Additionally, the channel extends north and connects to the Los Angeles River, potentially providing a corridor from the urbanized San Fernando Valley into greenfield/open space areas that may provide more suitable opportunities for wildlife. However, fencing along the channel restricts wildlife access and the concrete-encased nature of the channel provides little cover, resting, foraging, or nesting opportunities for wildlife, therefore, limiting the channel's suitability to serve as a significant wildlife corridor.

Ornamental trees within and adjacent to the BSA provide some opportunities for cover, resting, foraging, and nesting to localized bird populations; however, they do not function as a significant wildlife movement corridor.

5. SPECIAL-STATUS SPECIES

5.1 Special-Status Plant Species

Special-status plant species include those listed as Endangered, Threatened, Rare or those species proposed for listing by the USFWS under the federal Endangered Species Act (FESA), those listed by CDFW under the California Endangered Species Act (CESA), and the CNPS.[2,3,4] The CNPS inventory is sanctioned by the CDFW and essentially serves as the list of candidate plant species for State listing. CNPS' California Rare Plant Ranks (CRPR) 1B and 2 species are considered eligible for State listing as Endangered or Threatened.

A total of 59 plant species were identified from the CNDDB[5] and CNPS[6] database searches to have historically been recorded from the Canoga Park and surrounding eight quadrangles (a land area of nearly 100 square miles), and from a search of IPaC[6] of the project vicinity, including the 17 federal and/or State-listed species below:

- marsh sandwort (*Arenaria paludicola*; federally and State-listed Endangered)
- Braunton's milk-vetch (*Astragalus brauntonii*; federally-listed Endangered)
- Ventura marsh milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus*; federally and State-listed Endangered)
- coastal dunes milk-vetch (*Astragalus tener* var. *titi*; federally and State-listed Endangered)
- Nevin's barberry (*Berberis nevinii*; federally and State-listed Endangered)
- salt marsh bird's beak (*Chloropyron maritimum* ssp. *maritimum*; federally and State-listed Endangered)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*; Candidate for federal listing as Threatened and State-listed Endangered)
- Santa Susana tarplant (*Deinandra minthornii*; State Rare)
- beach spectaclepod (*Dithyrea maritima*; State-listed Threatened)
- slender horned spineflower (*Dodecahema leptoceras*; federally and State-listed Endangered)
- marcescent dudleya (*Dudleya cymosa* ssp. *marcescens*; federally-listed Threatened and State Rare)
- Santa Monica Mountains dudleya (*Dudleya cymosa* ssp. *ovatifolia*; federally-listed Threatened)
- Conejo dudleya (*Dudleya parva*; federally-listed Endangered)

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2 Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (Title 50 Code of Federal Regulations [CFR] 17.12 [listed plants], Title 50 CFR 17.11 [listed animals] and includes notices in the Federal Register for proposed species).

3 Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (Title 14 California Code of Regulations 670.5).

4 Plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code Section 1900 *et seq*.).

5 California Department of Fish and Wildlife. *California Natural Diversity Data Base (CNDDB).* Full condensed report for the Canoga Park, Simi, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills quadrangles. Generated December 28, 2022.

6 California Native Plant Society, Rare Plant Program. 2022. Inventory of Rare and Endangered Plants (online edition, v9-01 0.0). Available at: http://www.rareplants.cnps.org/. Accessed December 28, 2022.

- spreading navarretia (*Navarretia fossalis*; federally-listed Threatened)
- California Orcutt grass (*Orcuttia californica*; federally and State-listed Endangered)
- Lyon's pentachaeta (*Pentachaeta lyonii*; federally and State-listed Endangered)
- Gambel's watercress (*Rorippa gambellii*; federally-listed Endangered and State-listed Threatened)

The 59 special-status plant species identified during the database reviews, their status, and habitat requirements are provided in Table A, Attachment C of this memorandum.

No naturally-occurring special-status plant species were observed in the BSA during the field survey, and no records of special-status plant species coincide with the BSA.

No USFWS-designated Critical Habitat for any special-status plant species coincides with the BSA.

5.2 Special-Status Wildlife Species

Special-status wildlife species include those listed by USFWS under FESA and by CDFW under CESA. USFWS and CDFW officially list species as either threatened, endangered, or as candidates for listing. Additional species receive federal protection under the Bald Eagle Protection Act (e.g., bald eagle, golden eagle), the MBTA, and state protection under CEQA Section 15380(d).

All birds, except European starlings, English house sparrows, rock doves (pigeons), and non-migratory game birds such as quail, pheasant, and grouse are protected under the MBTA. However, non-migratory game birds are protected under CFGC Section 3503. Many other species are considered by CDFW to be California Species of Special Concern (SSC) and others are on a CDFW Watch List (WL). The CNDDB tracks species within California for which there is conservation concern, including many that are not formally listed, and assigns them a CNDDB Rank.[7] Although CDFW SSC and WL species and species that are tracked by the CNDDB but not formally listed are afforded no official legal status, they may receive special consideration during the environmental review process. CDFW further classifies some species as "Fully Protected" (FP), indicating that the species may not be taken or possessed except for scientific purposes, under special permit from CDFW. Additionally, CFGC Sections 3503, 3505, and 3800 prohibit the take, destruction, or possession of any bird, nest, or egg of any bird except English house sparrows and European starlings unless authorization is obtained from CDFW.

[7] California Department of Fish and Wildlife. 2022. California Natural Diversity Database (CNDDB). Special Animals List. October.

A total of 57 wildlife species were identified from the CNDDB[8] search of the Canoga Park and surrounding eight quadrangles and from a search of IPaC[9] for the project vicinity, including the 18 federal and/or State-listed wildlife species below:

- tricolored blackbird (*Agelaius tricolor*; State-listed Threatened)
- Swainson's hawk (*Buteo swainsoni*; State-listed Threatened)
- western yellow-billed cuckoo (*Coccyzus americanus occidentalis*; federally-listed Threatened and State-listed Endangered)
- southwestern willow flycatcher (*Empidonax traillii extimus*; federally and State-listed Endangered)
- coastal California gnatcatcher (*Polioptila californica californica*; federally-listed Threatened)
- bank swallow (*Riparia riparia*; State-listed Threatened)
- least Bell's vireo (*Vireo bellii pusillus*; federally and State-listed Endangered)
- arroyo toad (*Anaxyrus californicus*; federally-listed Endangered)
- California red-legged frog (*Rana draytonii*; federally-listed Threatened)
- southern mountain yellow-legged frog (*Rana muscosa*; federally and State-listed Endangered)
- Santa Ana sucker (*Catostomus santaanae*; federally-listed Threatened)
- steelhead - Southern California DPS (*Oncorhynchus mykiss irideus pop.* 10; federally-listed Endangered)
- tidewater goby (*Eucyclogobius newberryi*; federally-listed Endangered)
- Crotch bumble bee (*Bombus crotchii*; Candidate for State listing as Endangered)
- monarch - California overwintering population (*Danaus plexippus pop.* 1; Candidate for federal listing as Threatened)
- quino checkerspot butterfly (*Euphydryas editha quino*; federally-listed Endangered)
- Riverside fairy shrimp (*Streptocephalus woottoni*; federally-listed Endangered)
- vernal pool fairy shrimp (*Branchinecta lynchi*; federally-listed Threatened)

The 57 special-status wildlife species identified during the database reviews, their status, and habitat requirements are provided in Table B, Attachment C of this memorandum.

No CNNDB records of special-status wildlife species coincide within the BSA.

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8 California Department of Fish and Wildlife. *California Natural Diversity Data Base (CNDDB).* Full condensed report for the Canoga Park, Simi, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills quadrangles. Generated December 28, 2022.

9 Information for Planning and Consultation. 2022. U.S. Fish and Wildlife Service. Available at: https://ecos.fws.gov/ipac/. Accessed December 28, 2022.

No USFWS-designated Critical Habitat for any special-status wildlife species coincides with the BSA.

6. SENSITIVE NATURAL COMMUNITIES

Sensitive natural communities are those that are designated as rare in the region by the CNDDB, support special-status plant or wildlife species, or receive regulatory protection (i.e., Section 404 of the Clean Water Act (CWA) and/or Sections 1600 et seq. of the CFGC). Rare communities are given the highest inventory priority.[10,11] Based on a review of the CNDDB,[12] thirteen sensitive vegetative communities have been recorded within the Canoga Park and surrounding eight quadrangles, including California Walnut Woodland, Riversidean Alluvial Fan Sage Scrub, Southern California Coastal Lagoon, Southern California Steelhead Stream, Southern Coast Live Oak Riparian Forest, Southern Coastal Salt Marsh, Southern Cottonwood Willow Riparian Forest, Southern Mixed Riparian Forest, Southern Riparian Scrub, Southern Sycamore Alder Riparian Woodland, Southern Willow Scrub, Valley Needlegrass Grassland, and Valley Oak Woodland. These communities are generally documented in the CNDDB over two miles to the north and northeast of the BSA.

No sensitive natural communities occur within the BSA. Vegetation consists primarily of non-native ornamental trees and shrubs that are common in urban environments. However, aquatic communities (i.e., wetlands or other waters) under regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE), CDFW, and the Regional Water Quality Control Board (RWQCB) do coincide with the BSA, in the form of Caballero Creek, which occurs as a concrete-encased channel through the BSA.

7. APPLICABLE REGULATIONS

7.1 Federal Regulations and Standards

Federal Endangered Species Act (FESA)

Enacted in 1973, FESA provides for the conservation of threatened and endangered species and their ecosystems (United States Code [U.S.C.] Title 16, Chapter 35, Sections 1531–1544). FESA prohibits the “take” of threatened and endangered species except under certain circumstances and only with authorization from USFWS through a permit under Section 4(d), 7 or 10(a) of the ESA. “Take” under FESA is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.”

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10 Holland, R., *Preliminary Descriptions of the Terrestrial Natural Communities of California*. California Department of Fish and Game, The Resources Agency. 156 pp. 1986.

11 California Department of Fish and Wildlife, 2010. List of California Terrestrial Natural Communities Recognized by the Natural Diversity Data Base. Natural Heritage Division. The Resources Agency. September.

12 California Department of Fish and Wildlife. *California Natural Diversity Data Base (CNDDB).* Full condensed report for the Canoga Park, Simi, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills quadrangles. Generated December 28, 2022.

Formal consultation under FESA would be required if the proposed project had the potential to affect a federally-listed species that has been detected within or adjacent to the BSA. No federally-listed species were detected during the field survey and suitable habitats for such species do not occur in the BSA, or the species' known distribution does not coincide with the BSA. Therefore, formal consultation is not required.

Migratory Bird Treaty Act

Congress passed the MBTA in 1918 to prohibit the kill or transport of native migratory birds, or any part, nest, or egg of any such bird unless allowed by another regulation adopted in accordance with the MBTA (U.S.C. Title 16, Chapter 7, Subchapter II, Sections 703–712). The prohibition applies to birds included in the respective international conventions between the United States and Great Britain, the United States and Mexico, the United States and Japan, and the United States and Russia.

No permit is issued under the MBTA; however, the proposed project would remain in compliance with the MBTA by conducting pre-construction nesting bird surveys, and, if needed, providing a qualified biologist to monitor active nests occurring in the BSA to ensure construction does not affect species protected under the MBTA.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (the Eagle Act) amended in 1962, was originally implemented for the protection of bald eagles. In 1962, Congress amended the Eagle Act to also cover golden eagles, a move that was partially an attempt to strengthen protection of bald eagles, since the latter were often killed by people mistaking them for golden eagles. This act makes it illegal to import, export, take (which includes molest or disturb), sell, purchase, or barter any bald eagle or golden eagle or part thereof.

Bald and golden eagles are not known from the project area and habitat in the BSA is not suitable for these species. As a result, the proposed project would have no effect on bald or golden eagle.

Clean Water Act

Under Section 404 of the CWA, the USACE regulates the discharge of dredged or fill material into jurisdictional waters of the U.S., which include those waters listed in 33 CFR 328.3 (Definitions) (U.S.C. Title 33, Chapter 26, Sections 101–607). Section 401 of the CWA requires a water quality certification from the state for all permits issued by USACE under Section 404 of the CWA. RWQCB is the state agency in charge of issuing a CWA Section 401 water quality certification or waiver.

The project alignment intersects Caballero Creek; however, the proposed project would involve microtunneling the trunk line beneath the channel (described previously in Section 2.6 of this memorandum) and no project work would occur in or impact the channel. As a result, a 404 and 401 permit are not anticipated.

Rivers and Harbors Act – 33 U.S.C. Section 408

Section 14 of the Rivers and Harbors Act of 1899, as amended and codified in 33 U.S.C. Section 408, requires that any proposed occupation or use of an existing USACE civil works project be authorized by the Secretary of the Army. The USACE and the Los Angeles County Flood Control District (LACFCD) maintain flood management jurisdiction over the Los Angeles River and its tributaries. As discussed above, the proposed project would involve microtunneling the trunk line beneath the Caballero Creek channel, which is a tributary to the Los Angeles River. LADWP will coordinate with LACFCD and USACE and obtain a Section 408 permit for the proposed project, as required.

Magnuson-Stevens Fishery Conservation and Management Act

Under the purview of the National Oceanic and Atmospheric Association's National Marine Fisheries Service (NMFS), amendments in 1996 to the Magnuson-Stevens Fishery Conservation and Management Act set forth a number of mandates for NMFS, Regional Fishery Management Councils, and federal action agencies to identify and protect important marine and anadromous fish habitat. The Councils, with assistance from NMFS, are required to delineate Essential Fish Habitat (EFH) in fishery management plans for all managed species. EFH is defined to include "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include historic areas if appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (from the 1997 Interim Final Rule [62 Fed. Reg. 66551, Section 600.10 Definitions]).

The BSA is located within the urbanized San Fernando Valley region of the City and does not include EFH.

Protection of Wetlands – Executive Order Numbers 11990 and 12608

Under this Executive Order (EO) issued May 24, 1977 and amended by EO 12608, federal agencies must provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands (42 CFR 26961; 3 CFR 1977 Comp., p. 121). Each agency, to the extent permitted by law, must avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds: there is no practical alternative to such construction; the proposed action includes all practical measures to minimize harm to wetlands that may result from such use. In making this finding, the head of the agency may take into account economic, environmental and other pertinent factors. Each agency must also provide opportunity for early public review of any plans or proposals for new construction in wetlands.[13]

Wetlands, as defined below under this EO, do not occur within the BSA and as a result would not be affected by the proposed project.

> "…areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds."

Wild and Scenic Rivers Act

The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The Act is notable for safeguarding the special character of these rivers, while also recognizing the potential for their appropriate use and development. It encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection.

An online review of designated Wild and Scenic Rivers[14] was conducted and it was determined that the BSA is not located within the watershed of a wild or scenic river.

Coastal Zone Management Act

The U.S. Congress recognized the importance of meeting the challenge of continued growth in the coastal zone by passing the Coastal Zone Management Act in 1972 (Public Law 109-58; 16 U.S.C. 1451 et seq.). This act, administered by NOAA, provides for the management of the nation's coastal resources, including the Great Lakes. The goal is to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone."

The BSA is located within the urbanized San Fernando Valley region of the City and is not located in the City's Coastal Zone or the State Coastal Zone.

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[13] FedCenter.gov. 2017. Executive Order 11990. Protection of Wetlands. Available at: https://www.fedcenter.gov/Bookmarks/index.cfm?id=585

[14] National Wild and Scenic Rivers System. 2021. Wild and Scenic Rivers. Explore Designated Rivers. Available at: https://www.rivers.gov/map.php. Accessed August 27, 2021.

7.2 State Regulations and Standards

California Fish and Game Code

CFGC regulates the taking or possession of birds, mammals, fish, amphibians, and reptiles, as well as impacts to natural resources such as wetlands and waters of the state. It includes CESA (Sections 2050–2115) and Lake and Streambed Alteration Agreement (LSAA) regulations (Section 1600 et seq.).

Wildlife "take" is defined by CDFW as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Protection extends to the animals, dead or alive, and all their body parts. Section 2081 of CESA allows CDFW to issue an incidental take permit for state-listed threatened or endangered species, should the proposed project have the potential to "take" a state-listed species that has been detected within or adjacent to the project. Certain criteria are required under CESA prior to the issuance of such a permit, including the requirement that impacts of the take are minimized and fully mitigated.

No state-listed species were detected during the field survey and suitable habitats for such species does not occur in the BSA, or the species' known distribution does not coincide with the BSA. As a result, a permit under Section 2081 is not anticipated for the project.

Caballero Creek constitutes a potentially regulated water feature under the jurisdiction of CDFW; however, the proposed project would involve microtunneling the trunk line beneath the channel and no project work would occur in or impact the channel. As a result, coordination with CDFW and the issuance of an LSAA is not anticipated for the proposed project.

Porter-Cologne Water Quality Control Act

Under Section 13000 et seq., of the Porter-Cologne Act, RWQCB is the agency that regulates discharges of waste and fill material within any region that could affect a water of the state (California Water Code [CWC] 13260[a]), (including wetlands and isolated waters) as defined by CWC Section 13050(e).

Caballero Creek constitutes a potentially-regulated water feature of the State under the jurisdiction of the RWQCB; however, the proposed project would involve microtunneling the trunk line beneath the channel and no project work would occur in or impact the channel. As a result, coordination with the RWQCB and the issuance of a permit under Porter-Cologne is not anticipated for the project.

California Environmental Quality Act[15]

CEQA requires that biological resources be considered when assessing the environmental impacts resulting from proposed actions. CEQA does not specifically define what constitutes

[15] PRC Section 21000 et seq. and the State CEQA Guidelines, California Code of Regulations, Section 15000 et seq.

an "adverse effect" on a biological resource. Instead, lead agencies are charged with determining what specifically should be considered an impact. This technical memorandum has been prepared for project compliance with CEQA.

7.3 Local Regulations and Standards

Significant Ecological Area Program

Los Angeles County first began to inventory biotic resources and identify important areas of biological diversity in the 1970s. Today, the primary mechanism used by the County to conserve biological diversity is a planning overlay called Significant Ecological Areas (SEAs) designated in the County's General Plan Conservation/Open Space Element. SEAs are ecologically important land and water systems that support valuable habitat for plants and animals, often integral to the preservation of rare, threatened, or endangered species and the conservation of biological diversity in Los Angeles County. While SEAs are not preserves, they are areas where Los Angeles County deems it important to facilitate a balance between development and resource conservation.

Together, the General Plan overlays and a SEA conditional use permit (CUP) process are referred to as the SEA Program. The SEA Program, through goals and policies of the General Plan and the SEA ordinance (Title 22 Zoning Regulations, Section 22.56.215) help guide development within SEAs. The SEA ordinance establishes the permitting, design standards, and review process for development within SEAs, and permits are reviewed by the SEATAC. Development activities in the SEAs are reviewed closely in order to conserve water and biological resources such as streams, oak woodlands, and threatened or endangered species and their habitat.

The BSA lies approximately 6 miles from the Santa Susana Mountains and Simi Hills SEA. The proposed project is not anticipated to affect resources within this SEA, and as a result the SEA program would not be applicable to the proposed project.

City of Los Angeles Native Tree Protection Ordinance

In response to the City's declining oak tree population, the City enacted an oak tree protection ordinance in 1982. To further slow the decline of native trees, the City amended the two City Municipal Code sections pertaining to oak trees in April 2006 to include southern California black walnut (*Juglans californica*), western sycamore (*Platanus racemosa*), and California bay (*Umbellularia californica*) (Section 17.02 of City Municipal Code). Additionally, trees must be four inches or greater in diameter at 4.5 feet above ground (DBH) to be considered protected. The Board of Public Works must issue a permit before any alterations to protected trees are made that could cause them to be damaged, relocated or removed. Pruning also requires a permit and must comply with the pruning standards set forth by the Western Chapter of the International Society of Arboriculture.

Western sycamore trees with DBH measurements exceeding 4 inches were noted within the BSA, including adjacent to the project alignment. As a result, the Board of Public Works must issue a permit before any alterations to protected trees are made that could cause them to be damaged, relocated or removed.

8. IMPACTS ON BIOLOGICAL RESOURCES

Biological resources may be either directly or indirectly impacted by a project. Direct and indirect impacts may be either permanent or temporary in nature. These impact categories are defined below.

- **Direct**: Any alteration, physical disturbance, or destruction of biological resources that would result from project-related activities is considered a direct impact. Examples include clearing vegetation, encroaching into wetlands or a stream, and the loss of individual species and/or their habitats.
- **Indirect**: As a result of project-related activities, biological resources may also be affected in a manner that is ancillary to physical impacts. Examples include elevated noise and dust levels, soil compaction, increased human activity, decreased water quality, and the introduction of invasive wildlife (domestic cats and dogs) and plants.
- **Permanent**: All impacts that result in the long-term or irreversible removal of biological resources are considered permanent. Examples include constructing a building or permanent road on an area containing biological resources.
- **Temporary**: Any impacts considered to have reversible effects on biological resources can be viewed as temporary. Examples include the generation of fugitive dust during construction; or removing vegetation for the preparation of stream bank stabilization activities, and either allowing the natural vegetation to recolonize or actively revegetating the impact area. Surface disturbance that removes vegetation and disturbs the soil is considered a long-term temporary impact because of slow natural recovery in arid ecosystems.

8.1 Construction

The anticipated direct and indirect impacts of proposed project construction on biological resources are described below. Trenching, installation of pipelines, backfilling trenches, and repaving roadways during the construction phase would result in temporary impacts; no permanent impacts would occur.

8.1.1 Vegetation

Direct impacts to vegetation during project construction could include removal of trees and vegetation along portions of the project alignment.

Indirect impacts to vegetation during project construction could include the accumulation of fugitive dust. Other indirect impacts could include disturbance of surfaces that, if not controlled, could increase the potential for increased erosion and sediment deposition beyond the project's footprint. Although indirect impacts to non-native ornamental trees would not constitute a significant impact, with implementation of BMP-AQ-1 related to fugitive dust (e.g., implementation of Rule 403 measures required by SCAQMD) and BMP-WQ-1 and BMP-WQ-2 related to erosion and sediment control (e.g., implementation of a SWPPP) as identified previously in Section 2.9 of this memorandum, the potential for indirect impacts to any vegetation would be further reduced to a less than significant level.

8.1.2 Special-Status Plant Species

No federal or State-listed plant species were identified during the field survey, and special-status plants are not expected to occur in the BSA due to a lack of potentially suitable habitat. As a result, significant direct impacts on special-status plants are not anticipated.

Indirect impacts to special-status plant species occurring outside of the project site could result from construction-related habitat loss and modification of sensitive natural communities related to dust, noise, and stormwater runoff. If such impacts were to occur, they would be considered significant. However, suitable habitat for special-status plants is not present in the urbanized environment surrounding the project. As a result, indirect impacts to special-status plants are not anticipated.

8.1.3 Sensitive Natural Communities

Implementation of the proposed project would not result in direct or indirect impacts to any sensitive natural communities. As discussed previously in Section 6 of this memorandum, no sensitive natural vegetation communities occur within the BSA. However, aquatic communities (i.e., wetlands or other waters) under regulatory jurisdiction of USACE, CDFW, and the RWQCB coincide with the BSA via Caballero Creek, a tributary to the Los Angeles River. The truck line would be installed via the microtunneling method beneath the Caballero Creek channel, and as a result, no work would occur in or impact the channel. As a result, significant impacts to sensitive natural communities would not occur.

8.1.4 Protected Trees

Western sycamore trees protected under the City of Los Angeles Native Tree Protection Ordinance were identified in the BSA, including adjacent to the project alignment, during the field survey. A Tree Removal Permit in compliance with the City's Native Tree Protection Ordinance would be obtained if any western sycamore tree removal is required by the proposed project. As a result, impacts to protected trees would be less than significant.

8.1.5 Common Wildlife Species

Elements of project construction could potentially result in the mortality of individual wildlife species, particularly those species with limited mobility. Additionally, short-term indirect effects on wildlife, primarily urban bird species (discussed further below), would occur due to noise disturbances caused by heavy equipment and increased human activity. Although not considered significant, direct impacts to common wildlife species are not anticipated because all work would occur within the road right-of-way. In addition, impacts to common terrestrial wildlife would be avoided or minimized by implementing and adhering to standard construction measures related to noise as well as implementing BMP-AQ-1 related to fugitive dust, and BMP-WQ-1 and BMP-WQ-2 related to erosion and sediment control. As a result, significant impacts to wildlife are not anticipated

Ornamental trees in the BSA provide potentially suitable nesting habitat for urban bird species. As a result, birds protected by the MBTA and by CFGC have the potential to nest in the BSA and could be directly impacted during tree removal activities, if needed. However, with adherence to BMP-BIO-1 through BMP-BIO-4 discussed previously in Section 2.9 of this memorandum related to pre-construction surveys and providing qualified biological monitors as necessary, direct impacts to nesting birds protected under the MBTA and by CFGC would be avoided. As a result, impacts would be less than significant.

Indirect impacts to nesting birds within the BSA could occur during construction as a result of noise, dust, and increased human presence from construction activities. Such disturbances could result in increased nestling mortality due to nest abandonment or decreased feeding frequency. Such indirect impacts would be considered significant. However, by implementing standard construction measures related to noise as well as implementing BMP-AQ-1 related to fugitive dust, BMP-WQ-1 and BMP-WQ-2 related to erosion and sediment control, and BMP-BIO-1 through BMP-BIO-4 related to pre-construction surveys and providing qualified biological monitors as necessary, as discussed previously in Section 2.9 of this memorandum, indirect impacts to nesting birds protected under the MBTA and by CFGC would be reduced to a less than significant level.

8.1.6 Special-Status Wildlife Species

Individual special-status wildlife species could be directly and indirectly affected during construction in the same manner as described above; however, no federal or State-listed wildlife species have been identified in the BSA, and potentially suitable habitat for such species is absent from the BSA. As a result, direct and indirect impacts to special-status wildlife would not occur. As discussed above, by implementing standard construction measures related to related to noise as well as implementing BMP-AQ-1 related to fugitive dust, BMP-WQ-1 and BMP-WQ-2 related to erosion and sediment control, and BMP-BIO-1 through BMP-BIO-4 related to pre-construction surveys and providing qualified biological monitors as necessary, as discussed previously in Section 2.9 of this memorandum, indirect impacts to non-listed special-status birds nesting in the BSA would be reduced to a less than significant level.

8.1.7 Wildlife Movement Corridor

The BSA does not serve as a regional wildlife corridor and as a result, direct impacts to a regional wildlife movement corridor would not occur. However, as previously presented, Caballero Creek could provide opportunities for local wildlife movement. Since no work would occur in the channel and no night work is proposed, project construction activities are not anticipated to impact the channel's potential to facilitate wildlife movement. As a result, impacts to a wildlife movement corridor are not anticipated.

8.2 Operation

Significant impacts to biological resources during operations and routine maintenance of the project are not anticipated. All project facilities' operational and maintenance activities would be conducted within existing paved areas (i.e., roadways and a parking lot) and would generally not change conditions from those present prior to project implementation. Additionally, the proposed TTLR alignment and distribution mainlines would be located underground within the public road ROW, with the exception of the flow recorder, which would be installed in an aboveground cabinet on Victory Boulevard (just east of De Soto Avenue) within the public road ROW.

9 CONCLUSIONS

Based on the analysis presented in this technical memorandum, potentially significant impacts to nesting birds protected under the MBTA, CFGC, and western sycamore trees protected under the City of Los Angeles Native Tree Protection Ordinance could occur during project construction. However, by implementing and adhering to the BMPs outlined previously in Section 2.9 of this memorandum and obtaining a Tree Removal Permit, as required, significant impacts to biological resources would be reduced to a level below significance.

Should you have any questions or comments regarding this memorandum, or if additional information is required, please feel free to contact me.

Sincerely,

Vanessa Tucker
Wildlife Biologist

Enclosures:
Attachment A: Photographs of Existing Conditions within the BSA
Attachment B: USFWS IPaC Search Results & Official ESA Species List
Attachment C: CNDDB and CNPS Database Search Results Summary Tables for Special-Status Plant Species and Natural Communities, and Special-Status Wildlife Species

ATTACHMENT A

Photographs of Existing Conditions within the BSA

Photo 1: South-facing view along Victory Boulevard at intersection with Mason Avenue, at northern terminus of project alignment.

Photo 2: South-facing view of Orange Line Busway bike path along Victory Boulevard.

Photo 3: North-facing view along Topham Street between Corbin Avenue and Victory Boulevard.

Photo 4: North-facing view along Topham Street at intersection with Corbin Avenue.

Photo 5: North-facing view along Oxnard Street at intersection with Tampa Avenue.

Photo 6: North-facing view along Oxnard Street at intersection with Wilbur Avenue.

Photo 7: North-facing view along Oxnard Street at intersection with Reseda Boulevard.

Photo 8: North-facing view along Oxnard Street at intersection with Lindley Avenue.

Photo 9: North-facing view along Oxnard Street near the intersection with White Oak Avenue.

Photo 10: North-facing view along Oxnard Street near the intersection with Encino Avenue, at the southern terminus of the TTLR.

ATTACHMENT B

USFWS IPaC Search Results & Official ESA Species List

ATTACHMENT C

CNDDB and CNPS Database Search Results Summary Tables for Special-Status Plant Species and Natural Vegetation Communities, and Special-Status Wildlife Species

TABLE A. SPECIAL-STATUS PLANT SPECIES AND NATURAL VEGETATION COMMUNITIES[1]

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
Plants		
marsh sandwort *Arenaria paludicola*	Federal: FE State: SE CRPR: 1B.1	Found in sandy openings in freshwater or brackish marshes and swamps. Occurs between 0-170 meters (10-560 feet). Blooms May-August.
Braunton's milk- vetch *Astragalus brauntonii*	Federal: FE State: None CRPR: 1B.1	Found in closed-cone coniferous forest, chaparral, coastal scrub, and valley and foothill grassland. Prefers recent burns or disturbed areas, in stiff gravelly clay soils overlying granite or limestone. Occurs between 5-640 meters (15-2,100 feet). Blooms January-August.
Ventura Marsh milk-vetch *Astragalus pycnostachyus* var. *lanosissimus*	Federal: FE State: SE CRPR: 1B.1	Occurs in coastal dunes, coastal scrub, and edges of coastal salt or brackish marshes and swamps. Occurs between 0-35 meters (0-115 feet). Blooms June-October.
coastal dunes milk-vetch *Astragalus tener* var. *titi*	Federal: FE State: SE CRPR: 1B.1	Found in vernally mesic areas in coastal bluff scrub, coastal dune, and coastal prairie habitats. Occurs between 0-50 meters (0-165 feet). Blooms March-May.
Coulter's saltbush *Atriplex coulteri*	Federal: None State: None CRPR: 1B.2	Often found in alkaline or clay habitats of coastal bluff scrub, coastal dunes, coastal scrub and valley and foothill grasslands. Occurs between 0-460 meters (0-1,510 feet). Blooms March-October.
south coast saltscale *Atriplex pacifica*	Federal: None State: None CRPR: 1B.2	Found in alkali sink, coastal sage scrub, wetland-riparian playas, and coastal habitats. Occurs between 0-140 meters (0-460 feet). Blooms March-October.
Parish's brittlescale *Atriplex parishii*	Federal: None State: None CRPR: 1B.1	Found in alkaline chenopod scrub, playas, and vernal pool habitats. Occurs between 25-1,900 meters (80-6,230 feet). Blooms June-October.
Davidon's saltscale *Atriplex serenana* var. *davidsonii*	Federal: None State: None CRPR: 1B.2	Found in coastal bluff scrub and coastal scrub habitats. Prefers alkaline soil. Occurs between 10-200 meters (30-660 feet). Blooms April-October.
Malibu baccharis *Baccharis malibuensis*	Federal: None State: None CRPR: 1B.1	Found in chaparral, cismontane woodland, coastal scrub, and riparian woodland habitats. Occurs between 150–305 meters (500-1,000 feet). Blooms in August.
Plummer's baccharis *Baccharis plummerae* ssp. *plummerae*	Federal: None State: None CRPR: 4.3	Found in broadleaved upland forest, chaparral, cismontane woodland, and coastal scrub habitats. Occurs between 5-425 meters (15-1,395 feet). Blooms May-October.
Nevin's barberry *Berberis nevinii*	Federal: FE State: SE CRPR: 1B.1	Found in chaparral, cismontane woodland, coastal scrub, and riparian scrub habitats. Occurs between 70-825 meters (230 to 2,700 feet). Blooms (Feb) March-June.
Brewer's calandrinia *Calandrinia breweri*	Federal: None State: None CRPR: 4.2	Prefers sandy or loamy soils in disturbed or burned areas within chaparral and coastal scrub habitats. Occurs between 10-1,220 meters (30-4,010 feet). Blooms (January) March-June.

Common Name ***Scientific Name*[2]**	**Status[3]**	**General Habitat Description[4]**
Catalina mariposa-lily *Calochortus catalinae*	Federal: None State: None CRPR: 4.2	Found in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland habitats. Occurs between 15-700 meters (50-2,300 feet). Blooms February-June.
slender mariposa lily *Calochortus clavatus* var. *gracilis*	Federal: None State: None CRPR: 1B.2	Found in chaparral and coastal scrub, in shaded foothill canyons, often on grassy slopes within other habitats. Occurs between 320-1,000 meters (1,050-3,280 feet). Blooms March–June.
Plummer's mariposa-lily *Calochortus plummerae*	Federal: None State: None CRPR: 4.2	Found in coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, and lower montane coniferous forest habitats, on rocky and sandy sites (granitic or alluvial material). Occurs between 100–1,700 meters (330-5,580 feet). Blooms May-July.
Peirson's morning-glory *Calystegia peirsonii*	Federal: None State: None CRPR: 4.2	Found in chaparral, chenopod scrub, cismontane woodland, coastal scrub, lower montane coniferous forest, and valley and foothill grassland habitats. Occurs between 30-1,500 meters (95-4,925 feet). Blooms April-June.
white pygmy-poppy *Canbya candida*	Federal: None State: None CRPR 4.2	Prefers gravelly, sandy, granitic soils in Joshua tree woodland, Mojavean desert scrub and pinyon-juniper woodland habitats. Occurs between 600-1,460 meters (1,970-4,790 feet). Blooms March-June.
southern tarplant *Centromadia parryi* ssp. *australis*	Federal: None State: None CRPR: 1B.1	Found in margins of marshes and swamps, valley and foothill grassland, and vernal pool habitats. Occurs between 0-480 meters (0-1,570 feet). Blooms May-November.
island mountain-mahogany *Cercocarpus betuloides* var. *blancheae*	Federal: None State: None CRPR: 4.3	Found in closed-cone coniferous forest and chaparral habitats. Occurs between 30-600 meters (100-1,970 feet). Blooms February-May.
salt marsh bird's beak *Chloropyron maritimum* ssp. *maritimum*	Federal: FE State: SE CRPR: 1B.2	Found in coastal dunes and coastal salt marshes and swamps. Occurs between 0-30 meters (0-100 feet). Blooms May-October (November).
San Fernando Valley spineflower *Chorizanthe parryi* var. *fernandina*	Federal: FC State: SE CRPR: 1B.1	Prefers sandy coastal scrub and valley and foothill grassland habitats. Occurs between 150-1,220 meters (495-4,000 feet). Blooms April-July.
small-flowered morning-glory *Convolvulus simulans*	Federal: None State: None CRPR: 4.2	Prefers clay soils and serpentine seeps in chaparral, coastal scrub, and valley and foothill grassland habitats. Occurs between 30-700 meters (100- 2,300 feet). Blooms March-July.
Santa Susana tarplant *Deinandra minthornii*	Federal: None State: SR CRPR: 1B.2	Found in rocky areas in chaparral and coastal scrub habitats. Occurs between 280-760 meters (920-2,495 feet). Blooms July-November.
western dichondra *Dichondra occidentalis*	Federal: None State: None CRPR: 4.2	Found in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland habitats. Occurs between 50-500 meters (160-1,640 feet). Blooms (January) March-July.
beach spectaclepod *Dithyrea maritima*	Federal: None State: ST CRPR: 1B.1	Found in coastal dune and sandy coastal scrub habitats. Occurs between 0-50 meters (0-165 feet). Blooms March-May.

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
slender horned spineflower *Dodecahema leptoceras*	Federal: FE State: SE CRPR: 1B.1	Sandy chaparral, cismontane woodland, and alluvial fan coastal scrub. Occurs between 200-760 meters (890–2,510 feet). Blooms April–June.
Blochman's dudleya *Dudleya blochmaniae* ssp. *blochmaniae*	Federal: None State: None CRPR: 1B.1	Prefers clay or serpentine soils in coastal bluff scrub, chaparral, coastal scrub, and valley and foothill grassland habitats. Occurs between 5-450 meters (15-1,475 feet). Blooms April-June.
marcescent dudleya *Dudleya cymosa* ssp. *marcescens*	Federal: FT State: SR CRPR: 1B.2	Found in volcanic or rocky soils in chaparral habitats. Occurs between 150-520 meters (490-1,705 feet). Blooms April-July.
Santa Monica Mountains dudleya *Dudleya cymosa* ssp. *ovatifolia*	Federal: FT State: None CRPR: 1B.1	Found in volcanic or sedimentary, rocky soils in chaparral and coastal scrub. Occurs between 150–1,675 meters (495–5,525 feet). Blooms March–June.
San Gabriel mountains dudleya *Dudleya densiflora*	Federal: None State: None CRPR: 1B.1	Found in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and riparian woodland habitats. Occurs between 245-610 meters (800-2,000 feet). Blooms March-July.
many-stemmed dudleya *Dudleya multicaulis*	Federal: None State: None CRPR: 1B.2	Found in chaparral, coastal scrub, and valley and foothill grassland habitats. Often found in clay soils. Occurs between 15-790 meters (50-2,520 feet). Blooms April-July.
Conejo dudleya *Dudleya parva*	Federal: FE State: None CRPR: 1B.2	Found in coastal scrub, valley and foothill grassland habitats. Often found in clay or volcanic soils on rocky slopes and grassy hillsides. Occurs between 90-380 meters (195-1,450 feet). Blooms May-June.
Santa Barbara bedstraw *Galium cliftonsmithii*	Federal: None State: None CRPR: 4.3	Found in cismontane woodland habitats. Occurs between 200-1,220 meters (655-4,005 feet). Blooms May-July.
Palmer's grapplinghook *Harpogonella palmeri*	Federal: None State: None CRPR: 4.2	Found in chaparral, coastal scrub, and valley and foothill grassland habitats. Occurs between 20-955 meters (65-3,135 feet). Blooms March-May.
mesa horkelia *Horkelia cuneata* ssp. *puperula*	Federal: None State: None CRPR: 1B.1	Prefers sandy or gravelly sites in chaparral, cismontane woodland, and coastal scrub. Occurs between 70-810 meters (230-2,660 feet). Blooms February-September.
decumbent goldenbush *Isocoma menziesii* var. *decumbens*	Federal: None State: None CRPR: 1B.2	Found in chaparral and coastal scrub habitats. Often found in sandy soils or disturbed areas. Occurs between 10-135 meters (30-445 feet). Blooms April-November.
southern California black walnut *Juglans californica*	Federal: None State: None CRPR: 4.2	Prefers alluvial sites in chaparral, cismontane woodlands, coastal scrub, and riparian woodland. Occurs between 50-900 meters (160-2,950 feet). Blooms March-August.
southwestern spiny rush *Juncus acutus* ssp. *coulteri*	Federal: None State: None CRPR: 4.2	Found in mesic coastal dunes, alkaline meadows and seeps, and coastal salt marshes and swamps. Occurs between 0-900 meters (0-2,955 feet). Blooms (March) May-June.
Coulter's goldfields *Lasthenia glabrata* ssp. *coulteri*	Federal: None State: None CRPR: 1B.1	Found in coastal salt marshes, playas, and vernal pools. Occurs between 0-1,220 meters (0-4,000 feet). Blooms February-June.

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
fragrant pitcher sage *Lepechinia fragrans*	Federal: None State: None CRPR: 4.2	Found in chaparral habitats. Occurs between 20-1,310 meters (65-4,300 feet). Blooms March-October.
Robinson's pepper-grass *Lepidium virginicum* var. *robinsonii*	Federal: None State: None CRPR: 4.3	Found in chaparral and coastal scrub habitats. Occurs between 0-885 meters (0-2,905 feet). Blooms January-July.
ocellated Humboldt lily *Lilium humboldtii* spp. *ocellatum*	Federal: None State: None CRPR: 4.2	Prefers openings in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and riparian woodland habitats. Occurs between 30-1,800 meters (100-6,000 feet). Blooms March-July (August).
Payne's bush lupine *Lupinus paynei*	Federal: None State: None CRPR: 1B.1	Prefers sandy substrates in coastal scrub, riparian scrub, and valley and foothill grassland habitats. Occurs between 220-420 meters (720-1,380 feet). Blooms March-April (May-July).
Davidson's bush-mallow *Malacothamnus davidsonii*	Federal: None State: None CRPR: 1B.2	Chaparral, cismontane woodland, coastal scrub, and riparian woodland. Occurs between 185-855 meters (610-2,800 feet). Blooms June-January.
white-veined monardella *Monardella hypoleuca* ssp. *hypoleuca*	Federal: None State: None CRPR: 1B.3	Found in lower montane coniferous forest in scree, disturbed areas, rocky or gravelly areas, and roadside habitats. Occurs between 975-2,920 meters (3,200-9,580 feet). Blooms May-August.
mud nama *Nama stenocarpa*	Federal: None State: None CRPR: 2B.2	Found in marshes and swamps, lake margins, and riverbanks. Occurs between 5-500 meters (15-1,640 feet). Blooms January-July.
spreading navarretia *Navarretia fossalis*	Federal: FT State: None CRPR: 1B.1	Found in chenopod scrub, shallow freshwater marshes and swamps, playas, and vernal pool habitats. Occurs between 30-665 meters (95-2,185 feet). Blooms April-June.
Ojai navarretia *Navarretia ojaiensis*	Federal: None State: None CRPR: 1B.1	Prefers openings in chaparral and coastal scrub, valley and foothill grasslands. Occurs between 275-620 meters (920-2,030 feet). Blooms May-July.
chaparral nolina *Nolina cismontane*	Federal: None State: None CRPR: 1B.2	Prefers sandstone or gabbro chaparral and coastal scrub. Occurs between 140-1,275 meters (460-4,180 feet). Blooms (March) May-July.
California Orcutt grass *Orcuttia californica*	Federal: FE State: SE CRPR: 1B.1	Found in vernal pools. Occurs between 15-660 meters (50-2,165 feet). Blooms April-August
Sonoran maiden fern *Pelazoneuron puberulum* var. *sonorensis*	Federal: None State: None CRPR: 2B.2	Found in meadows and seeps. Occurs between 50- 610 meters (165-2,000 feet). Blooms January-September.
Lyon's pentachaeta *Pentachaeta lyonii*	Federal: FE State: SE CRPR: 1B.1	Prefers rocky, clay sites in chaparral, coastal scrub, and valley and foothill grassland habitats. Occurs between 30-690 meters (100-2,265 feet). Blooms February-August.
Fish's milkwort *Polygala cornuta* var. *fishiae*	Federal: None State: None CRPR: 4.3	Found in chaparral, cismontane woodland, and riparian woodland habitats. Occurs between 100-1,000 meters (330-3,280 feet). Blooms May-August.

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
Nuttall's scrub oak *Quercus dumosa*	Federal: None State: None CRPR: 1B.1	Prefers sandy or clay loam soils in closed-cone coniferous forest, chaparral, and coastal scrub habitats. Occurs between 15-400 meters (45-1,315 feet). Blooms February-April (May-August).
Coulter's matilija poppy *Romneya coulteri*	Federal: None State: None CRPR: 4.2	Often found in burns in chaparral or coastal scrub habitats. Occurs between 20-1,200 meters (65-3,940 feet). Blooms March-July (August).
Gambel's watercress *Rorippa gambellii*	Federal: FE State: ST CRPR: 1B.1	Prefers freshwater or brackish marshes and swamps. Occurs between 5-330 meters (15-1,080 feet). Blooms April-October.
Sanford's arrowhead Sagittaria sanfordii	Federal: None State: None CRPR: 1B.2	Prefers marshes and swamps. Occurs between 0-650 meters (0-2,135 feet). Blooms May-October.
salt spring checkerbloom *Sidalcea neomexicana*	Federal: None State: None CRPR: 2B.2	Prefers alkaline or mesic sites in chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, and playa habitats. Occurs between 15-1,530 meters (45-5,020 feet). Blooms March-June.
Greata's aster *Symphyotrichum greatae*	Federal: None State: None CRPR: 1B.3	Mesic sites in broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and riparian woodland. Occurs between 300-2,010 meters (980-6,590 feet). Blooms June-October.
Sensitive Natural Communities		
California Walnut Woodland	CNDDB	--
Riversidean Alluvial Fan Sage Scrub	CNDDB	--
Southern California Coastal Lagoon	CNDDB	--
Southern California Steelhead Stream	CNDDB	--
Southern Coast Live Oak Riparian Forest	CNDDB	--
Southern Coastal Salt Marsh	CNDDB	--
Southern Cottonwood Willow Riparian Forest	CNDDB	--
Southern Mixed Riparian Forest	CNDDB	--
Southern Riparian Scrub	CNDDB	--
Southern Sycamore Alder Riparian Woodland	CNDDB	--
Southern Willow Scrub	CNDDB	--
Valley Needlegrass Grassland	CNDDB	--
Valley Oak Woodland	CNDDB	--

[1] Special-status plant species and natural vegetation communities known from the CNDDB and CNPS to occur on the Canoga Park, Simi, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills quadrangles, and from IPAC for the project vicinity.
[2] Nomenclature for special-status plant species conforms to CNPS.
[3] Sensitivity Status Codes

Federal **FT** – Federally Threatened under the Federal Endangered Species Act

	FE – Federally Endangered under the Federal Endangered Species Act
	FC – A Federal Candidate for listing under the Federal Endangered Species Act
State	**ST** – State Threatened under the California Endangered Species Act
	SE – State Endangered under the California Endangered Species Act
	SR – State Rare under the California Endangered Species Act
CRPR	California Rare Plant Rank (CRPR)
	1A: Plants presumed extinct in California
	1B: Plants rare, threatened, or endangered in California and elsewhere
	2: Plants rare, threatened, or endangered in California, but more common elsewhere
	3: Plants more information is needed for
	4: Plants of limited distribution – a watch list
	0.1: Seriously threatened in California
	0.2: Fairly endangered in California
	0.3: Not very endangered in California
	California Department of Fish and Wildlife (CDFW)

[4] General Habitat Descriptions from CNPS.

TABLE B. SPECIAL-STATUS WILDLIFE SPECIES[1]

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
Invertebrates		
Santa Monica shieldback katydid *Aglaothorax longipennis*	Federal: None State: None Other: CNDDB	Endemic to the Santa Monica mountains, specifically to one known population at the mouth of Big Rock Canyon. Inhabits chaparral and streambeds, as well as introduced iceplants.
Wawona riffle beetle *Atractelmis wawona*	Federal: None State: None Other: CNDDB	Known from interior mountain ranges in central California.
Crotch bumble bee *Bombus crotchii*	Federal: None State: CE Other: CNDDB	Occurs at relatively warm and dry sites, including the inner Coast Range of California and the margins of the Mojave Desert.
vernal pool fairy shrimp *Branchinecta lynchi*	Federal: FT State: None Other: CNDDB	Occur primarily in vernal pools, seasonal wetlands that fill with water during fall and winter rains and dry up in spring and summer. The majority of pools in any vernal pool complex are not inhabited by the species at any one time. Different pools within or between complexes may provide habitat for the fairy shrimp in alternative years, as climatic conditions vary.
sandy beach tiger beetle *Cicindela hirticolis gravida*	Federal: None State: None Other: CNDDB	Inhabits areas adjacent to non-brackish water along the coast of California from San Francisco Bay to northern Mexico. Inhabits clean, dry, light-colored sand in the upper zone. Subterranean larvae prefer moist sand not affected by wave action.
globose dune beetle *Coelus globosus*	Federal: None State: None Other: CNDDB	Found in coastal dune habitats.
monarch – California overwintering population *Danaus plexippus pop. 1*	Federal: FC State: None Other: CNDDB	Winter roosts occur along California coast from Mendocino County, south to Baja California, Mexico. Roosts in wind-protected tree groves (eucalyptus, Monterey pine, cypress) with nectar and water sources nearby.
Busck's gallmoth *Eugnosta busckana*	Federal: None State: None Other: CNDDB	Found in Southern California. On wing from November-February.
quino checkerspot butterfly *Euphydryas editha quino*	Federal: FE State: None Other: CNDDB	Occurs in coastal sage scrub habitats in southern California and northern Baja California. Larvae rely on host plants *Plantago erecta* or *Castilleja exserta* found in meadows and upland sage scrub/chaparral.
western ridged mussel *Gonidea angulata*	Federal: None State: None Other: CNDDB	Found in streams, rivers, and lakes with substrates ranging from gravel to firm mud. Requires at least some silt, sand, or clay.
Pacoima shoulderband *Helminthoglypta traskii pacoimensis*	Federal: None State: None Other: CNDDB	Known from the San Gabriel mountains and Pacoima Canyon in Los Angeles County.
Gertsch's socalchemmis spider *Socalchemmis gertschi*	Federal: None State: None Other: CNDDB	Inhabits sage scrub, chaparral, oak woodland, and coniferous forest, generally in rocky outcrops or talus slopes in non-arid climates. Known only from Brentwood and Topanga Canyon.

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
Riverside fairy shrimp *Streptocephalus woottoni*	Federal: FE State: None Other: CNDDB	Lives in vernal pools of at least 30 centimeters in depth, from January through March. Found in Riverside and San Diego counties. Also found in northern Baja California.
Amphibians		
arroyo toad *Anaxyrus californicus*	Federal: FE State: None Other: CNDDB	Gravelly or sandy washes, stream and river banks, and arroyos. Also, upland habitat near washes and streams such as sage scrub, mixed chaparral, Joshua tree woodland, and sagebrush habitats.
California red-legged frog *Rana draytonii*	Federal: FT State: None Other: SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11 to 20 weeks of permanent water for larval development and must have access to aestivation habitat. Endemic to California and Baja California, at elevations ranging from sea level to 1,524 meters (5,000 feet). Has a distinct aquatic and upland habitat requirement which includes pools of slow-moving streams, perennial or ephemeral ponds and upland sheltering habitats.
southern mountain yellow-legged frog *Rana muscosa*	Federal: FE State: SE Other: WL	Found in the southern Sierra Nevada mountains in lakes, ponds, and streams. Requires breeding habitat that does not dry out year-round.
western spadefoot *Spea hammondii*	Federal: None State: None Other: SSC	Inhabits grassland, oak woodland, coastal sage scrub, and chaparral vegetation in washes, floodplains, alluvial fans, playas, and alkali flats.
Coast Range newt *Taricha torosa*	Federal: None State: None Other: SSC	Endemic to California. Found in wet forests, oak forests, chaparral, and rolling grasslands. In southern California, drier chaparral, oak woodland, and grasslands are used.
Reptiles		
California legless lizard *Anniella* spp.	Federal: None State: None Other: SSC	Prefer coastal dune, valley foothill grassland, chaparral, and coastal scrub habitats. Found primarily in areas with moist, loose sandy or organic soils where there is plenty of leaf litter for cover.
southern California legless lizard *Anniella stebbinsi*	Federal: None State: None Other: SSC	Occurs in moist warm loose soils in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Often under leaf litter or other surface objects.
coastal whiptail *Aspidoscelis tigris stejnegeri*	Federal: None State: None Other: SSC	Found in deserts and semiarid areas with sparse vegetation and open areas. Also occurs in woodland and riparian areas. Substrate may be firm, sandy, or rocky soils.
California glossy snake *Arizona elegans occidentalis*	Federal: None State: None Other: SSC	Patchily distributed from the eastern portion of San Francisco Bay, southern San Joaquin Valley, and the Coast, Transverse, and Peninsular ranges, south to Baja California. Generalist reported from a range of scrub and grassland habitats, often with loose or sandy soils.

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
San Bernardino ringneck snake *Diadophis punctatus modestus*	Federal: None State: None Other: CNDDB	Prefers moist habitats, including wet meadows, rocky hillsides, gardens, farmland, grassland, chaparral, mixed coniferous forests and woodlands.
western pond turtle *Emys marmorata*	Federal: None State: None Other: SSC	Occurs in aquatic water bodies including flowing rivers and streams, permanent lakes, ponds, reservoirs, settling ponds, marshes and other wetlands. Semi- permanent water bodies such as stock ponds, vernal pools and seasonal wetlands can also be utilized on a temporary basis.
coast horned lizard *Phrynosoma blainvillii*	Federal: None State: None Other: CNDDB	Inhabits coastal sage scrub and chaparral in arid and semiarid climates. Prefers friable, rocky, or shallow sandy soils.
two-striped gartersnake *Thamnophis hammondii*	Federal: None State: None Other: SSC	Highly aquatic, found in or near permanent freshwater, often along streams with rocky beds and riparian growth. Known from coastal California from the vicinity of Salinas to northwest Baja California, from sea to about 2,135 meters (7,000 feet).
Fish		
Santa Ana sucker *Catostomus santaanae*	Federal: FT State: None Other: CNDDB	Permanent streams and rivers, with depths from a few centimeters to over a meter. Water must be cool with variable flows. Substrates of gravel, rubble and boulders are preferred for foraging and required for breeding.
tidewater goby *Eucyclogobius newberryi*	Federal: FE State: None Other: CNDDB	Benthic fish that occurs in small coastal lagoons, lower reaches of streams, and uppermost portions of large bays. It is most abundant in the upper ends of lagoons created by small coastal streams. In lower sections of coastal streams, it occurs in fresh to brackish water (preferably less than 10 ppt).
arroyo chub *Gila orcuttii*	Federal: None State: None Other: SSC	Required habitat includes slow-moving or backwater sections of warm to cool (10 to 24°C) streams with mud or sand substrates. Depths of streams are typically greater than 41 centimeters (16 inches).
steelhead – southern California DPS *Oncorhynchus mykiss irideus pop. 10*	Federal: FE State: None Other: CNDDB	Found in Pacific Ocean tributaries from Aleutian Islands in Alaska south to Southern California. Anadromous forms are known as steelhead, freshwater forms as rainbow trout.
Santa Ana speckled dace *Rhinichthys osculus* spp. 3	Federal: None State: None Other: SSC	Small springs or streams to large rivers and dep lakes. Prefer clear, well oxygenated water, with movement due to currents or waves. Deep cover and overhead protection are also preferred.
Birds		
tricolored blackbird *Agelaius tricolor*	Federal: None State: ST Other: BCC, SSC	Inhabits annual grasslands, wet and dry vernal pools, seasonal wetlands. Frequently found in and around agricultural areas.
southern California rufous-crowned sparrow *Aimophila ruficeps canescens*	Federal: None State: None Other: WL	Resident in southern California coastal sage scrub and sparse mixed chaparral. Frequents relatively steep, often rocky hillsides with grass and forb patches.

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
golden eagle *Aquila chrysaetos*	Federal: None State: None Other: FP	Uses rolling foothills and mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, and cliffs and rock outcrops. Uncommon permanent resident and migrant throughout California, except center of Central Valley. Ranges from sea level up to 3,835 meters (0-11,500 feet). Habitat typically rolling foothills, mountain areas, sage-juniper flats, and desert.
Bell's sage sparrow *Artemisiospiza belli belli*	Federal: None State: None Other: WL, BCC	Nests in chaparral dominated by fairly dense stands of chamise. Found in coastal sage scrub in south of range. Nest located on the ground beneath a shrub or in a shrub 6-18 inches above ground. Territories about 50 yards apart.
burrowing owl *Athene cunicularia*	Federal: None State: None Other: BCC, SCC	Inhabits open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, California ground squirrel.
Swainson’s hawk *Buteo swainsoni*	Federal: None State: ST Other: BCC	Nests in stands with few trees in juniper-sage flats and riparian areas. Utilizes adjacent grasslands, grain or alfalfa fields, or livestock pastures for foraging.
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	Federal: FT State: SE Other: BCC	Breeds in low to moderate elevation native forests lining the rivers and streams of western United States. Prefers cottonwood-willow forests. Migrate to wintering grounds in South America.
white-tailed kite Elanus leucurus	Federal: None State: None Other: FP	Found in rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Prefers open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.
southwestern willow flycatcher *Empidonax traillii extimus*	Federal: FE State: SE Other: CNDDB	Inhabits riparian woodlands in southern California. Nests in extensive thickets of low, dense willows on edge of wet meadows, ponds, or backwaters, between 610-2,440 meters (2,000-8,000 feet). Dense willow thickets are required for nesting and roosting. Low, exposed branches are used for singing posts/hunting perches.
American peregrine falcon *Falco peregrinus anatum*	Federal: Delisted State: Delisted Other: FP	Frequents bodies of water in open areas with cliffs and canyons nearby for cover and nesting. Also know to nest on tall buildings or bridges within urban environments.
coastal California gnatcatcher *Polioptila californica californica*	Federal: FT State: None Other: SSC	Obligate, permanent resident of coastal sage scrub below 760 meters (2.500 feet) in southern California. Inhabits low, coastal sage scrub in arid washes, on mesas and slopes.

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
bank swallow *Riparia riparia*	Federal: None State: ST Other: CNDDB	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, and ocean to dig nesting hole.
least Bell's vireo *Vireo bellii pusillus*	Federal: FE State: SE	Summer resident of southern California in low riparian habitat in vicinity of water or in dry river bottoms, below 610 meters (2,000 feet).
Mammals		
pallid bat *Antrozous palidus*	Federal: None State: None Other: SCC, WBWG-H	Occurs in deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rock areas for roosting. Roosts must protect bats from high temperatures; very sensitive to disturbance of roosting sites.
Townsend's big-eared bat *Corynorhinus townsendii*	Federal: None State: None Other: SSC, WBWG-H	Lives in a variety of communities, including coastal conifer and broad-leafed forests, oak and conifer woodlands, arid grasslands and deserts, and high-elevation forests and meadows. Throughout most of its geographic range, it is most common in mesic sites. Habitat must include appropriate roosting, maternity, and hibernacula sites, such as caves and cave-like formations, free from disturbances by humans.
spotted bat *Euderma maculatum*	Federal: None State: None Other: SSC, WBWG-H	Prefers sites with adequate roosting habitat, such as cliffs. Feeds over water and along washes. May move from forests to lowlands in autumn. Found at a small number of localities, mostly in the foothills, mountains and desert regions of southern California. Preferred habitats include arid deserts, grasslands, and mixed conifer forests. Elevational range extends from below sea level in California to above 3,000 meters (10,000 ft).
western mastiff bat *Eumops perotis californicus*	Federal: None State: None Other: SCC, WBWG-H	Known from open semiarid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grassland, and chaparral. Roosts in crevices in cliff faces, high buildings, trees, and tunnels. Roost locations are generally high above the ground providing a 3-meter minimum clearance below the entrance for flight. Requires large open water drinking sites.
silver-haired bat *Lasionycteris noctivagans*	Federal: None State: None Other: WBWG-M	Occurs in coastal and montane coniferous forests, valley foothill woodlands, pinyon-juniper woodlands, and valley foothill and montane riparian habitats. Roosts in hollow trees, snags, buildings, rock crevices, caves, and under bark.
western red bat *Lasiurus blossevillii*	Federal: None State: None Other: SSC, WBWG-H	Prefers edges or habitat mosaics that have trees for roosting and open areas for foraging. Roosting habitat includes forests and woodlands from sea level up through mixed conifer forests. Feeds over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands. Not found in desert areas

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
hoary bat *Lasiurus cinereus*	Federal: None State: None Other: WBWG-M	May be found at any location in California. Winters along the coast and in southern California, breeding inland and north of the winter range. During migration, may be found at locations far from the normal range. Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees, feeds primarily on moths; requires water.
California leaf-nosed bat *Macrotus californicus*	Federal: None State: None Other: SSC, WBWG-H	Roosts in rocky, rugged terrain with mines and caves. Forages over nearby flats and washes. Habitats occupied include desert riparian, desert wash, desert scrub, desert succulent shrub, alkali desert scrub, and palm oasis. California records are below 600 meters (2,000 feet).
south coast marsh vole *Microtus californicus stephensi*	Federal: None State: None Other: SCC	Occurs in wetland habitats and associated grasslands along the coast.
western small-footed myotis *Myotis ciliolabrum*	Federal: None State: None Other: CNDDB	Occurs in arid, upland habitats. Prefers open stands in forests and woodlands as well as brushy habitats. Utilizes streams, ponds, springs, and stock tanks for drinking and feeding. Occurs in a wide variety of habitats, primarily in relatively arid wooded and brushy uplands near water. Found from sea level to at least 2,700 meters (8,900 feet).
Yuma myotis *Myotis yumanensis*	Federal: None State: None Other: CNDDB	Distribution is closely tied to bodies of water, which it uses as foraging sites and sources of drinking water. Found in a wide variety of habitats ranging from sea level to 3,300 m (11,000 ft), but it is uncommon to rare above 2560 m (8000 ft). Optimal habitats are open forests and woodlands with sources of water over which to feed.
San Diego desert woodrat *Neotoma lepida intermedia*	Federal: None State: None Other: SSC	Occurs in coastal scrub of southern California from San Diego County to San Luis Obispo County. Prefers moderate to dense canopies. Particularly abundant in rock outcrops and rocky cliffs and slopes.
Los Angeles pocket mouse *Perognathus longimembris brevinasus*	Federal: None State: None Other: SSC	Inhabits lower elevation grasslands and coastal sage communities in and around the Los Angeles Basin. Prefers open ground with fine sandy soils. May not dig extensive burrows, instead may be found hiding under weeds and dead leaves.

[1] Special-status species known from the CNDDB to occur on the Canoga Park, Simi, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills quadrangles, and from IPAC for the project vicinity.
[2] Nomenclature for special-status wildlife conforms to CNDDB.
[3] Sensitivity Status Codes

Federal	**FT**	- Federally Threatened under Federal Endangered Species Act (FESA)
	FE	- Federally Endangered under FESA
	FC	- Federal Candidate for listing under FESA

State	**ST**	- State Threatened under California Endangered Species Act (CESA)
	SE	- State Endangered under CESA
	SC	- State Candidate for listing under CESA
Other	**SSC**	- Designated as a Species of Special Concern by CDFW
	WL	- Designated as a Watch List species by CDFW
	CNDDB	- Tracked by CDFW in the California Natural Diversity Data Base or considered locally sensitive
	WBWG-H	- Designated by the Western Bat Working Group (WBWG 2017) as High Priority - species that are imperiled or are at high risk of imperilment
	WBWG-M	- Designated by the WBWG (2017) as Medium Priority – a level of concern that should warrant closer evaluation, more research, and conservation actions of both species and possible threats.

[4] General Habitat Descriptions from CNDDB.

APPENDIX C

Cultural Resources Technical Memorandum

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Memorandum

To:	Mr. Marshall Styers Environmental Planning and Assessment Los Angeles Department of Water and Power
Subject	Topham Trunk Line Replacement Project – Cultural Resources Technical Memorandum – Final
From	Alec Stevenson, M.A., RPA, and Monica Wilson, M.A., AECOM
Date	May 23, 2023

Introduction

The purpose of this memorandum is to describe current conditions and assess possible impacts to cultural and paleontological resources potentially affected by the Topham Trunk Line Replacement (TTLR) Project (proposed project) within the context of California laws, federal laws, and regulations in compliance with the California Environmental Quality Act (CEQA) and the standards of CEQA-Plus as defined by the State Water Resources Control Board. The City of Los Angeles Department of Water and Power (LADWP) proposes to install approximately 23,300 linear feet (LF) of a 36-inch-diameter underground pipe along Victory Boulevard, Topham Street, and Oxnard Street, in the west San Fernando Valley area of the City of Los Angeles. The installation of the new 36-inch-diameter trunk line would replace the aging and deteriorating existing 24-inch Topham Trunk Line to provide greater operational flexibility for water flow and delivery and to improve system redundancy and resiliency. The proposed project would also include approximately 6,599 LF of new 12-inch-diameter underground distribution mainline that would connect the proposed TTLR Project to the existing distribution system on Mason Avenue, Victory Boulevard, and Topham Street. In addition, the proposed project would include approximately 3,429 LF of new 16-inch diameter underground distribution mainline that would replace the existing 8-inch diameter distribution mainline on Tampa Avenue, south of Topham Street. The proposed project and the distribution mainlines would be installed mostly parallel to their respective existing lines; once installation is completed, the existing lines would be abandoned in place and decommissioned accordingly.

AECOM was retained by LADWP to conduct this cultural resources assessment for the proposed project. This assessment is based on archival research and focuses on archaeological or built environment resources, tribal cultural resources, and paleontological resources. No previously recorded cultural resources were found within the Area of Potential Effects (APE) and no archaeological resources were discovered during the field surveys. The proposed project was found to have no historic properties within the APE. However, 225 resources were identified through the Built Environment Resources Directory (BERD) as adjacent to the project APE (see Attachment 1). All of these properties were previously evaluated as ineligible for listing in the National Register of Historic Places (NRHP) through the Section 106 process. Furthermore, these properties would not be located within the proposed project's disturbance area, which would occur within the road right-of-way (ROW) and within an existing LADWP easement located at the Los Angeles County Metropolitan Transportation Authority (Metro)'s Pierce College Station parking lot and north of the baseball fields at Winnetka Avenue and Victory Boulevard Thus, these properties would not be affected by project activities.

As discussed below, based on the results of this assessment, the project APE has a low sensitivity for archaeological resources and tribal cultural resources. Nevertheless, to reduce impacts to potential unanticipated archaeological resources, it is recommended that the construction personnel and supervisory staff be given training on the recognition of cultural resources that may be encountered during ground-disturbing activities within the APE.

Project Description and Setting

Project Setting

The proposed project would be located in the western San Fernando Valley of the City of Los Angeles within the communities of Winnetka, Woodland Hills, Tarzana, Encino, and the Sepulveda Basin (Figures 1 through 3). Approximately 23,300 LF of the new 36-inch trunk line would be installed along Victory Boulevard, Topham Street, and Oxnard Street, beginning just east of the intersection of De Soto Avenue and Victory Boulevard and ending at the intersection of Oxnard Street and Encino Avenue. A portion of the new 36-inch trunk line would be installed within an existing LADWP easement located at the Metro's Pierce College Station parking lot and north of the baseball fields at Winnetka Avenue and Victory Boulevard. In addition, approximately 6,599 LF of the new 12-inch diameter distribution would be installed along Mason Avenue (from Kittridge Street to Victory Boulevard), Victory Boulevard (at the intersection of Mason Avenue and Victory Boulevard), and Topham Street (from Victory Boulevard to Tampa Avenue). Approximately 3,429 LF of the new 16-inch diameter distribution mainline would be installed along Topham Street (from Tampa Avenue to Evenhaim Lane) and Tampa Avenue (from Topham Street to Ventura Boulevard). As described previously, the TTLR and the distribution mainlines would be installed mostly parallel to their respective existing lines; once installation is completed, the existing lines would be abandoned in place and decommissioned accordingly.

Land uses along Victory Boulevard, Topham Street, Oxnard Street, and Tampa Avenue are mixed and include residential, religious, commercial, public transit (Metro Orange Line), one private school (Woodcrest Preschool), limited manufacturing, open space, and public facilities including Pierce College. The Los Angeles River runs east-west, approximately 0.25 to 0.5 mile north of the proposed project.

Project Objectives

The primary objective of the proposed project is to replace the aging and deteriorating existing Topham Trunk Line to provide greater operational flexibility for potable water flow between the 1134SZ and 1123SZ. In addition, the proposed project would improve system redundancy and resiliency by providing potable water supply to the 1123SZ during a planned or emergency outage of the De Soto Reservoir or Rinaldi Trunk Line, increasing overall reliability in the service zones of the west San Fernando Valley.

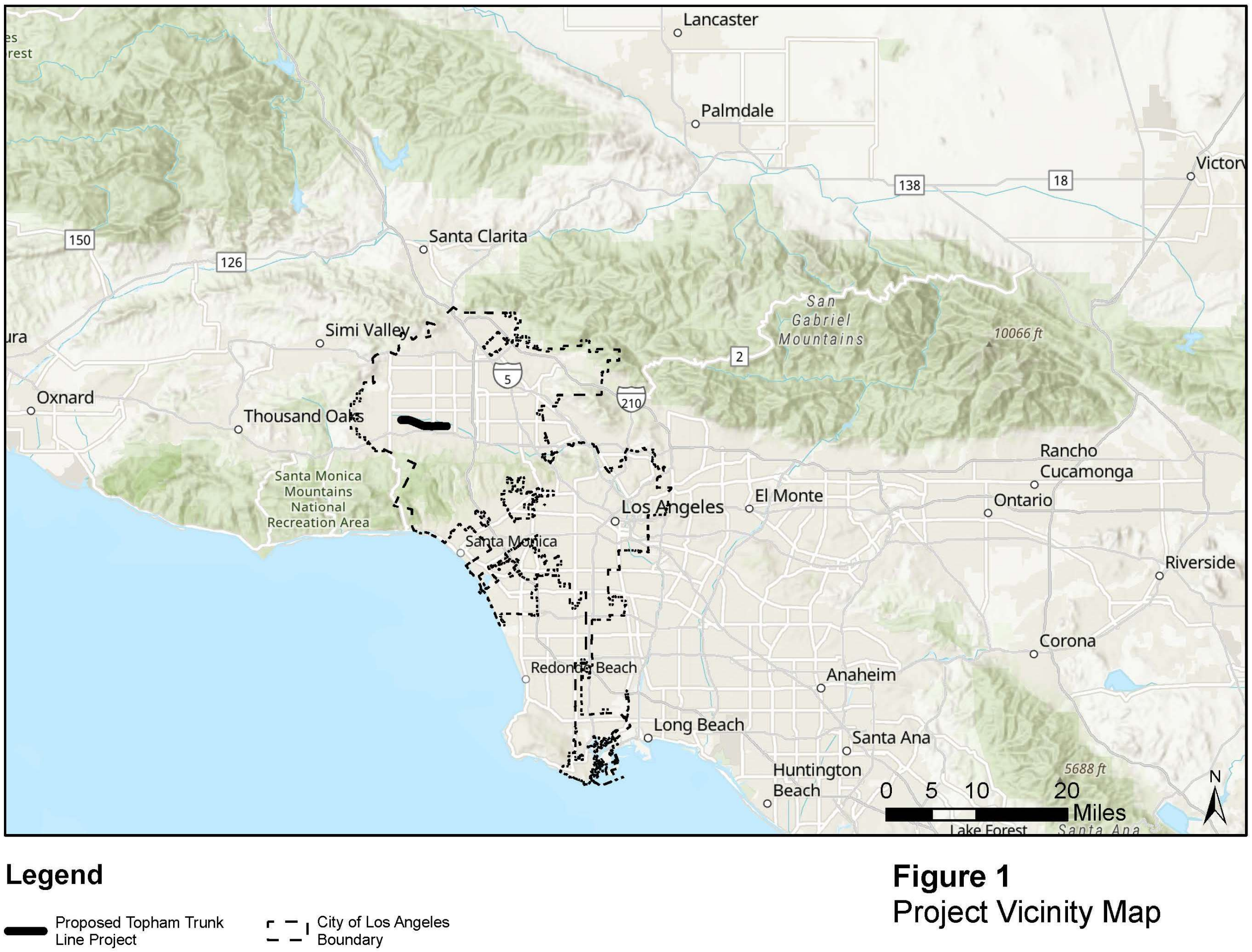
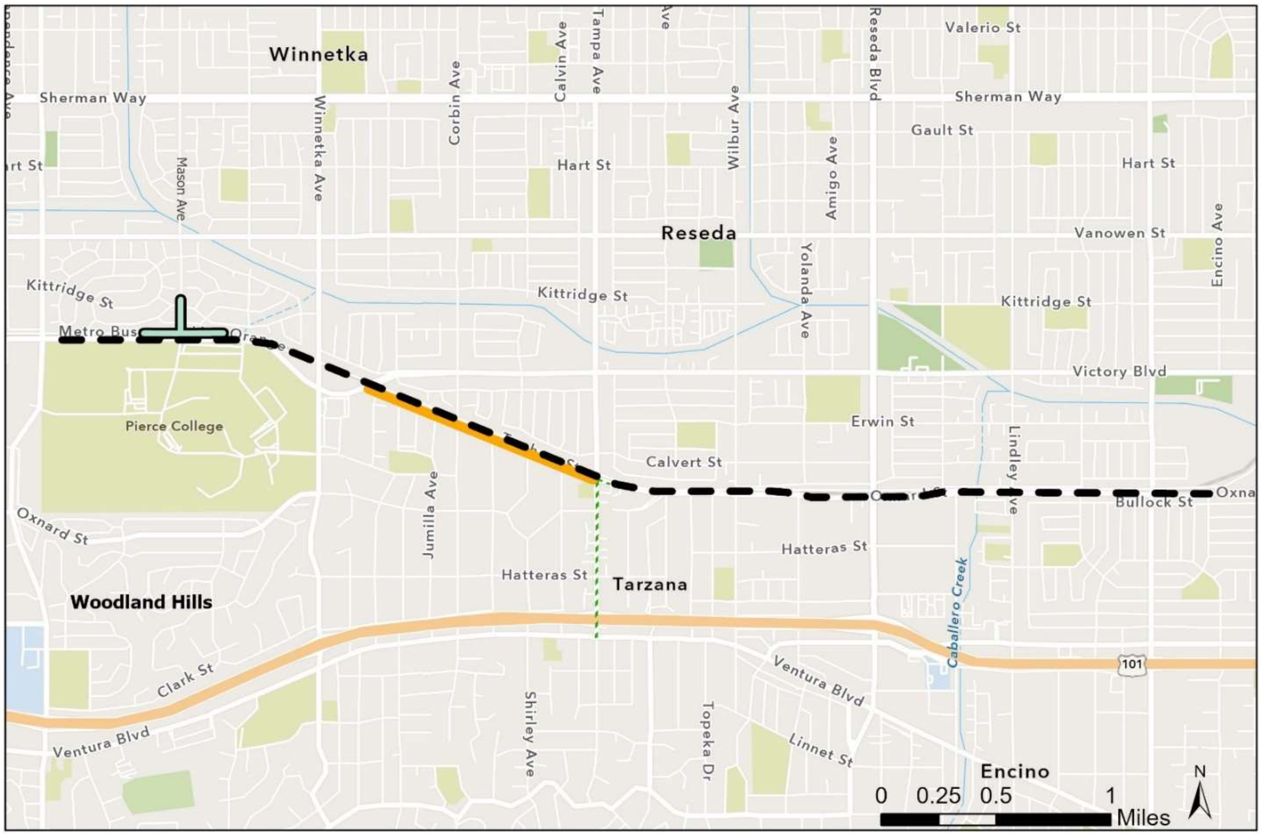


Figure 1
Project Vicinity Map

County of Los Angeles, California State Parks, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, Esri, USGS

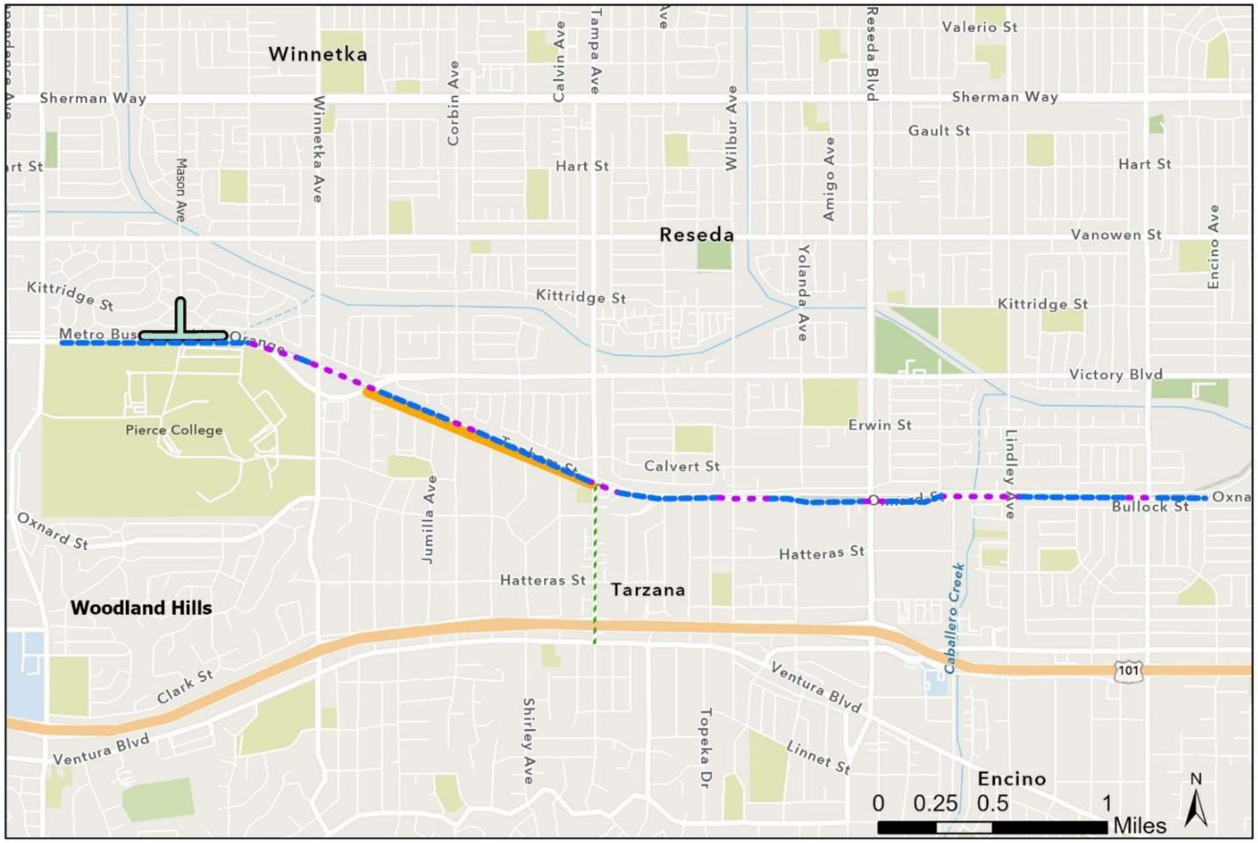


Legend

- Proposed Topham Trunk Line Project
- Proposed 12" Victory Blvd & Mason Ave Mainline Open Cut
- Proposed 12" Topham St Mainline Open Cut
- Proposed 16" Tampa Ave Mainline Open Cut

Figure 2
Project Overview Map

County of Los Angeles, California State Parks, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA



Legend

Construction Method

- Proposed Topham Tunk Line Jacking
- Proposed Topham Tunk Line Open Cut
- Proposed 12" Victory Blvd & Mason Ave Mainline Open Cut
- Proposed 12" Topham St Mainline Open Cut
- Proposed 16" Tampa Ave Mainline Open Cut

Figure 3
Project Construction Methods Overview

County of Los Angeles, California State Parks, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA

Project Description

Proposed TTLR Components and Location

The primary component of the proposed project is a new 36-inch diameter underground trunk line, which would replace the existing Topham Trunk Line. As previously discussed, the replacement line would be routed mainly within Victory Boulevard, Topham Street, and Oxnard Street. On the east, the TTLR would connect directly to the existing Encino Inlet Line, identified as the 1134SZ at Encino Avenue. On the west, the TTLR would connect directly to the De Soto Trunk Line, identified as the 1123SZ at De Soto Avenue. Because the existing Topham Trunk Line must remain in service until the proposed project is completed, the TTLR would be installed in an alignment parallel to, rather than removing and replacing, the existing trunk line.

The TTLR would consist of WSP, which is considered a continuous pipeline because the joints between pipe segments are welded together. Seismic loads created by ground displacement from a seismic event are accommodated by the capability of the walls of the WSP to stretch and bend.

Because the TTLR would interconnect directly to the 1123SZ and 1134SZ to provide system redundancy and operational flexibility, the proposed project would also include the installation of approximately 6,599 LF of underground 12-inch diameter distribution mainline and approximately 3,429 LF of new 16-inch diameter distribution mainline. The 12-inch distribution mainline and 16-inch distribution mainline would be connected to existing distribution mainlines throughout the alignment to provide direct service to the 1123SZ. Both distribution mainlines would consist of earthquake resistant ductile iron pipe (ERDIP) to provide resilience during seismic events. Segments of ERDIP are joined with a gasket rather than being fused together, which provides flexibility at the joints to accommodate seismic loads by allowing the pipeline not only to bend laterally but also expand and contract lengthwise.

In addition to the above, several appurtenant facilities necessary to support the operation of the proposed trunk line and mainline would be installed. These include isolation valves, a flow meter, and a flow recorder. The isolation valves and flow meter would be located underground within the public road ROW. The flow recorder would be installed in an aboveground cabinet (72 inches tall, 48 inches wide, and 24 inches deep) located on the western end of the project alignment on Victory Boulevard (just east of De Soto Avenue), within the public road ROW. After the TTLR is operational, the existing Topham Trunk Line would be isolated from the drinking water system and abandoned in place.

Trunk Line and Mainline Open-Trench Construction

The 12-inch and 16-inch distribution mainlines as well as the majority of the TTLR would be installed through an open-trench method of construction whereby a trench is excavated in the roadway, pipeline segments are placed in the trench, the trench is backfilled, and the road is repaved.

In order to achieve the open-trench construction in an effective, efficient, and safe manner, work zones would be established in the roadway within which open-trench construction activities could proceed unimpeded. Preliminarily, the work zones for the 12-inch and 16-inch distribution mainlines would total approximately 2,400 feet in length, and the work zones for the TTLR would total approximately 3,000 feet in length. These work zones would include the active construction work area (400 feet for the 12-inch and 16-inch distribution mainlines and 1,000 feet for the TTLR), and traffic control tapering on each end of the work area, at 1,000 feet in length at each end.

The work zones would be the minimum width required to accommodate barriers or cones separating traffic from construction activities, safety setbacks adjacent to the trench, shoring required to stabilize the trench walls (for the TTLR installation), the trench itself, and adequate area to safely and effectively operate equipment and trucks, as well as the flexibility to avoid existing substructures in the road. With these measures, the work zones would be approximately 25 to 30 feet in width for the 12-inch and 16-inch distribution mainlines, and 30 to 40 feet in width for the TTLR. Based on the width of the work zone, some street segments along the proposed project alignment may allow only for one traffic lane in each direction and no parking. For the TTLR construction, the following street segments may require full closure with local access only, due to the narrow curb to curb dimensions:

- Topham Street, between Victory Boulevard and Cahill Avenue
- Oxnard Street, between Cahill Avenue and Wilbur Avenue
- Oxnard Street, between Lindley Avenue and Encino Avenue

These work zones would allow for the continuous installation of the TTLR pipeline in longer spans without the requirement to frequently disassemble and relocate barriers, equipment, and construction support facilities and modify traffic control elements, all of which would hamper the pipeline installation process but not substantially improve the flow of traffic in the vicinity of the construction. In addition to the actual work zones, lane transition zones would be required extending outward from the work zone along Mason Avenue, Victory Boulevard, Topham Street, Oxnard Street, and Tampa Avenue to channel approaching traffic into the travel lanes adjacent to the work zone.

The open-trench construction process for the TTLR would involve several steps. The initial step of the installation would be establishing the construction work zone. This would be accomplished by first installing traffic controls, including restriping of lanes, signage, and traffic signal modifications, as necessary, to merge traffic and direct it safely around the work zone. K-rails and other traffic barriers or markers would then be installed around the actual work zone to demarcate the zone and provide a safe working area. Placing the K-rail barriers would require the use of a forklift or other type of construction equipment. Mobilization would include delivering construction equipment and materials to the work zone and establishing field offices and other personnel and construction support facilities necessary for trunk line installation to proceed.

Once the work zone has been established, subsurface utility exploration would be conducted to verify the vertical and horizontal location of underground utilities that must be avoided, protected, or relocated during pipeline installation. This would involve core drilling a small-diameter hole in the pavement and removing soil with a vacuum truck to expose the utilities. Once the precise alignment of the trunk line has been established based on this exploration, the pavement would be cut along both edges of a given length of the trench using a pavement saw, and the pavement over the trench would be stripped using an excavator and a front loader. The pavement would be loaded on trucks and hauled from the site and either reclaimed for use as paving material or road base material, or it would be taken to a landfill as inert debris that can be recycled as road base for internal landfill use.

Because of the depth of excavation for the trunk line, shoring to support the walls of the trench may be required to provide a stable and safe working environment. Cantilever or braced shoring methods would be utilized, but are dependent on soil investigation results. No impact pile-driving would be involved. Installing the piles would be accomplished using a drill rig and a hydraulic crane with various attachments, depending on the method of installation. These steps, from traffic control to installing the shoring piles, would be completed before any of the actual pipeline installation tasks would begin and would take approximately two months.

After the shoring piles are in place, work would begin on installing individual pipe segments. For the 36-inch trunk line, the trench would be excavated approximately 5 to 6 feet wide and 8 to 15 feet deep. These depths are necessary to accommodate the 36-inch diameter trunk line, bedding material under the pipe, and the minimum of five feet of cover required over the trunk line.

The steel shoring plates would be lowered between the H-beams as the depth of the trench excavation increases. Approximately 250 to 300 LF of trench could be excavated and shored in a month for the TTLR. The excavated material would be loaded onto trucks parked adjacent to the trench and hauled from the work zone. While some of the excavated material may be utilized at other construction sites within the region, it is assumed for environmental analysis purposes that all material would be hauled to a local landfill.

In addition to the pipe segments, various appurtenances, such as valves, meters, and maintenance holes, would also be installed as required. The general process for installation of these appurtenances would be similar to the pipe segments and would occur within the designated work zones.

After completion of the work within a given work zone, equipment, materials, and facilities would be removed from the zone, the pavement would be restored and restriped, and the traffic barriers would be removed. Depending on the length of the work zone and actual conditions, active construction within an individual work zone may range for approximately 3 to 4 months. The entire process would then be repeated for the next construction work zone, which may or may not be in an adjacent section of the roadway.

The open-trench construction process for the 12-inch and 16-inch distribution mainlines more simple than the TTLR. All traffic control materials would be setup prior to the start of every work shift and would be removed after work is completed for the day. The Underground Service Alert system will be utilized to map underground utilities along the alignment. The pavement cutting and excavation process would involve excavating will be similar as that of the TTLR except for the trench dimensions. For the 12-inch distribution mainline, the trench would be excavated approximately 30 inches wide and 4 to 5 feet deep. For the 16-inch distribution mainline, the trench would be excavated approximately 3 feet wide and 5 feet deep. For these depths, no shoring would be needed. These depths necessary to accommodate the 12-inch and 16-inch distribution mainlines, bedding material under the lines, and the minimum of 3 feet of cover required over the mainlines. At the end of every work shift, any open trench would be covered with steel plates for the safety of the public. For the 12-inch distribution mainline, approximately 20 to 40 LF of trench could be installed in a day. For the 16-inch distribution mainline, approximately 20 to 25 LF of trench could be installed in a day.

Various pieces of construction equipment would be used to accomplish the open-trench installation of the TTLR as well as the 12-inch and 16-inch distribution mainlines. For the TTLR, the construction equipment would include the following: drill rig, front loader, hydraulic cranes, pavement saw, sweeper, forklift, excavator, backhoe, blower, skid steer, wheel loader, carry deck, utility trucks (water truck, gang truck, slurry truck, flat bed pipe truck, four pick-up trucks, two axle dump trucks, and three axle dump trucks), and trailers (dump trailer, low bed trailer, weld truck with trailer). For the 12-inch and 16-inch distribution mainlines, the construction equipment would include the following: backhoe, crane (or carry deck if overhead power is present or the work zone is within a narrow street), utility trucks (two axle dump truck, three axle dump truck, gang truck, flatbed for pipe), skid steer, sweeper truck, and carrier for backhoe (or trailer attached to a dump truck). However, these pieces of equipment serve specialized purposes during the pipeline installation and would generally only be operated for brief periods when required. For example, the saw would be used to cut the edges of the trench at the beginning of the construction process, the excavator would be used during trench excavation, and a crane would be used when installing the H-beam piles and the trunk line or mainline pipe segments. Therefore, individual pieces of equipment would not operate continuously during the day and generally would not operate simultaneously.

Trucks would haul debris and excavated material from the site and deliver construction materials, such as pipe segments and backfill material, to the site. The peak of haul truck trips would occur during the excavation of the trench, which may require an average of three dump trucks trips in a single day, assuming a 10-cubic yard truck capacity for the TTLR and a 20-cubic yard truck capacity for the 12-inch and 16-inch distribution mainlines. The peak of delivery trucks would occur during the backfilling of the trench with the soil-cement slurry. Assuming a

10-cubic yard concrete truck capacity for the TTLR, this may require an average of one to two concrete trucks per day to backfill the trench within 5 feet of the surface after the installation of the trunk line. Also, assuming a 20-cubic yard dump truck capacity for the 12-inch and 16-inch distribution mainlines, this may require an average of three to four dump trucks per day to backfill the trench within 3 feet of the surface after the installation of these distribution mainlines. These excavation and backfilling operations may occur simultaneously in different sections of the trench, which may result in a peak of approximately five truck trips per day within a given work zone.

Within a given work zone, the open-trench construction would require approximately 20 daily construction personnel for the trunk line and 8 daily construction personnel for the 12-inch and 16-inch distribution mainlines installation. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

Trunk Line Microtunneling (Jacking)

While the majority of the TTLR would be installed using the above described open-trench method of construction, in certain areas, a microtunneling (also referred to as jacking) method would be employed to install the trunk line. The microtunneling method would use a cutting head that loosens the soil, then the soil is transported out. Microtunneling would be utilized where large substructures exist that cannot be easily relocated for the TTLR. These structures include major sewer, storm, natural gas, or water lines or other structures. Microtunneling involves installing the trunk line beneath these substructures at a depth sufficient to avoid direct conflicts as well as indirect impacts related to settlement of soil material above the tunnel. As the tunnel is bored, steel pipe casing is continually pushed forward into the tunnel by a hydraulic jacking system.

The total length of microtunneling is preliminarily estimated at approximately 6,161 LF of the total 23,300-LF TTLR (Figure 3). Microtunneling would occur at the following locations along the TTLR alignment: Victory Boulevard (just south of Oso Avenue) to the existing LADWP easement located at Metro's Pierce College Station parking lot and immediately north of the baseball fields at Winnetka Avenue and Victory Boulevard; Topham Street (at Corbin Avenue and Tampa Avenue, respectively); and, Oxnard Street (between Topeka Drive and Yolanda Avenue, at Reseda Boulevard, between Etiwanda Avenue and Lindley Avenue, and between Balcom Avenue and White Oak Avenue, respectively).

The microtunneling method requires excavating shafts at either end of the span. Similar to open-trench construction, the microtunneling would require a work zone to accommodate various pieces of equipment involved in the jacking process, delivery and haul trucks, and other construction support functions. Based on the width of these work zones, some street segments along the proposed project alignment may allow only for one traffic lane in each direction and no parking. The work zones for the End Tunnel Pit on Oxnard St east of Lindley Ave, the Jacking Pit on Oxnard St west of Topeka Drive, or the pits on Topham Street, may require complete road closures and signage for detours would be posted accordingly. In addition, a portion of the work zone that occurs within the existing LADWP easement on Metro's Pierce College Station parking lot may require the northern portion of the parking lot to be closed for approximately one year for completion of the microtunneling work. The work zones surrounding each shaft would total approximately 3,000 feet in length. This would include the two launching and receiving work areas for the pits (approximately 12 feet wide, 35 feet long, and 30 feet deep), approximately 1,000 feet of spacing between the pits, and the traffic control tapering that extends about 1,000 feet beyond both sides of the work areas. They would overlap in location with the adjacent open-trench work zone but both work zones would not be active at the same time.

Cantilever or braced shoring methods would be utilized, but are dependent on soil investigation results. No impact pile-driving would be involved. After the piles have been installed, the shafts would be excavated, and the excavated material would be loaded onto trucks parked adjacent to the shaft and hauled from the construction work zone to a local landfill. The establishment of the shafts and installation of microtunneling equipment may take several weeks.

Several types of microtunnel boring machines may be utilized for pipeline installations. However, for the purposes of environmental analysis, it has been assumed that a closed-face slurry shield microtunneling boring machine (MTBM) would be employed. This type of MTBM permits microtunneling where groundwater may be encountered and limits groundwater intrusion into the launching and receiving shafts, minimizing the need for dewatering.

The microtunneling process would involve the installation of a steel casing pipe between the launching and receiving shafts. The MTBM process does not require construction personnel to enter the tunnel, as the machines are controlled from outside the tunnel. The MTBM would be lowered into the launching shaft and pushed forward by the hydraulic jacking frame as the cutter head of the MTBM removes soil at the leading edge of the tunnel. The slurry shield MTBM provides a closed environment within which soil particles are transferred into the interior of the cutter head, mixed with water that is pumped from the surface to the MTBM, and pumped through discharge lines to the surface as a slurry mixture. This process allows the MTBM to be advanced toward the receiving shaft by the hydraulic jack, with pipe casing segments, which are nominally 35 feet in length, continually lowered into the launching shaft and pushed forward behind the MTBM. Each new casing segment would be welded to the previous segment to extend the casing. The slurry mixture pumped to the surface would be processed in a separation plant to remove the spoils and recycle the water through the MTBM. The spoils would be transferred to a dump truck to be hauled off site.

The work zones surrounding each shaft would total approximately 4,000 feet in length. This would include the two launching and receiving work areas for the pits, approximately 2,000 feet of spacing between the pits, and the traffic control tapering that extends about 1,000 feet beyond both sides of the work areas. The work zones for the End Tunnel Pit on Oxnard St east of Lindley Ave may require complete road closure due to the narrow curb to curb width.

The average pace of installation for microtunneling would be approximately 40 feet per day, which would not include pit excavation or pipe installation. The actual time to complete a microtunneling installation for a given span would depend on factors such as soil conditions as well as the length of the span, with the total length of individual spans ranging from about 350 feet to 1,550 feet for microtunneling. However, the entire microtunneling operation at a given shaft location would be expected to be approximately 6 months.

Various pieces of construction equipment would be used to accomplish the microtunneling installation, including an excavator, front loader, hydraulic crane, utility truck, tunnel ventilation systems, slurry separator plant, tunnel boring machine, power generators, electrical systems, and high pressure water pump. Trucks would haul excavated material from the shaft and the spoils from the boring operation as well as deliver construction materials. The peak of haul truck trips would occur during the excavation of the launching and receiving shafts, which may require up to about two to three trucks per day, which may result in a peak of approximately three truck trips per day within a given work zone.

For microtunneling operations, the peak of delivery trucks would occur during the backfilling of the shafts with the soil-cement slurry. Assuming a 10-cubic yard truck capacity, this may require up to about three concrete trucks per day to backfill both shafts. Microtunneling would require approximately 28 construction personnel. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

Connections

As mentioned above, the existing Topham Trunk Line must remain in service during project construction. Therefore, the proposed project, including the 12-inch and 16-inch distribution mainlines, would first be placed in service and supplied via a connection to the new De Soto Trunk Line Replacement at De Soto Avenue and Victory Boulevard at the west end. The existing Topham Trunk Line would remain in service and supplied by the existing Encino Inlet Line at Oxnard Street and Encino Avenue at the east end. This would allow connections from the 12-inch and 16-inch distribution mainlines to the distribution system to be done with minimal impact to normal operations in the 1123SZ. Once these distribution connections have been made, the TTLR connection to the Encino Inlet Line at Oxnard Street and Encino Avenue would be made. The shutdown of the existing Topham Trunk Line would take place during the winter months when water demand is low to avoid potential supply issues. The existing Topham Trunk Line would be isolated from the drinking water system and abandoned in place once these final connections have been made.

Best Management Practices

The following best management practices (BMPs) would be employed during construction of the proposed project, to help minimize or eliminate potential impacts to the environment. BMPs are distinguished from mitigation measures because they are based on existing regulatory requirements and/or are standard practices and procedures of LADWP and/or its contractors not unique to the proposed project.

Air Quality

- **BMP-AQ-1:** The proposed project would comply with South Coast Air Quality Management District (SCAQMD) Rule 401 (Visible Emissions) and Rule 402 (Nuisance) to prevent the occurrence of public nuisances and visible dust plumes traveling off-site, and would implement Rule 403 dust control measures and Rule 1166 measures to control the emission of Volatile Organic Compounds (VOCs) from excavating, grading, handling and treating VOC-contaminated soil as required by the SCAQMD, including but not limited to the following:
    - Water shall be applied to exposed surfaces at least two times per day to prevent generation of dust plumes.
    - The construction contractor shall utilize at least one of the following measures at each vehicle egress from the project site to a paved public road:
        - Pave the surface extending at least 100 feet and at least 20 feet wide;
        - Utilize a wheel shaker/wheel spreading device consisting of raised dividers at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages; or
        - Install a wheel washing system to remove bulk material from tires and vehicle undercarriages.
    - All trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
    - Construction activity on exposed or unpaved dirt surfaces shall be suspended when wind speed exceeds 25 miles per hour (mph).

- A community liaison shall be identified concerning on-site construction activity including resolution of issues related to dust generation.

- Non-toxic soil stabilizers shall be applied according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more).

- Streets shall be swept at the end of the day if visible soil is carried onto adjacent public paved roads. If feasible, water sweepers with reclaimed water shall be used.

Biological Resources

Because project construction activities would be continuous during the 7-year construction period, nesting bird season (which generally occurs February 15 through September 15, and as early as January for raptors) could not be avoided. Therefore, the following BMPs shall be employed to avoid and minimize impacts to nesting birds protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGC):

- **BMP-BIO-1:** A pre-construction nesting bird survey shall be conducted by a qualified biologist within 3 days prior to the start of construction activities during the nesting season to determine whether active nests are present within or directly adjacent to the construction zone. All nests found shall be recorded.

- **BMP-BIO-2:** In the event an active nest is detected, a qualified biologist shall monitor the nest to determine if a nest avoidance buffer zone is necessary to restrict construction activities in proximity to the nest to protect the nest from failing. Any buffer zone, within which construction activities may not occur, shall be established in coordination with the qualified biologist, who shall take into account existing baseline conditions (e.g., topography, buffering buildings or other structures, etc.). In addition, observed avian response to ambient conditions (e.g., existing traffic noise and human activity) shall factor into the requirement for and size of a nest avoidance buffer.

- **BMP-BIO-3**: The qualified biologist shall monitor all active nests, including those with and without an established buffer, at least once per week to determine whether birds are being disturbed. If signs of disturbance or stress are observed, the qualified biologist shall implement adaptive measures to reduce disturbance. These measures could include establishing or increasing buffer distances, or placing visual screens or sound dampening structures between the nest and construction activity until fledging is confirmed. The qualified biologist shall monitor each active nest until they determine that nestlings have fledged and dispersed, or the nest is no longer active.

- **BMP-BIO-4:** Should an active nest of any federal or state-listed bird species be detected during pre-construction surveys or subsequent construction monitoring, construction activity in the immediate area shall not commence or shall cease if already underway, and the applicable federal and/or state agency (e.g., United States Fish and Wildlife Service [USFWS], California Department of Fish and Wildlife [CDFW], etc.) shall be notified. Work in other areas of the project site may continue until the active nests has been evaluated.

Cultural Resources

- **BMP-CUL-1:** All field supervisors and all construction workers shall participate in training on cultural resources awareness prior to the initiation of project construction on project sites that involve ground-disturbing activities. The training shall include a description of the types of cultural resources (including tribal cultural resources and human remains) that could inadvertently be encountered during ground-disturbing activities, the sensitivity of the resources, the legal basis for protection of the resources, and the penalties for unauthorized collection of or knowingly damaging the resources. The training shall address the proper procedures in the event of an inadvertent discovery of a cultural resource, including the immediate halting of work in the area of the discovery, notification of appropriate individuals of the discovery, the establishment of appropriate protective buffer zones around the discovery, and the continued avoidance of the protected area until the resource has been evaluated by qualified individuals and an appropriate treatment plan has been developed and implemented. These procedures shall be documented in a Cultural Resources Monitoring Plan (CRMP) that shall establish, in the event of inadvertent discovery of cultural resources, monitoring procedures (including potential Native American monitors), notification procedures, key staff, and preliminary treatment measures for potential discoveries. The CRMP shall be written to ensure compliance with appropriate state and federal laws. The training presentation and CRMP shall be available to additional supervisory or construction personnel who may join after project construction has begun.

Paleontological Resources

- **BMP-GEO-1:** In the event previously unknown paleontological resources are encountered, the construction manager would halt construction activities in the immediate area in accordance with CEQA Guidelines Section 15064.5(f). LADWP would retain a qualified paleontologist to make an immediate evaluation of the significance and appropriate treatment of the resource. Construction activities may continue on other parts of the construction site while evaluation and any necessary treatment of paleontological resources take place.

Stormwater and Erosion Control

- **BMP-WQ-1:** A Storm Water Pollution Prevention Plan (SWPPP), which will include erosion and sedimentation BMPs, shall be developed and implemented for construction activities. The SWPPP may include, but would not be limited to, the following:
    - Minimizing the extent of disturbed areas and duration of exposure;
    - Stabilizing and protecting disturbed areas;
    - Keeping runoff velocities low; and
    - Retaining sediment within the construction area.
- **BMP-WQ-2:** Construction erosion and sediment control BMPs may include, but are not limited, to the following:
    - Temporary desilting basins;
    - Silt fences;
    - Gravel bag barriers;
    - Temporary soil stabilization with mattresses and mulching;
    - Temporary drainage inlet protection; and
    - Diversion dikes and interceptor swales.

<u>Transportation</u>

- **BMP-TRA-1**: Residences and businesses near the pipeline alignment would be notified prior to the start of construction (e.g., via flyers) of lane closures and parking restrictions in their vicinity. The notices would include a telephone number for comments or questions related to construction activities.

- **BMP-TRA-2** LADWP would coordinate with all applicable agencies regarding construction schedules and worksite traffic control and detour plans, including but not limited to the City of Los Angeles Department of Transportation, the City of Los Angeles Department of Public Works, Bureau of Engineering, the City of Los Angeles Fire Department, and the City of Los Angeles Police Department.

<u>Utilities and Service Systems</u>

- **BMP-UTL-1:** The proposed project construction would incorporate source reduction techniques and recycling measures and maintain a recycling program to divert waste in accordance with the Citywide Construction and Demolition Debris Recycling Ordinance.

Project APE

A three-dimensional APE has been delineated for the proposed project, which addresses the potential for the proposed project to impact cultural resources. The project APE is the boundary of the road ROW for Victory Boulevard, Topham Street, and Oxnard Street between De Soto Avenue and Encino Avenue; Mason Avenue between Kittridge Street and Victory Boulevard; and Tampa Avenue between Victory Boulevard and Ventura Boulevard. This is the same as the proposed Topham Trunk Line in Figure 2. The vertical APE is confined to the approximate maximum depths of excavation for the proposed project, including trenching, and microtunneling. The typical maximum depth is expected to be 1 foot below surface along trenches and 35 feet below surface at microtunneling entrances and exits.

Environmental Setting

The San Fernando Valley is located within the south-central portion of the Transverse Ranges, a 400-kilometer-long band of west-trending mountain ranges and valleys (Yerkes and Campbell 2005). The project APE is located at the southern margin of the San Fernando Valley, north of the base of the Santa Monica Mountains at 750 feet above mean sea level. Part of the Los Angeles River is directly north of the APE (0.5 mile at most) and what is now the Los Angeles Aqueduct. The generally Mediterranean climate is characterized as mild, with warm, nearly rainless summers and mild winters with only occasional storms (Dibblee and Ehrenspeck 1991).

The Santa Monica Mountains are a coastal mountain range that extends approximately 40 miles in an east-west direction along the coast of California. The Los Angeles River begins in the Simi Hills and Santa Susana Mountains. Historically, the river and its tributaries, including the Tujunga Wash and Pacoima Wash, meandered through the San Fernando Valley (Dibblee and Ehrenspeck 1991). The project APE is mapped as having surficial deposits of Quaternary alluvium and young alluvial fan deposits. These deposits date from the Holocene to the late Pleistocene and consist of unconsolidated gravel, sand, and silt. The project APE is less than 100 feet away from but still outside of an undivided pocket of the Pico Formation, a Pliocene coarse-grained Tertiary age formation of sedimentary origin (Yerkes and Campbell 2005).

Cultural Setting

As a framework for discussing the types of cultural resources that may be encountered in the vicinity of the proposed project, the following section summarizes the major prehistoric and historic developments in and around the City of Los Angeles and the San Fernando Valley. This summary is followed by a more focused discussion of the history local to the project APE.

Prehistoric Overview

While people are known to have inhabited Southern California beginning at least 13,000 years Before Present (B.P.) (Arnold et al. 2004), the first substantial evidence of human occupation in the Los Angeles area dates to at least 9000 B.P. and is associated with a period known as the Millingstone Cultural Horizon (Wallace 1955; Warren 1968). Millingstone populations established permanent settlements that were located primarily on the coast and in the vicinity of estuaries, lagoons, lakes, streams, and marshes where a variety of resources, including seeds, fish, shellfish, small mammals, and birds, were exploited. Early Millingstone occupations are typically identified by the presence of handstones (manos) and millingstones (metates), while those Millingstone occupations dating later than 5000 B.P. contain a mortar and pestle complex as well, signifying the exploitation of acorns in the region.

Although many aspects of Millingstone culture persisted, by 3500 B.P. a number of socioeconomic changes occurred (Erlandson 1994; Wallace 1955; Warren 1968). These changes are associated with the period known as the Intermediate Horizon (Wallace 1955). Increasing population size necessitated the intensification of existing terrestrial and marine resources (Erlandson 1994). This intensification was accomplished in part through use of new technological innovations such as the circular shell fishhook on the coast; and, in inland areas, use of the mortar and pestle to process acorns, an important new vegetal food staple; and the dart and atlatl resulting in a more diverse hunting capability. Evidence for shifts in settlement patterns has been noted as well at a variety of locations at this time and is seen by many researchers as reflecting increasingly territorial and sedentary populations. The Intermediate Horizon marks a period in which specialization in labor emerged, trading networks became an increasingly important means by which both utilitarian and non-utilitarian materials were acquired, and travel routes were extended.

The Late Prehistoric period, spanning from approximately 1500 years B.P. to the Spanish mission era, is the period associated with the florescence of contemporary Native American groups. The northern San Fernando Valley was the northernmost extent of the territory occupied by people whom the Spanish referred to as the Fernandeño, whose name was derived from nearby Mission San Fernando. The Fernandeño spoke one of four regional Uto-Aztecan dialects of Gabrielino, a Cupan language in the Takic family, and were culturally identical to the Gabrielino. The Tataviam and Chumash, of the Hokan Chumashan language family, lived to the north and west of this territory, respectively, and it is likely that the territorial boundaries between these linguistically distinct groups fluctuated in prehistoric times (Bean and Smith 1978; Shipley 1978).

Ethnographic Overview

Occupying the southern Channel Islands and adjacent mainland areas of Los Angeles and Orange Counties, the Gabrielino are reported to have been second only to their Chumash neighbors in terms of population size, regional influence, and degree of sedentism (Bean and Smith 1978). The Gabrielino are estimated to have numbered around 5,000 in the pre-contact period (Kroeber 1925). Maps produced by early explorers indicate the existence of at least 40 Gabrielino villages, but as many as 100 may have existed prior to contact with Europeans (Bean and Smith 1978; McCawley 1996; Reid 1939 [1852]). Gabrielino villages are reported by early explorers to have been most abundant along the dominant rivers of the Los Angeles Basin, including the Los Angeles, San Gabriel, and Santa Ana Rivers.

Ten important villages were located within the San Fernando Valley, of which the most populous was *Pasheeknga*, located near where Mission San Fernando was ultimately established (McCawley 1996:40). The community of *Achooykomenga* is thought to have been close to *Pasheeknga*, though the exact location has not been confirmed. Sétimo Lopez, a Fernandeño informant who worked with ethnographer J.P. Harrington, reported that this settlement was located southwest of the Mission San Fernando, near a reservoir used to provide water to the mission. However, the dam constructed for the aqueduct and reservoir system for the mission is located approximately 1 mile northeast of the mission (McCawley 1996). The village of *Siutcanga*, located at Rancho El Encino, with parts of the site remaining at Los Encino State Historic Park, was approximately 1.75 miles east of the project APE. The Gaspar de Portola expedition is thought to have encountered *Siutcanga* in 1769, where they were greeted by a large gathering of Gabrielino people.

Historic Overview

Spanish explorers made brief visits to Gabrielino territory in 1542 and 1602; however, the historic period of settlement in Southern California began with Spanish exploration in the late eighteenth century, starting with the Gaspar de Portola Expedition in 1769. The Spanish government subsequently established missions and military outposts to facilitate colonization of the area. Spanish Governor Felipe de Neve and Mexican settlers founded El Pueblo de La Reina de Los Angeles in 1781 and, by 1800, the pueblo featured approximately 30 adobe houses and had become an important stop for trade along the Santa Fe Trail (Dillion 1990; McCawley 1996; Weaver 1973). During this time, the local Native American inhabitants came to be known by the names Gabrielino and Fernandeño, depending on whether the Spanish assigned them to the San Gabriel Mission or the San Fernando Mission.

After Mexico won independence from Spain in 1821, colonization efforts in Alta California decreased. The Spanish mission system was largely abandoned and, late in the 1830s, the Mexican government began bestowing land grants or ranchos to those loyal to the Mexican government and to some Anglo settlers. During the 1800s, much of the rancho lands was broken up into smaller land holdings and sold to an influx of new settlers, who increased the population of Los Angeles to 1,500 in the 1830s (Dakin 1978:200). In 1835, Los Angeles was officially designated a city and California's capital (Dillion 1990; Weaver 1973).

In 1848, the United States gained control of California through the Treaty of Guadalupe-Hidalgo, which was a result of the American victory in the Mexican-American War. The 1849 discovery of gold in California caused American immigration into the area to increase and, by 1850, California achieved statehood. That same year, the City of Los Angeles was incorporated with a population of 1,610. At this time, the city consisted of mostly agricultural land and ranchland, with a small, concentrated commercial center (JRP Historical Consulting Services 2003). The Los Angeles economy changed beginning in 1869, when the transcontinental railroad opened new markets, which resulted in a citrus boom in the 1870s. A short-lived land speculation boom occurred in Southern California in the 1880s, mainly because of railroad construction.

When the Southern Pacific Railroad extended its line from San Francisco to Los Angeles in 1876, newcomers poured into Los Angeles and the population nearly doubled between 1870 and 1880. With the completion of several additional railroads, including the Santa Fe Railroad in 1886, immigration to Southern California became easier. Immigrants to Southern California also were attracted by the favorable climate and agricultural potential. Increased Anglo-American immigration into the area caused increased urbanization of Los Angeles. Commercial and industrial enterprises began to overshadow agriculture, and, by the end of the nineteenth century, the commercial center of the city had expanded, with suburban developments at its periphery. The subdivision of the large ranchos took place during this time. The city's population rose from 11,000 in 1880 to 50,000 by 1890 (Meyer 1981:45).

The beginning of the twentieth century saw the florescence of a uniquely suburban metropolis, where a vast network of residential communities overshadowed city centers, where the single-family home was valued over the high-rise, and where private space took precedence over public space (Hawthorne 2006). Heavy industries began to locate factories and plants in the Los Angeles area, and the community experienced a boom period during World War II as the demand for wartime products, such as aircraft parts, rose. The boom period continued after the war, resulting in a housing shortage and the construction of dozens of freeways, radically altering the character of Los Angeles by simultaneously dividing local neighborhoods and connecting outlying communities.

History of Project APE

El Camino Real

A literal translation of The Royal Road or The King’s Highway, El Camino Real is often regarded as a 600-mile commemorative route that connects various Spanish missions throughout former Alta California, from its southern end at Mission San Diego de Alcala and its northern end at Mission San Francisco Solano. Regardless, there is not really any single Camino Real that exists. During the Mission period, when this road was utilized, all roads under Spanish rule within Alta California were considered Royal Roads, as they belonged to the crown (Masters 2013; SCVHistory 2022). These were roads built to offer the best possible journey in order for Missions to be no more than a day’s ride apart. However, this was not always the case, and definitely not the case until all Missions were complete as they were not built in geographic order (SCVHistory 2022). It was not uncommon for any Camino Real to overlap previous Native American trade routes, or to eventually turn into modern highways, as they often coursed the best or easiest routes along California.

However, calling this network of roads a single grand Camino Real is a misconception. Their use was often sporadic. The roads were built and never fixed. It was easier and safer to travel by boat. Although historic in its own right, in reality, it was a fabrication of the tourist period. By the mid-nineteenth century, parts of these routes were improved but many other sections were not. Because they already connected many locations along the new State of California, attempts were made to initiate the Camino Real as a whole, to improve travel for stagecoaches and freight wagons (Brown et al. 2016). By 1902, it was adopted by the California Federation of Women’s Clubs, to give these networks of roads more exposure to increase their potential of being improved and utilized for larger scale traffic. It was during this time that the distinct bells were placed along the route (Pool 2006).

Later, between 1890 and 1920, entrepreneurs, fueled by the expanding railroads and Automobile Club, used these roads to entice travelers. They romanticized the mission period and used the idea of a single large road connecting all the missions as a way to make this endeavor grander. The goal was to give these roads a single purpose. By 1915, a map was produced by the Automobile Club of Southern California, tracing the route for motorists (Tuttle 2000).

One of these roads, now the 101-freeway, is approximately 0.5 mile south of the project APE. Although many roads labeled the Camino Real fell into disrepair during the mission period, this part did not. It was one of three mission roads in the western San Fernando Valley and played a large role in connecting the greater Los Angeles area with Ventura and farther north using the Calabasas Camino Real in the Santa Monica Mountains (SCVHistory 2022).

Ranching

The story of the project APE is one of ranching interrupted by the sudden early twentieth-century growth of the San Fernando Valley. Although the project APE is almost 8 miles southwest of the Ex-Mission de San Fernando compound, it was part of the Ex-Mission de San Fernando land grant that covered the San Fernando Valley. In 1887, Henry Hubbard and Bud Wright purchased the 1,100-acre segment, from Benjamin Porter, the brother of George Porter. Hubbard and Wright farmed the land until 1910, when they sold it to the Valley Farm Company for subdivision (*San Fernando Valley Magazine* 1975).

Within the eastern edge of the project APE, and stationed along the El Camino Real, was the Rancho Los Encinos, mostly utilized for grazing. However, not long after its inception, it was used as a way station for travelers (Hayes 2007). Established as a ranch in 1793 by Francisco Reyes Alcalde, and originally used by the Gabrieleño, the ranch contained a natural spring that was essential for travelers. However, Reyes was accused of mistreating Native American workers and, in 1845, the Mexican Governor Pio Pico re-granted the land to three Gabrieleño workers. It was later acquired by another ranch owner where a large adobe home was built that still stands today (Bearchell and Fried 1989).

In 1849, as the California Gold Rush picked up, so did a large demand for beef. To meet this, many ranches in the region, including Rancho Los Encinos, began to raise cattle for slaughter. Farms changed their structure to meet demand; and with this came growing pains. However, as quickly as it came, the Gold Rush economy collapsed, and so did demand, leaving ranches in debt. Rancho Los Encinos was not spared. The property exchanged hands many times throughout the years through the 1900s (Hayes 2007). Much of the ranch land was sold off by the Amestoy family that would eventually become the community of Encino. More was bought by commercial endeavors. The final remaining piece of property was purchased by California in 1949 to convert it to Los Encinos State Historic Park (Bevill 2007).

Encino and neighboring communities came into their own as an urban extension of Los Angeles after World War II. After the war, they underwent massive growth. The small farms and ranches were quickly carved up and built upon. The equestrian culture of the valley was maintained in nearby Pierce College but was no longer prominent in the surrounding area.

Los Angeles Water Supply

Historically, the Los Angeles pueblo relied on the Los Angeles River for its water supply, using a system of ditches branching from a main ditch, the Zanja Madre. After the City of Los Angeles incorporated in 1850, the short-lived Los Angeles Water Works built a water tank to supply the city in 1858 but failed along with other various enterprises to establish a viable water system. In 1868, the privately owned Los Angeles City Water Company incorporated and was granted exclusive rights to construct and operate a water system in the city. By 1878, the system had over 300 miles of water mains, six major reservoirs, infiltration galleries, and pumping plants. At the time, Fred Eaton served as the superintendent and William Mulholland began working for the company. In 1886, Mulholland became the superintendent, when Eaton became the City Engineer. In 1902, the company had 337 miles of water mains and 676 fire hydrants (SurveyLA 2017:8; Water and Power Associates 2022).

After years of disputes between the City of Los Angeles and the Los Angeles City Water Company, the City acquired the company in 1902 to form the first municipal water system under the Los Angeles Water Department (the predecessor of LADWP) with Mulholland as its superintendent. The new department sought to enlarge and improve existing water storage capacity. New reservoirs constructed included Ivanhoe (built 1906) and Silver Lake (built 1907), which were fed by a new supply line from an intake on the Los Angeles River near Griffith Park. The Garvanza Reservoir (later renamed Highland), originally built circa 1886, became part of the City’s municipal system in 1902 and was upgraded with a new pumping station and enlarged between 1907–09. Linked to these early reservoirs was the system’s first steel tank constructed on LeMoyne Avenue in 1906. The tank was supplied by water pumped from the newly constructed Ivanhoe-Silver Lake reservoirs. This reliance on a few large reservoirs and on multiple local tanks placed at high elevations and supplied by pumps became the pattern the water department followed in subsequent decades (SurveyLA 2017:8–9, 26).

Water Distribution System

With the coming of the aqueduct, the Water Department, later Bureau of Water Works and Supply, under Mulholland had been laying an “interior” system of city main lines and laterals amounting to over 46 miles of pipeline laid between 1909 and 1914. Between 1912 and 1913, the City of Los Angeles purchased 11,690 tons of cast iron pipe to expand the municipal water system, and by July 1913, the City controlled over 586 miles of lateral mains with 4-inch or larger diameters (Mulholland 1913:20–21,1914:15–16).

Besides the expansion of interior municipal distribution system within City limits, Mulholland also planned for a Los Angeles trunk system to connect the aqueduct to the City’s system. The trunk system would include storage and distribution reservoirs, trunk lines, water mains, distribution lines, pumping stations, and other infrastructure. Due to the existing mandates and uncertainties related to the City’s ability to sell its surplus water to other communities, the Los Angeles trunk system that would directly connect the aqueduct water supply to the municipal distribution system was the first priority. In 1912, Mulholland presented plans for the Los Angeles trunk system that included two new reservoirs near the discharge of the aqueduct: the Upper and Lower San Fernando Reservoirs (later renamed for Bureau of Water Works and Supply Chief Engineer Harvey Arthur Van Norman). The two reservoirs connected to a main Los Angeles City Trunk Line that would siphon the water down the San Fernando Valley up to the new Franklin Tunnel leading to two new reservoirs at Franklin Canyon in the Santa Monica Mountains.

Mulholland’s plans also included regional distribution of the City’s new abundant water supply to the surrounding communities, particularly in the San Fernando Valley. Annexation and selling surplus water for irrigation in the San Fernando Valley were also highly anticipated outcomes of the operation of the aqueduct. Several trunk lines stemming from the San Fernando Reservoirs and the aqueduct itself were proposed to carry water to other communities (**Plate 1**).

Trunk lines serve as major distribution arteries that deliver water between larger lines, tanks, and reservoirs to smaller water mains and connect to lateral or branch lines, distribution mains, and service lines. The approximately 144-inch-diameter Los Angeles Aqueduct pipe connects to several trunk lines that average between 36 and 72 inches in diameter. By 1940, the trunk line system within the San Fernando Valley was greater in mileage than that of the entire Los Angeles Metropolitan area with an intricate network of distribution mains and service lines (*The Van Nuys News* 1940).

Topham Trunk Line

The Topham Trunk Line was originally constructed in 1917 and named the Topham and Canoga Park Pipeline. In 1936, 6,045 LF of 36-inch-diameter riveted-steel pipe was added (Unit 43) west of De Soto Street to Canoga Avenue. In 1937, the portion of Ventura Trunk Line connecting Topham Trunk Line to Encino Inlet Line was installed, consisting of approximately 11,210 LF of 24-inch-diameter welded-steel pipe and 1,370 LF of 24-inch-diameter ductile iron pipe.

In 1936, as part of an experimental program conducted by the Bureau of Water Works and Supply, the interior of the Topham Trunk Line was sandblasted, enameled, and coated with red lead primer (City of Los Angeles Board of Water and Power Commissioners 1936). Several other pipelines were also included in this program, including the Western Avenue-Stone Canyon Trunk Line, Saticoy Street Pipeline, Fallbrook Pipeline, San Fernando By-Pass Line, Diaz Avenue Pipeline, Fletcher Drive Pipeline, Elysian Reservoir Pipeline, and Ventura Boulevard Pipeline (City of Los Angeles Board of Water and Power Commissioners 1936). Although many of these pipes were less than 20 years old at the time, the effects of corrosion were already evident. During the early twentieth century, red lead paint was promoted as ideal for protecting iron and steel work including pipes, bridges, tanks, and structural steel (*Keystone Catalog* 1926). Research on this topic continued into the late 1960s on finding effective ways to stop corrosion and developing barrier materials that would insulate the pipes (McComb 1967).

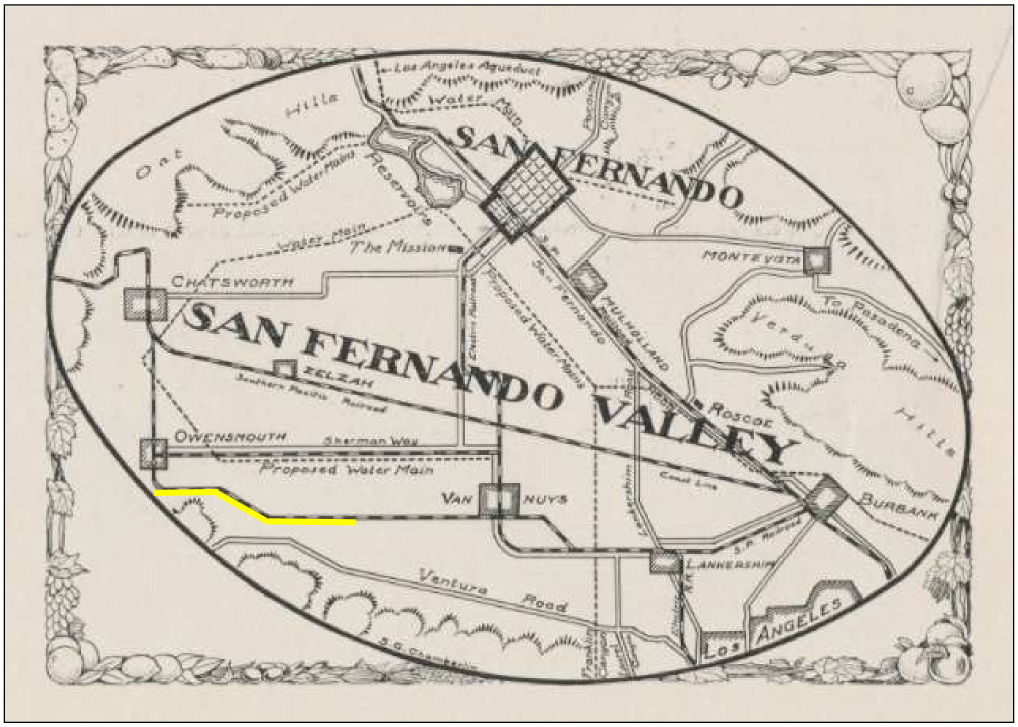


Plate 1: Map depicting several proposed mains (or trunk lines) after completion of the Los Angeles Aqueduct in 1913, San Fernando Reservoir at top (Water and Power Associates 2022). Note the future location of the Topham Trunk Line is identified along the Southern Pacific Railroad alignment.

By 1980, LADWP's trunk lines were being constructed with ductile iron pipes, which replaced the gray cast iron pipes and steel (riveted and welded) pipes in use since the 1910s (Hamada et al. 1994). Gray cast iron pipes were used in a very small percentage of historic-age trunk lines in Los Angeles, with steel pipe, asbestos cement pipe, and ductile iron pipe being the most ubiquitous construction material used in trunk line construction from 1913–1980 (Hamada et al. 1994).

Extensive alterations throughout the entire Topham Trunk Line have included modifications for modern use, service expansion, and technological developments; repairs, replacements, and reconstructions following disaster events and failures; cement and slip lining sections; and ongoing maintenance. Additionally, connections to pumping stations, valves, and other improvements were installed along the pipeline. In 2017, a rupture was repaired along the line at Tampa Avenue and Topham Street (*Los Angeles Times* 2017) (**Plate 2**).

Plate 2: Rupture repair at Tampa Avenue and Topham Street, 2017 (*Los Angeles Times* 2017)

Other Trunk Lines and Water Distribution Infrastructure

Because of the geographic span of Los Angeles, the water distribution system is supplied by several series of reservoirs, trunk lines, distribution lines, water mains, pumping stations, and other infrastructure. Sixteen storage reservoirs were eventually constructed within the city for year-round water supply and delivery. The locations of these reservoirs were the driving factor behind the design of the overall water distribution system (Hurlbut 1932:1688).

The impact of the new water supply was not immediately felt by large areas of the enlarged city until after World War I, when a series of additional reservoirs was constructed to connect to the Los Angeles Aqueduct. The Chatsworth Reservoir (built 1919) served the northwestern section of the San Fernando Valley; the Encino Reservoir (built 1921) served the southern San Fernando Valley; the Stone Canyon Reservoir (built 1921) served Westwood and the West Side; and the Mulholland Dam and Hollywood Reservoir (built between 1923–24) served the Hollywood area (SurveyLA 2017:11–12, 28).

In the early 1930s, the municipal water distribution system for Los Angeles still relied on the Los Angeles River and four large reservoirs (Stone Canyon, Franklin, Hollywood, and Silver Lake) situated in the ring formed by the Santa Monica Mountains and the Los Feliz Hills. These major points of distribution extend along a line about 14 miles long and from them come the large trunk lines forming the skeleton of the distribution system for the city. The four larger reservoirs were built primarily to provide part of the storage required for the Los Angeles Aqueduct (Hurlbut:1932:1689–90). From west to east were three additional smaller reservoirs (Rowena [built 1901], Elysian [built 1903], and Buena Vista [built 1868-69]) utilized as part of the city water system that were already in place by 1911 and pre-dated the construction of the Topham Trunk Line (Hurlbut 1932:1686). The reservoirs within the city water system served the dual purposes of storage and distribution. Their use decentralizes the trunk lines supplying the smaller mains of the water distribution system and therefore provides a readily available and safe water supply as backup for any failures of the aqueduct or other portion of the larger system (Hurlbut 1932:1690).

By 1932, additional trunk lines were constructed to decentralize the trunk line system so that the failure of any one trunk line did not paralyze a large portion of the system (Hurlbut 1932:1693). The Los Angeles water distribution system was not designed to place too great reliance on any particular trunk line but designed as a system such that its various units will function under normal or emergency conditions that may be placed upon it (Hurlbut 1932:1688). Many of the trunk lines built in the subsequent decades were in less developed areas and spurred additional population growth and development in those areas (LADWP n.d.). By 1940, nearly half of the city's 300 miles of trunk lines was already installed, with nearly 7,000 miles of distribution pipes installed by 1994. In the subsequent decades, additional infrastructure was added to the city water distribution and hundreds of miles of trunk lines were constructed into the 1960s to meet increased water demands of the growing city population (LADWP n.d.).

Of the other trunk lines built to connect with the Los Angeles Aqueduct and/or Los Angeles municipal distribution system, a notable example is the Bouquet Canyon Reservoir Pipeline that was constructed in 1934. At the time of its construction, it was the largest single-weld project of its kind in the world and an engineering feat for traversing mountainous terrain (Van Nuys News 1940). The Harbor Trunk Line, which also connects to the Los Angeles Aqueduct, was instrumental in the permitting development for providing an adequate water supply to the Municipal Airport in 1935 (later known as the Los Angeles International Airport, LAX) (LADWP n.d.:16).

As of 2015, approximately 542 miles of trunk line served the 3.9 million people who live in the city's more than 473-square-mile service area. Of the hundreds of miles of trunk lines, those constructed during the 1910–19 period, which includes the Topham Trunk Line, accounted for 55.9 miles or approximately 10 percent of the total system. In comparison, large-scale expansions to the LADWP system in the 1930–39 and 1950–59 periods were nearly double at 95.5 and 95.9 miles, respectively (LADWP 2015).

Regulatory Context

The proposed project is subject both to CEQA and, because federal funding will be received via the Clean Water State Revolving Fund, the standards of CEQA-Plus. CEQA-Plus utilizes CEQA documentation plus the federal standards of the National Environmental Policy Act (NEPA). CEQA-Plus requires compliance with Section 106 of the National Historic Preservation Act (NHPA), 16 United States Code (USC) Section 470f and its implementing regulations 36 Code of Federal Regulations (CFR) Part 800, and with CEQA, Public Resources Code (PRC) Section 21000 et seq. and the State CEQA Guidelines, California Code of Regulations (CCR) Section 15000 et seq. The investigations focused on the identification of significant cultural resources pursuant to both NHPA and CEQA, applying the standards of significance discussed below. The identification of tribal cultural resources pursuant to Assembly Bill (AB) 52 is being conducted separately by LADWP.

Standards of Significance

In accordance with NEPA, the NHPA, and CEQA, cultural resources are protected from adverse effect if they meet standards of significance. The NHPA (16 USC Section 470) and its implementing regulations (36 CFR Part 800) establish a program for the preservation of historic properties throughout the United States. Section 106 of the NHPA requires that federal projects or projects under federal jurisdiction consider the effect of an undertaking on properties eligible for or included in the NRHP. The California Register of Historical Resources (CRHR or California Register) was created as the authoritative guide to California's significant archaeological and historical resources and was modeled closely after the NRHP. The criteria are nearly identical to those of the NRHP but focus on resources of statewide, rather than national, significance. NRHP and CRHR criteria as applied to cultural resources within the APE are outlined below.

NRHP

The NHPA establishes the NRHP, which is "an authoritative guide to be used by federal, state, and local governments, private groups and citizens to identify the nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment" (36 CFR 60.2). To be eligible for listing in the NRHP, a property must be at least 50 years old (or have reached 50 years old by the project completion date) and possess significance in American history and culture, architecture, or archaeology to meet one or more of four established criteria (36 CFR 60.4):

A. Association with events that have made a significant contribution to the broad patterns of our history;

B. Association with the lives of persons significant in our past;

C. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; and/or

D. Have yielded, or may be likely to yield, information important in prehistory or history.

Historic resources eligible for listing in the NRHP are considered "historic properties," and may include buildings, sites, structures, objects, and historic districts. A potential historic property less than 50 years of age may be eligible under NRHP Criteria Consideration G if it can be demonstrated that sufficient time has passed to understand its historic importance (National Park Service 1990). To be eligible for listing in the NRHP, a property must also have integrity, which is defined as "the ability of a property to convey its significance." Within the concept of integrity, the NRHP recognizes seven aspects or qualities that, in various combinations, define integrity: feeling, association, workmanship, location, design, setting and materials.

CRHR

The determination of CRHR significance of a cultural resource is guided by specific legal context outlined in Sections 15064.5 (b), 21083.2, and 21084.1 of the PRC, and the CEQA Guidelines (CCR Title 14, Section 15064.5). A cultural resource may be eligible for listing in the CRHR if it:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

2. Is associated with the lives of persons important in our past;

3. Embodies the distinctive characteristics of a type, period, region or method of construction or represents the work of an important creative individual or possesses high artistic values; or

4. Has yielded, or may be likely to yield, information important in prehistory or history.

A cultural resource determined to meet one or more of the above criteria is considered a historical resource under CEQA. In addition to meeting one or more of the above criteria, historical resources eligible for listing in the CRHR must retain enough of their historic character or appearance to be able to convey the reasons for their significance. Such integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association.

Assembly Bill 52

On September 25, 2014, Governor Jerry Brown signed into law AB 52. The intent of AB 52 is to "set forth a process and scope that clarifies California tribal government involvement in the CEQA process, including specific requirements and timing for lead agencies to consult with tribes on avoiding or mitigating impacts to Tribal Cultural Resources." It applies to projects that require an environmental impact report or a Negative Declaration/Mitigated Negative Declaration.

AB 52 amended the CEQA statute and required amendments to the CEQA Guidelines to address consultation with California Native American tribes as a part of the CEQA process. Pursuant to PRC Section 21080.3.2, Tribal Governments can request consultation with a lead agency and give input regarding potential impacts to tribal cultural resources before the agency decides what type of environmental review is necessary for a project. The PRC further requires avoiding damage to tribal cultural resources, if feasible. If not, lead agencies must mitigate impacts to tribal cultural resources to the extent feasible.

Section 21074 of the PRC defines "Tribal Cultural Resources" as a resource that is either of the following:

1. Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:

    a. Included or determined to be eligible for inclusion in the CRHR.

    b. Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

    a. A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.

    b. A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

Archival Research

As part of this cultural resources assessment, an archival research program was conducted. The purpose of this research is to identify known cultural resources in the project APE, provide context for the evaluation of cultural resources within this area that are 45 years or older, and inform interpretations regarding the potential to encounter previously unidentified cultural resources in the course of ground-disturbing work associated with the proposed project. A brief discussion of tribal cultural resources is provided to examine the potential of the proposed project to impact resources that may hold significance to the California Native American community. Additionally, a review of geological maps and literature was conducted to determine the paleontological sensitivity within the project APE. The results of this archival research are presented below.

Archaeological/Built Environment Resources

Archival research included a records search at the South Central Coastal Information Center (SCCIC), a review of local cultural resource registers, and review of local and regional historical maps. Supplemental research in published and unpublished sources was also conducted to provide prehistoric and historic contexts for the project APE.

Records searches of the APE were conducted at the SCCIC housed at California State University, Fullerton. The records searches focused on the identification of previously recorded cultural resources and cultural resources reports within the study area, which comprises the project APE, a 0.25-mile buffer for built historic resources, and a 0.5-mile buffer for archaeological resources.

Additional archival research was conducted by AECOM archaeologist Alec Stevenson, M.A., RPA, and included a review of SCCIC-provided site records and report data, historical site and property inventories, and historical maps. Inventories of the NRHP, the CRHR, the California State BERD, California Historical Landmarks and Points of Interest, the Los Angeles Historic Resources Inventory, and the list of City of Los Angeles Historic-Cultural Monuments (LAHCMs) were also reviewed to identify cultural resources within the study area.

Previous Cultural Resources Investigations Reports

The records search revealed that 44 cultural resources investigations were previously conducted within a 0.5-mile radius of the APE (Table 1). Of these, 11 studies (LA-00384, LA-2409, LA-02908, LA-3742, LA-06007, LA-07835, LA-7840, LA-11606, LA-10203, LA10208, and LA-12505) overlap the project footprint. Most of this overlap is LA-07835. These studies all consist of cultural resources assessments. Much of the work completed in the records search area consisted of records searches and cultural assessments or site visits associated with telecommunications projects. In total, approximately 90 percent of the project APE and 20 percent of the study area have been subject to previous cultural resource investigations.

Table 1. Previous Cultural Resources Investigations Conducted within 0.5 Mile of the Project APE

Author	Report Number	Description	Date
Van Horn, David M.	LA-00377	Ultra-systems Project: Archaeological Survey	1978
Martz, Patricia	LA-00384*	Description and Evaluation of the Cultural Resources Within Haines Debris Basin, Hansen Dam, Lopez Dam, and Sepulveda Dam, Los Angeles County, Los Angeles County	1977
Singer, Clay A.	LA-01258	Cultural Resource Survey and Impact Assessment for a Portion of the Former Warner Ranch in Woodland Hills	1982
Stelle, Kenneth and Albert Galiardo	LA-02409*	For Improvements of the Operational Characteristics of Route 101, the Ventura Freeway in Los Angeles and Ventura Counties, Between Route 405 in Los Angeles, and the Santa Clara River in Oxnard	1982
Foster, Reginald K.	LA-02643	Supplemental Draft Environmental Impact Report EIR No. 675-81 Zc_(gpa)(hd)(sub)(ps)(sup)(da)	1992
Anonymous	LA-02908*	Draft Environmental Assessment Tillman Reclamation Plant Flood Protection Project	1990
Neuenschwander, Neal J.	LA-03521	Cultural Resource Assessment of the Proposed Expansion of National Guard Facilities at Van Nuys, Los Angeles County, California	1996

Author	Report Number	Description	Date
Anonymous	LA-03635	Draft Master Environmental Assessment Warner Center Woodland Hills, California a Development of Kaiser Aetna	1973
Romani, John F.	LA-03742*	Archaeological Survey Report for the 07-la/ven 101 Project P.M. 17.1-38.2/0.0-22.7 07351 - 076620	1982
Anonymous	LA-03744	Historic Property Survey Desoto Avenue Between Sherman Way and Victory Boulevard W.O. 21247	1977
Duke, Curt	LA-05046	Cultural Resource Assessment for Pacific Bell Wireless Facility La 209-02, County of Los Angeles, CA	2000
Lapin, Philippe	LA-05047	Cultural Resource Assessment for Pacific Bell Wireless Facility La 209-01, County of Los Angeles, CA	2000
Horne, Melinda C.	LA-06007*	Archaeological Survey Report Los Angeles Pierce College Los Angeles County, California	2002
Unknown	LA-06142	Expansion of the Reseda High School Facilities Located at 18230 Kittridge Street in the City of Los Angeles	2002
Duke, Curt	LA-06755	Cultural Resource Assessment for the AT&T Wireless Services Facility Number R278, County of Los Angeles, California	2000
Duke, Curt	LA-06759	Cultural Resource Assessment for Pacific Bell Mobile Services Facility La 968-01, County of Los Angeles, California	2000
McKenna, Jeanette A.	LA-06772	Cultural Resource Assessment/Evaluation for Nextel Communications Site CA-8105c, Woodland Hills, Los Angeles County, California	2002
Billat, Scott	LA-07144	Stonehenge Pierce/CA-7566a Telecommunications Facility, Los Angeles Community Pierce College 6201 Winnetka Avenue, Woodland Hills, California	2004
Billet, Lorna	LA-07272	Hobbes, CA-6301a	2005
Kyle, Carolyn E.	LA-07277	Cultural Resource Assessment for Cingular Wireless Facility Vy234-03 City of Woodland Hills Los Angeles County, California	2002
Whitley, David S. and Joseph M. Simon	LA-07835*	Phase I Archaeological Survey/class III Inventory, San Fernando Valley East-west Transit Corridor, Brt Alternative, Study Area, Los Angeles, California	2000
Sylvia, Barbara	LA-07840*	Negative Archaeological Survey Report for the Beautification and Modernization Along Route 134 from the 134/170 Separation to Shoup Ave UC, and along Route 101	2001
Bonner, Wayne H.	LA-08051	Cultural Resources Records Search Results and Site Visit for Cingular Wireless Candidate Nl-135-01 (Canoga Park) 6543 North Corbin Avenue, Woodland Hills, Los Angeles County, California	2005
Killeen, John J.	LA-08194	Sepulveda Basin Sports Complex Project, Records and Literature Search and Archaeological Survey	2006
Bonner, Wayne H.	LA-08682	Cultural Resources Records Search Results and Site Visit for Cingular Wireless Candidate El-0147-01 (Ramona), 19717 Oxnard Street, Woodland Hills, Los Angeles, Los Angeles County, California	2006
Bonner, Wayne H.	LA-08688	Cultural Resources Records Search and Site Visit Results for T-Mobile Candidate Sv11576a (Vanowen & Oso), 20122 Vanowen Street, Los Angeles, Los Angeles County, California	2007

Author	Report Number	Description	Date
Bonner, Wayne H.	LA-08691	Cultural Resources Records Search and Site Visit Results for Cingular Wireless Candidate Vn-0084-02 (Victory Parking Ramp), 21200 Victory Boulevard, Woodland Hills, Los Angeles County, California	2006
Bonner, Wayne H.	LA-09245	Cultural Resources Records Search and Site Visit Results for Sprint Nextel Candidate LA73XC533 (Best Western), 20122 Vanowen Street, Los Angeles, Los Angeles County, California	2007
Bonner, Wayne H.	LA-09247	Cultural Resources Records Search and Site Visit Results for T-Mobile Candidate SV01581E (Vince Building), 18432 Oxnard Street, Tarzana, Los Angeles County, California	2007
Sriro, Adam	LA-10203*	Negative Archaeological Report - 020471	2000
Sylvia, Barbara	LA-10208*	Negative Archaeological Survey Report: Metal Beam Guardrail (MBGR)	2001
Bonner, Wayne H.	LA-10232	Cultural Resources Records Search and Site Visit Results for T-Mobile USA Candidate SV11576A(XR) (Vanowen & Oso), 20122	2009
Billa, Lorna	LA-10342	Vanowen St., Canoga Park, Los Angeles County, CA	2009
Billat, Lorna	LA-10343	Collocation ("CO") Submission Packet, FCC Form 621, Project Name: Warner Plaza, Project No. CA-2766A	2009
Gust, Sherri	LA-10543	Archaeological Initial Study Report and Mitigation Plan for the San Fernando Valley MRT Fiber Optic Line Project, Cities of Canoga Park, Burbank and Los Angeles, California	2003
Supernowicz, Dana	LA-10616	Cultural Resources Study of the Pierce College Project, AT&T Site No. LAR278A, 6201 N. Winnetka Avenue, Woodland Hills, Los Angeles County, California 91371	2009
Bonner, Wayne	LA-10926	Cultural Resources Records Search and Site Visit Results for T-Mobile USA Candidate SV12455-A (Reseda Tarzana), 6360 Reseda Boulevard, Reseda, Los Angeles County, California	2011
Sander, Jay	LA-11252	Cultural Resources Records Search for T-Mobile USA Inc., SV12165A/Oxnard and Balcom ROW JPA 17731 Oxnard Street, Encino, Los Angeles County, California	2010
Maxon, Patrick	LA-11606*	Phase I Cultural Resources Assessment, Sylmar Ground Return Replacement Project, Los Angeles County, California	2011
Bonner, Wayne	LA-11612	Cultural Resources Records Search and Site Visit Results for AT&T Mobility, LLC Candidate LAR278 (Pierce College), CASPR No: 3551018357, 6201 North Winnetka Avenue, Woodland Hills, Los Angeles County, California	2011
Loftus, Shannon	LA-11674	Cultural Resource Records Search and Site Survey, AT&T Site NL0110, Victory Tampa Medical Center, 19231 Victory Boulevard, Reseda, Los Angeles County, California 91335	2011
Bonner, Wayne and Kathleen Crawford	LA-12129	Cultural Resources Records Search and Site Visit Results for T-Mobile West, LLC Candidate SV00968A (LA968 Victory Tampa Med Bl) 19231 Victory Boulevard, Reseda, California	2012
Wallace, James, Sara Dietler, and Linda Kry	LA-12505*	Draft Phase I Cultural Resources Assessment San Fernando Valley Water Recycling Project City of Los Angeles, California	2012

Author	Report Number	Description	Date
Gold, Alan G. and Jennifer Roland	LA-13191	Phase I Investigation for the Verizon Wireless Einstein Tower Installation Project, Encino, Los Angeles County, California	2015

*indicates study overlaps with the project footprint

Previously Recorded Cultural Resources

The SCCIC records searches identified one previously recorded cultural resource (P-19-188834) mapped within 0.5 mile of the project APE. This resource is an early 1960s gymnasium located at the Pierce College Campus. It is a two-story irregularly shaped wood and mason building with a stepped-out single-story addition. The resource was determined ineligible for NRHP listing by consensus through the Section 106 process, but not evaluated for California Register or local listing (assigned NRHP Status Code 6Y). This resource is not located within the project APE.

Built Environment Resource Directory

The BERD is an inventory of built environment resources maintained by the Office of Historic Preservation. Review of the BERD focused on properties adjacent to streets within the APE, specifically Victory Boulevard, Topham Street, and Oxnard Street between De Soto Avenue and Encino Avenue; Mason Avenue between Kitridge Street and Victory Boulevard; and Tampa Avenue between Victory Boulevard and Ventura Boulevard. A total of 225 properties are listed in the BERD adjacent to the APE. All identified BERD resources were determined ineligible for listing in the NRHP through the Section 106 process; one of these without State Historic Preservation Officer review. None were evaluated for the California Register or Local Listing (see Attachment 2). None of the identified BERD resources are within the APE.

California Historical Landmarks

California Historical Landmarks are buildings, structures, sites, or places that have been determined to have statewide historical interest. A search of the California Historical Landmarks list revealed no California Historical Landmarks within 0.5 mile of the project APE.

LAHCMs

LAHCMs are sites in Los Angeles that have been designated by the Los Angeles Cultural Heritage Commission. A search of the LAHCMs revealed two monuments within 0.5 mile of the project APE. They are neighboring residential buildings and are approximately 800 feet southwest of the project APE (Table 2). No LAHCMs are located within the project APE.

Table 2. Los Angeles Historic-Cultural Monuments within 0.5 Mile of the Project APE

Monument No.	Name	Street Address	Adopted
976	Corbin Palms House	6118 North Jumilla Avenue	02/26/2010
1163	Corbin Palms Model H-3	6134 North Jumilla Avenue	06/20/2018

Los Angeles Historic Resources Inventory (HistoricPlacesLA)

As part of this investigation, a search of the Los Angeles Historic Resources Inventory (HistoricPlacesLA) was conducted. The City of Los Angeles has conducted a comprehensive survey to identify significant historic resources under the SurveyLA program. The historic resources identified in the historic survey have been mapped on HistoricPlacesLA, an interactive map that depicts the Los Angeles historic resources inventory including LAHCMs; Historic Preservation Overlay Zones; and resources identified as eligible for listing on local, state, or federal registers through the SurveyLA program. The data available in the HistoricPlacesLA inventory are updated as additional resources are identified and evaluated for areas not covered by SurveyLA. A search of resources in this database was limited to properties adjacent to streets within the project APE, including Victory Boulevard, Topham Street, and Oxnard Street between De Soto Avenue and Encino Avenue; Mason Avenue between Kittridge Street and Victory Boulevard; and Tampa Avenue between Victory Boulevard and Ventura Boulevard. One historic resource was identified on the Los Angeles Historic Resources Inventory. This is a residential, single-family property, located at 6241 North Corbin Avenue, at the cross street of Topham as a part of the Eastwood Estates/Fieldstone Series Historic District Contributor. This resource appears eligible as a contributor to a Historic Preservation Overlay Zone (HPOZ) through SurveyLA or other survey evaluation. This property is not within the APE.

Historic-era Maps and Aerial Photographs

Historical map research was conducted to understand past land use and disturbance and to identify possible locations of archaeological sensitivity within the project APE. United States Geological Survey (USGS), Sanborn Fire Insurance, and Baist's Real Estate maps were consulted.

No Sanborn maps for the project APE were identified in the course of this archival resource. The project APE was, however, overlaid on Plate 47 from the 1921 Baist's Real Estate Map catalog. This plate shows the entirety of the APE as being within the Southern Pacific Railroad ROW and Topham Street. Topham extended through what is now Victory Boulevard and Oxnard Street. The northern side of the APE has mostly smaller parcels, probably for future housing, while the southern side has larger tracts of land owned by commercial interests. It is bound on the east by Rancho El Encino. Most parcels along the APE are empty, except for the Topham cross streets of Reseda Boulevard and Lindley Avenue. Water pipes are also mapped going north-south at these locations.

The earliest USGS topographic map, the 1903 Calabasas, California 1:625000 map, shows no features or structures except for the Southern Pacific Railroad, or Chatsworth Park Branch, within or adjacent to the project APE. At this time all nearby roads, including those associated with the project, had not yet been constructed. The same is shown on the 1903 Camulos, California (1:125000) map.

The 1928 Reseda, California 1:24000 map shows that the backbone of Victory Boulevard, Topham Street, and Oxnard Street are present, including many cross streets. These roads are only paved near Reseda Boulevard, with the rest being unpaved. Oxnard Street only extends to Lindley Avenue. Everything west of Lindley is mostly hillside. There are approximately 15 structures along these roads adjacent to the railroad and the APE.

The 1944 Calabasas, California 1:62500 map shows a significant change in the region and the project APE. Four small neighborhoods are now present with more than 50 houses adjacent to the APE alone, although the street layout is similar to the 1928 Reseda, California 1:24000 map. The portion of Victory Boulevard within the APE is unpaved. Oxnard Street still only extends to Lindley Avenue.

The 1952 Canoga Park, California 1:24000 map indicates that by the mid-twentieth century the roads extended farther east, into the now-mapped Sepulveda Flood Control Basin. The map shows multiple neighborhoods along Topham Street between Wilbur Avenue and Lindley Avenue, and the entirety of what is now Victory Boulevard was paved. At this point, the roads in the area were very similar to what they are today.

Table 3. Historical USGS Maps Reviewed

Map Name	Scale	Year
Calabasas, California Quadrangle	1:62500	1903
Camulos, California Quadrangle	1:24000	1903
Reseda, California Quadrangle	1:24000	1928
Calabasas, California Quadrangle	1:62500	1944
Canoga Park, CA	1:24000	1952

Aerial photographs of the project APE were accessible on the University of California Santa Barbara Library (UCSBL) Geospatial Database. The aerial images support the archival map research. Two aerial photographs from 1928 and one from 1944 were studied. The first two photographs (frame J-167 and J-200) were taken by plane, on flight C-300, at 1:18,000 scale. Frame J-167 has a view of the western half of the APE, consisting of farmland. The remaining APE is shown on frame J-200. Some structures are visible within individually maintained parcels throughout the central portion of the project. The eastern side is all farmlands. Lastly, the 1944 photo (frame 29-26) was taken on flight DDF-1944 at 1:10,000 scale. The majority of the APE is adjacent to mixed-use single-family homes and agriculture. The area is still predominately agriculture; however, there is extensive new (as of 1944) neighborhoods and residential single-family homes along Topham Street.

Tribal Cultural Resources

Tribal cultural resources are defined as sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe. In addition, tribal cultural resources are either included or determined to be eligible for inclusion in the CRHR; included in a local register of historical resources; or determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to PRC 21074 (a)(1)(A)-(B). In addition to archaeological resources of Native American origin, tribal cultural resources may include but are not limited to waterways and bodies of water such as creeks, lakes, or springs; vegetation communities that have known traditional uses as food, medicine, or raw material for production of tools and crafts; locations of procurement for raw stone and minerals that were used to make tools, rock art, and other goods; trails and trade routes; and places or landscapes that are important to traditional cultural practices, regardless of the presence or absence of archaeological material culture. Initial consultation between LADWP and tribes with known affiliations to the area have identified a likelihood that tribal cultural resources could be present within the project APE. This is based on the project APE's position within or around the known traditional communities or settlements as well as other features such as trails, trade routes, and waterways. To further identify known or potential tribal cultural resources within the APE, a review of ethnographic literature, historic maps, archaeological resources, and the current and historic environmental settings was reviewed by AECOM.

The results of the SCCIC records searches did not identify any resources that could potentially be tribal cultural resources. Maps and ethnographic literature were reviewed to ascertain the possibility of non-artifactual resources. The nearest documented villages include *Siutcanga*, approximately 1.75 miles southeast of the project APE; *Pasheeknga* approximately 7 miles northeast; and *Achooykomenga*, which may be approximately 7.5 miles north of the project APE (McCawley 1996). However, the full extent and exact location of these villages are not currently well defined.

The project APE was assessed for natural resources and landscape features that may be of interest to the tribal community. The project APE has been subject to decades of development and little remains of the flora or fauna endemic to the region. Historically, there were likely patches of useful plant resources in the area, but none now remain to indicate what type of gathering or processing activities may have been undertaken by tribes in the project APE. No known tool stone outcrops or mineral deposits were identified in the course of this investigation. Historic maps show the Los Angeles River potentially draining into the vicinity of the project APE. Although this has been channelized and diverted, historically it would have provided sources of fresh water that create ideal conditions for certain plant resources and local fauna. Temporary camps and activity areas were also commonly established near reliable sources of fresh water. While no known such sites have been identified in the vicinity, the presence of washes and drainages in the project APE indicate the potential for encountering tribal cultural resources.

A review of maps depicting historical and ethnographic settlements and trails, as well as historic topographic maps that show landforms and hydrology, was conducted to identify places where tribal cultural resources have the potential to be observed. A map of trails identified in ethnographic literature compiled by Davis (1961) does not depict any routes in proximity to the project APE, with the closest north-south route about 7 miles east, which is likely the El Camino Viejo a Los Angeles (Davis 1961:5). The *Kirkman - Harriman pictorial and historical map of Los Angeles County: 1860 A.D. 1937 A.D.* (1938) depicts a variety of historic settlements, trails, and geographic locations (SCVHistory 2022). This illustrative map places the estimated route of the Portola expedition about 1 mile east of the project APE. A network of mission roads is depicted across the region, one less than a mile north of and south of the project APE. The map scale is fairly large at 1:200,000 and it is based on historic maps and accounts. For this reason, it is useful in indicating that Spanish period travel routes, likely based off of tribal trail networks, were present in the vicinity of the project APE, though their exact location is difficult to verify. No historic trails or travel routes have been formally recorded within the project APE.

Paleontological Resources

The project footprint is mapped as having surficial deposits of Quaternary alluvium and young alluvial fan deposits ranging in age from the Holocene and latest Pleistocene. The alluvial deposits consist of unconsolidated gravel, sand, and silt from recently active streams and debris-flows. The young alluvial fan deposits are undivided, unconsolidated gravel, sand, and silt with boulders near the base of mountain fronts. Surfaces can show light to moderate pedogenic soil development. Directly adjacent to but still outside of the project APE is a Pliocene coarse-grained Tertiary-age Pico formation of sedimentary origin (Yerkes and Campbell 2005).

The surficial sediments of younger Quaternary alluvium are not likely to produce significant vertebrate fossils, though sensitivity increases with depth where earlier Pleistocene deposits may be encountered. No known fossilized vertebrate remains have been documented in the vicinity of the project APE. However, there are fossil localities nearby from the same sedimentary deposits that occur in the proposed project areas (Kry and Beherec 2014).

Fossil specimens of extinct peccary, ground sloth, camel, horse, and bison have been recovered from 20 to 80 feet below ground surface in other parts of the San Fernando Valley (Beherec and Kry 2014). Generally, paleontological sensitivity increases with depth, with older deposits exhibiting greater potential to yield fossil specimens. Ground-disturbing activities occurring at shallow depths, such as grading or trenching less than 5 feet below ground surface, are unlikely to encounter significant vertebrate fossil remains in the younger Quaternary alluvial and older young alluvial fan sediments that cover the project footprint. Excavations at greater depth increase the potential for encountering older Quaternary alluvial sediments, which have potential to yield fossil specimens (Beherec and Kry 2014).

Field Survey

Field surveys of the project APE were conducted on April 28, 2022, and December 5, 2022, by AECOM archaeologist Alec Stevenson, M.A., RPA; AECOM archaeologist Mahnoor Rahman (under direction of AECOM Secretary of the Interior Professional Qualified staff); and AECOM architectural historian Monica Wilson, M.A. Mr. Stevenson meets the Secretary of the Interior's Professional Qualification Standards in Archaeology. Ms. Wilson meets the Secretary of the Interior's Professional Qualification Standards in Architectural History and History. Usually, a pedestrian transect survey of 15 meters or less is performed; however, because the project APE is in highly developed neighborhoods where work will take place within existing paved roadways of the project APE, the archaeological survey consisted of a windshield survey along the project alignment. The windshield survey was supplemented with targeted examinations of locations identified during the windshield survey where the ground surface is visible. Only apparently undisturbed areas with the potential for ground-disturbing activities were surveyed during these targeted examinations. The purpose of the survey was to identify and record cultural resources that are at least 45 years old and evaluate any discovered resources for historical significance based on criteria for listing in the NRHP and CRHR. The project APE was also examined for evidence of tribal cultural resources or paleontological resources.

The project APE has limited soil visibility, as the APE is limited to the road ROW, which is covered in asphalt and concrete with the exception of tree wells and unpaved easements (**Plate 3**). It is likely that nearly 100 percent of the project APE has been previously disturbed due to road and utility construction. Landscaping greenbelts and small planters with grass, trees, and dirt were present along all project APE associated roads (**Plate 4**) and Tampa Avenue (**Plate 5**) on the sidewalk just outside of the project APE. The project APE along Tampa Avenue similarly includes minor areas of exposed ground surface and is almost entirely paved (**Plates 6 and 7**) In the course of photographing the project APE, targeted inspections of exposed soil in these landscaping features directly adjacent to the project APE were performed to provide context for what may be expected below the road's ground surface. Throughout the examined areas, the soil is predominantly a light tan to yellow-brown, fine-grained silty sand. Modern plastic trash, broken glass, ceramics, and miscellaneous metal refuse were observed in these areas which also exhibited streetlights, power poles, and other utility structures that have impacted most of the soil, occasionally evidenced by fill gravel in the soil.

In the course of the field survey, no archaeological, tribal cultural resources, or paleontological resources were identified in the project APE. One historical resource meeting the age criterion of 45 years or more was identified, the Topham Trunk Line. The Topham Trunk Line was recorded and evaluated on DPR523 forms included in Attachment 2 and is summarized below.

Topham Trunk Line

The Topham Trunk Line consists of approximately 14,160 LF of the original 1917 alignment of 24-inch-diameter riveted-steel pipe beginning at De Soto Avenue and Victory Boulevard and terminating at Tampa Avenue and Ventura Boulevard. Expansions in 1936 and 1937 added 18,625 LF to the alignment. In 1936, 6,045 LF of 36-inch-diameter riveted-steel pipe was added (Unit 43) west of De Soto Street to Canoga Avenue. In 1937, the portion of Ventura Trunk Line connecting Topham Trunk Line to Encino Inlet Line was installed, consisting of approximately 11,210 LF of 24-inch-diameter welded-steel pipe and 1,370 LF of 24-inch-diameter ductile iron pipe. Some additions partially replaced previously constructed portions of the line. The present total length of the Topham Trunk Line is approximately 32,785 LF (**Plates 8 and 9**).

Plate 3: Overview of eastern junction of APE along West Oxnard Street near Encino Avenue (View: East)

Plate 4: Exposed soil adjacent to APE (View: East)

Plate 5: Overview of APE on Topham where current Trunk Line continues south, along Tampa Avenue (View: West)

Plate 6: Overview of project APE along Tampa Avenue and areas of exposed ground surface (View: South)

Plate 7: Overview of project APE along Tampa Avenue at 101 Freeway on-ramp (View: South)

Plate 8. Overview of an underground section being repaired at West Oxnard Street and Etiwanda Avenue, view to west, April 28, 2022

Plate 9. Overview of an underground section at Mason Avenue and Victory Boulevard, view to east, April 28, 2022

The Topham Trunk Line is an entirely underground pipeline with five major gate valves located along the alignment. The line is primarily serviced by the Winnetka Pump Station and the Wells Drive Pump Station, which are connected to the Topham Trunk Line via major water mains. Under normal operations, the Topham Trunk Line supplies the southeastern De Soto Trunk Line (1123SZ) and the 1123SZ portion of the Ventura Trunk Line with water from Rinaldi & De Soto Regulator Station (1196/1123SZ). The Encino Inlet Line supplies the southwestern 1134SZ through the 1134SZ portion of the Ventura Trunk Line with water from Los Angeles Reservoir. However, when Ventura & Wilbur Seasonal Gate is open, the Topham Trunk Line conveys Los Angeles Reservoir water from the Ventura Trunk Line to the De Soto Trunk Line. Although classified as a seasonally operated major gate valve, Ventura & Wilbur is now normally closed.

Topham Trunk Line Evaluation

NRHP Criterion A and CRHR Criterion 1

Under NRHP Criterion A or CRHR Criterion 1, the Topham Trunk Line has no significant association with important historic events. Built in 1917, the Topham Trunk Line is associated with the supply of water, which is one of the most significant themes in the history and development of Los Angeles, and more specifically with the development of the Los Angeles municipal water distribution system after the landmark completion of the Los Angeles Aqueduct from the Owens Valley to the San Fernando Valley. However, the Topham Trunk Line is not the oldest trunk line in Los Angeles and is one of many trunk lines that convey water from Los Angeles Reservoir. The Topham Trunk Line was constructed during the period of significance for potentially significant water delivery resources (1902–1980) and provided for water delivery; however, the Topham Trunk Line does not distinctively “reflect significant trends in community planning relating to the expansion of publicly owned utilities to provide water and power services to a city growing in both area and population” (SurveyLA 2017:31).

The Topham Trunk Line was designed and constructed as part of the overall early twentieth-century expansion of Los Angeles's water distribution system to realize Fred Eaton's and William Mulholland's aspirations for a growing metropolis, but it does not reflect a specific significant trend in planning related to the development of a particular community. Rather, it served as a fairly simple conduit within the Los Angeles municipal water distribution system. The Topham Trunk Line does not reflect a significant contribution to local history that would meet NRHP Criterion A or CRHR Criterion 1.

<u>NRHP Criterion B and CRHR Criterion 2</u>

Under NRHP Criterion B or CRHR Criterion 2, the Topham Trunk Line is not significant for any associations with the lives of persons important to history. Research did not indicate that any individuals involved with the construction or design of the resource's surviving elements made demonstrably important contributions to history at the local, state, or national level.

<u>NRHP Criterion C and CRHR Criterion 3</u>

Under NRHP Criterion C or CRHR Criterion 3, the Topham Trunk Line is not significant because it is not an important example of a type, period, or method of construction. The Topham Trunk Line is a typical example reflecting twentieth-century construction methods. The Topham Trunk Line was designed as an approximately 14,160 LF pipeline consisting of 24-inch-diameter riveted steel pipe. Of typical design, materials, and construction methods, the Topham Trunk Line does not "illustrate technological innovations in civil engineering relating to the development of the city's water storage and distribution system" (SurveyLA 2017:31–32). Further, the California Department of Transportation (Caltrans) historic context, *Water Conveyance Systems in California*, notes properties eligible under NRHP Criterion C/CRHR Criterion 3 may have unique values or they may be the best or good examples of a type of water conveyance property. The earliest, best preserved, largest, or sole surviving examples of particular types of water conveyance systems or a property that introduced a design innovation may be eligible as examples of evolutionary trends in engineering. To be considered a good representative of that type, period, or method of construction, a water conveyance system must possess "distinctive characteristics," the common features or traits of that type, period, or method of construction. Through those distinctive characteristics, a property must clearly illustrate one or more of the following: the pattern of features common to a particular class of resources; the individuality or variation of features that occurs within the class; the evolution of that class; or the transition between classes of resources (JRP and Caltrans 2000).

Designed by the engineers of the Bureau of Waterworks and Supply circa 1917, the engineering of the Topham Trunk Line employed basic principles of a main water distribution line. The pipeline materials, consisting of riveted prefabricated steel pipes and poured/board-formed concrete, were the standard materials used for the Los Angeles water distribution system pipelines from 1913 until the 1980s. This process of manufacturing water pipes from steel sheets and plates that were rolled and riveted together was first pioneered during the late 1850s. This method of fabrication was not only economical but was versatile enough to meet the requirements of individually designed projects wherein pipe wall thickness could readily be adjusted to fit different heads of a pipeline (Cates 1971). Additionally, the construction methods involving the assembly of prefabricated elements adjacent to open trenching were unremarkable and the standard method employed by the Water Department to lay pipe.

The Topham Trunk Line is not the earliest, best preserved, largest, or sole surviving example of its type, nor does it represent the work of a master. The utilitarian pipeline does not possess high artistic values because it was designed for function and utility and not for aesthetic quality. Therefore, the Topham Trunk Line does not meet NRHP Criterion C or CRHR Criterion 3.

NRHP Criterion D and CRHR Criterion 4

The Topham Trunk Line is not likely to yield further information important to history or prehistory because the construction history and use of this resource are well documented. Therefore, this resource does not meet NRHP Criterion D or CRHR Criterion 4.

Integrity Analysis

Although the Topham Trunk Line does not meet the NRHP or CRHR criteria, this evaluation assessed its integrity to a potential period of significance, which would date to 1917, the year the line was completed. The Topham Trunk Line retains integrity of location, feeling, and association, but does not retain integrity of design, materials, workmanship, or setting. It is in its original location and retains its feeling and association because it expresses its historic purpose as a functional, primarily underground water system. However, the design, materials, and workmanship have lost integrity. The design of the pipeline has been substantially altered. As a result of expansion projects in 1936 and 1937, 18,625 LF of pipe of various sizes and materials was added to the original 14,160 LF alignment. Only 43 percent of the Topham Trunk Line is original. The Topham Trunk Line as a whole has been actively maintained and upgraded during a century of use. Integrity of workmanship is also lost because the system has been altered with modern construction methods that replaced the outdated metal riveting technology used during its construction in 1917. The Topham Trunk Line does not retain integrity of materials because the alterations have added new sections and introduced new materials into the water system. While the Topham Trunk Line continues to carry water through the distribution system, it no longer retains the integrity of design, materials, or workmanship of a 1917-constructed water pipeline.

Summary and Evaluation

In summary, the Topham Trunk Line retains only three aspects of integrity, including location, feeling, and association. Based on the parameters for eligibility established by Office of Historic Resources, an eligible resource must retain integrity of five of the seven aspects of integrity: design, materials, location, feeling, and association (SurveyLA 2017:31–32). The Topham Trunk Line does not retain integrity of design, materials, workmanship, or setting and no longer retains the integrity of an underground water system constructed in 1917. It is recommended as ineligible for the NRHP and CRHR under all applicable criteria.

See Attachment 2 for further details.

Sacred Lands File Search

A Sacred Lands File (SLF) search was conducted by the Native American Heritage Commission (NAHC) to identify any Native American cultural resources that may be Traditional Cultural Properties or tribal cultural resources and that might be affected by the proposed project, as required by CEQA as amended by AB 52.

The NAHC sent LADWP a letter providing the SLF results and a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the project. The results of the SLF were positive. The NAHC results are not exhaustive or specific. Often a tribe is the only source of additional information regarding a positive SLF check or any tribal cultural resource. Documents pertaining to the SLF search are provided as Attachment 3.

LADWP is conducting consultation under AB 52 separately from this cultural resources study.

Assembly Bill 52 Consultation

The proposed project is subject to compliance with AB 52 (PRC 21074), which requires consideration of impacts to TCRs as part of the CEQA process, and that the lead agency notify California Native American

Tribal representatives that have requested notification who are traditionally or culturally affiliated with the geographic area of the project site. In compliance with AB 52, LADWP has contacted all NAHC-listed traditionally geographically affiliated tribal representatives that have requested project notification. All records of correspondence related to AB 52 notification and any subsequent consultation are on file with LADWP.

Management Recommendations

Paleontological Recommendations

The sensitivity of the proposed project to encounter significant fossil remains appears low to moderate. Geologic maps indicate that the project APE lies within an area mapped as having surficial deposits of Quaternary alluvium and older young alluvial fan deposits. No known fossil specimens have been identified in the APE; however, fossilized remains have been encountered in similar older quaternary alluvial deposits nearby. Soils at relatively shallow depths can reasonably be assumed to have been disturbed in the recent past by the construction and maintenance of roads and utilities, as well as by natural weathering. Shallow excavations in the project APE, those less than 5 feet in depth, are unlikely to yield intact fossils. Greater depths in the APE may exhibit older Quaternary alluvial sediments. Deeper excavations within the project APE, which may extend as far as 40 feet below surface, have low to moderate potential to encounter fossil deposits. Based on the results of archival research, no paleontological monitoring is recommended at this time. If potential fossil remains are encountered by the proposed project, work will be temporarily halted in the vicinity of the find and LADWP will contact a qualified paleontologist to evaluate and determine appropriate treatment for the resource.

Archaeological Recommendations

Based on the results of the archival research and surveys, it is possible, but unlikely, that significant archaeological or tribal cultural resources will be encountered during ground-disturbing activities for the proposed project. The site is located within a heavily disturbed urban area. The primary roadways in the APE were initially developed in the early twentieth century and, by the mid-twentieth century, Victory Boulevard, Topham Street, and Oxnard Street were well-developed transit routes lined with commercial and residential properties. In addition, numerous below-grade utilities have been installed throughout the entire APE. The process likely heavily impacted any prehistoric or early historic remains that may have existed in the APE prior to road development. In addition, the results of the survey were negative. Based on this, there is low potential that archaeological resources will be encountered during ground-disturbing activities for the proposed project. The following recommendations are proposed for the TTLR Project:

Inadvertent Discovery of Archaeological Resources

Although not expected to occur due to the low potential in the APE, in the event of an inadvertent discovery of archaeological resources during construction activities, the proposed project would be subject to California PRC Section 21083.2(i) regarding provisions related to the accidental discovery of archaeological resources. Furthermore, the proposed project would implement BMP CUL-1, as discussed previously, which would require all field supervisors and all construction workers to participate in training on cultural resources awareness prior to the initiation of project construction on project sites that involve ground-disturbing activities. The training would include a description of the types of cultural resources (including tribal cultural resources and human remains) that could inadvertently be encountered during ground-disturbing activities, the sensitivity of the resources, the legal basis for protection of the resources, and the penalties for unauthorized collection of or knowingly damaging the resources. The training would address the proper procedures in the event of an inadvertent discovery of a cultural resource, including the immediate halting of work in the area of the discovery, notification of appropriate individuals of the discovery, the establishment of appropriate protective buffer zones around the discovery, and the continued avoidance of the protected area until the resource has been evaluated by qualified individuals and an appropriate treatment plan has been developed and implemented. These procedures would be documented in a CRMP that establishes, in the event of inadvertent discovery of cultural resources, monitoring procedures (including potential Native American monitors), notification procedures, key staff, and preliminary treatment measures for potential discoveries. The CRMP would be written to ensure compliance with appropriate state and federal laws, including California PRC Section 21083.2(i). With compliance with existing regulations as well as implementation of BMP CUL-1, the impact related to inadvertent discovery of archaeological resources during construction activities would be less than significant.

Built Environment Recommendations

Based on the results of this investigation, no historical resources were identified within the APE for the purposes of CEQA. Since the project would be restricted to below-grade improvements within the existing roadways and there is no potential for direct or indirect effects on historical resources for the purposes of CEQA, no specific treatments are recommended for built environment resources.

Tribal Cultural Resources Recommendations

It is possible that buried cultural resources that may rise to the significance of tribal cultural resources may exist within the project area. The following recommendations are proposed for the TTLR Project:

Tribal Monitoring

A tribal monitor shall be invited to monitor project-related ground-disturbing activities from Lindley Avenue to the eastern terminus of the proposed project alignment that have a reasonable likelihood of encountering tribal cultural resources. The tribal monitor shall be ancestrally affiliated with the project area and qualified by their tribe to monitor tribal cultural resources. Before initiating ground-disturbing activities, the tribal monitor shall conduct a brief awareness training session for the benefit of all construction workers and supervisory personnel. The training, which could be held in conjunction with the project's initial on-site safety meeting, shall explain the importance of and legal basis for the protection of significant tribal cultural resources. Each worker shall be notified of the proper procedures to follow in the event that tribal cultural resources or human remains are uncovered during ground-disturbing activities. These procedures include work curtailment or redirection, and immediately contacting the site supervisor and archaeological and tribal monitor.

Inadvertent Discoveries

In the event that an archaeological resource inadvertently discovered during project construction is determined to be potentially of Native American origin based on the initial assessment of the find by a qualified archaeologist pursuant to California Public Resources Code Section 21083.2(i), the Native American tribes that consulted on the proposed project pursuant to California Assembly Bill 52 shall be notified and be provided information about the find to allow for early input from the tribal representatives with regards to the potential significance and treatment of the resource.

If, as a result of the resource evaluation and tribal consultation process, the resource is considered to be a tribal cultural resource in accordance with California PRC Section 21074, determined to be eligible for inclusion in the California Register of Historic Resources or a local register of historical resources or determined to be significant by LADWP (the CEQA lead agency), the qualified archaeologist shall monitor all remaining ground-disturbing activities in the area of the resource, and a tribal monitor from a consulting Native American tribe shall be invited to monitor the ground-disturbing activities. The tribal monitor shall be ancestrally affiliated with the project area and qualified by their tribe to monitor tribal cultural resources.

The input of all consulting tribes shall be taken into account in the preparation of any required treatment plan for the resources prepared by the qualified archaeologist. Work in the area of the discovery may not resume until evaluation and treatment of the resource is completed and/or the resource is recovered and removed from the site. Construction activities may continue on other parts of the construction site while evaluation and treatment of the resource takes place.

If human remains are discovered, work in the immediate vicinity of the discovery will be suspended and the Los Angeles County Coroner contacted. If the remains are deemed Native American in origin, the coroner will contact the NAHC and identify a Most Likely Descendant pursuant to PRC Section 5097.98, CCR Section 15064.5, and the CRMMP. Work may be resumed at the landowner's discretion but will only commence after consultation and treatment have been concluded. Work may continue on other parts of the project while consultation and treatment are conducted.

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Attachment 1 – Built Environment Resource Directory List
Attachment 2 – DPR Forms
Attachment 3 – NAHC SLF Search Results

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AECOM

Attachment 1

Built Environment Resource Directory List

OTIS ID	Property Number	Address	Evaluation Status	Parcel_Number	Year Built
566601	131594	19212 Aetna St, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2156-001-003	1949
566474	131669	17600 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2229-036-001	1950
566472	131667	17612 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2229-036-003	1950
566470	131665	17622 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2229-036-005	1950
566481	131676	17626 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2229-036-006	1950
566475	131670	17632 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2229-036-007	1950
566477	131672	17606 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2229-036-002	1950
566478	131673	17636 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2229-036-008	1950
566480	131675	17560 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2229-035-016	1950
566504	131699	17710 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	213-031-023	1950
566482	131677	17700 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-025	1950
566498	131693	17704 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-024	1950
566473	131668	17642 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2229-036-009	1950
566479	131674	17646 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2229-036-010	1950
566471	131666	17652 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2229-036-011	1950
566490	131685	17714 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-022	1950
566476	131671	17656 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2229-036-012	1950
566484	131679	17724 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-020	1950
566501	131696	17750 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-015	1950
566495	131690	17800 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-014	1950
566493	131688	17730 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-019	1950
566505	131700	17740 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-017	1950
566488	131683	17804 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-013	1950
566483	131678	17744 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-016	1950
566500	131695	17720 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-021	1950

OTIS ID	Property Number	Address	Evaluation Status	Parcel_Number	Year Built
566487	131682	17734 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-018	1950
566502	131697	17810 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-012	1950
566491	131686	17824 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-009	1950
566494	131689	17820 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-010	1950
566485	131680	17814 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-011	1950
566503	131698	17850 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-004	1950
566497	131692	17860 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-002	1950
566496	131691	17840 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-006	1950
566499	131694	17830 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-008	1950
566489	131684	17834 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-007	1950
566492	131687	17864 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-001	1950
566486	131681	17854 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-003	1950
566506	131701	17844 Bessemer St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-031-005	1950
566522	131719	18300 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-013-016	1950
566508	131704	18318 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-013-013	1950
566513	131710	18306 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-013-015	1950
566507	131703	18312 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-013-014	1950
566509	131706	18328 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-013-011	1950
566515	131712	18334 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-013-010	1950
566516	131713	18340 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-013-009	1950
566514	131711	18322 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-013-012	1950
566518	131715	18406 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-013-005	1950
566511	131708	18412 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-013-004	1950
566520	131717	18418 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-013-003	1950
566510	131707	18400 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-013-006	1950

OTIS ID	Property Number	Address	Evaluation Status	Parcel_Number	Year Built
566519	131716	18352 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-013-007	1950
566517	131714	18346 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-013-008	1950
566512	131709	18424 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-013-002	1950
566523	131720	18430 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-013-001	1950
566527	131724	18954 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-016-009	1950
566531	131733	18946 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-016-010	1950
566344	131729	19016 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-016-006	1950
566532	131734	19010 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-016-007	1950
566524	131721	19022 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-016-005	1950
566342	131727	19002 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-016-008	1950
566345	131730	19028 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-016-004	1950
566528	131725	19106 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-017-018	1950
566533	131735	19040 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-016-002	1950
566525	131722	19048 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-016-001	1950
566534	131736	19114 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-017-017	1950
566529	131731	19100 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-017-019	1950
566536	131738	19126 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-017-015	1950
566343	131728	19034 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-016-003	1950
566526	131723	19132 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-017-014	1950
566530	131732	19120 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-017-016	1950
566351	131749	19154 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-017-002	1953
566341	131726	19138 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-017-013	1950
566538	131740	19148 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-017-001	1950
566353	131751	19160 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-017-003	1953
566535	131737	19144 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-017-012	1950

OTIS ID	Property Number	Address	Evaluation Status	Parcel_Number	Year Built
566537	131739	19166 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-017-004	1953
566354	131752	19200 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-017-005	1953
566347	131745	19218 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-017-008	1953
566355	131753	19224 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-017-009	1953
566539	131741	19212 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-017-007	1953
566346	131743	19236 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-017-011	1953
566349	131747	19206 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-017-006	1953
566350	131748	19230 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-017-010	1953
566352	131750	19244 Bessemer St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-018-001	1953
566467	131662	17469 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-033-004	1949
566554	131543	17507 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-033-002	1949
566545	131524	17465 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-033-005	1949
566573	131562	17513 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-033-001	1949
566553	131542	17459 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-033-006	1949
566557	131546	17565 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-001-013	1949
566734	131531	17501 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-033-003	1949
566555	131544	17535 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-001-019	1949
566574	131563	17539 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-001-018	1949
566735	131532	17545 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-001-017	1949
566546	131525	17551 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-001-015	1949
566718	131504	17601 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-001-010	1949
566736	131535	17561 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-001-014	1949
566570	131559	17569 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-001-012	1949
566733	131519	17575 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-001-011	1949
566559	131548	17611 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-001-008	1949

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566556	131545	17549 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-001-016	1949
566558	131547	17607 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-001-009	1949
566561	131550	17631 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-001-005	1949
566547	131526	17623 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-001-006	1949
566560	131549	17617 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-001-008	1949
566726	131512	17637 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-001-004	1949
566738	131538	17653 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-001-002	1949
566575	131564	17659 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-001-001	1949
566737	131537	17649 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2254-001-003	1949
566715	131501	17713 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-003	1949
566562	131551	17701 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-001	1949
566727	131513	17707 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-002	1949
566716	131502	17725 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-005	1949
566739	131539	17729 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-006	1949
566576	131565	17735 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-007	1949
566563	131552	17801 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-010	1949
566719	131505	17741 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-008	1949
566728	131514	17719 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-004	1949
566541	131520	17807 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-011	1949
566564	131553	17827 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-015	1949
566548	131527	17823 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-014	1949
566740	131540	17817 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-013	1949
566577	131566	17813 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-012	1949
566583	131572	17745 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-009	1949
566571	131560	17831 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-016	1949

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566549	131528	17841 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-018	1949
566565	131554	17847 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-019	1949
566729	131515	17837 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-017	1949
566542	131521	17851 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-020	1949
566578	131567	17861 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-022	1949
566566	131555	17857 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-021	1949
566552	131541	17865 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-023	1949
566724	131510	17937 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-032	1949
566567	131556	17927 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-034	1949
566721	131507	17921 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-035	1949
566550	131529	17931 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-033	1949
566543	131522	17917 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-036	1949
566723	131509	17905 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-038	1949
566568	131557	17941 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-031	1949
566730	131516	17901 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-039	1949
566580	131569	17947 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-030	1949
566579	131568	17911 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-037	1949
566569	131558	18023 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-024	1949
566572	131561	18009 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-027	1949
566544	131523	18015 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-026	1949
566722	131508	18029 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-023	1949
566720	131506	18001 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-029	1949
566581	131570	17947 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-030	1949
566717	131503	18045 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-026-005	1949
566732	131518	18033 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-022	1949

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566584	131573	18039 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-021	1949
566731	131517	18005 Bullock St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-028	1949
566368	131767	6081 Calvin Avenue, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2153-029-005	1920
566322	131879	6025 Donna Avenue, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2156-013-015	1944
566323	131880	6028 Donna Avenue, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2156-014-038	1954
566682	131467	19850 Friar St, Woodland Hills, CA, 91367	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2134-034-004	1954
566674	131459	19800 Friar St, Woodland Hills, CA, 91367	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2134-034-010	1954
566680	131465	19830 Friar St, Woodland Hills, CA, 91367	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2134-034-007	1954
566676	131461	19862 Friar St, Woodland Hills, CA, 91367	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2134-034-002	1954
566679	131464	19808 Friar St, Woodland Hills, CA, 91367	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing		1954
566675	131460	19858 Friar St, Woodland Hills, CA, 91367	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2134-034-003	1954
566678	131463	19822 Friar St, Woodland Hills, CA, 91367	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2134-034-008	1954
566681	131466	19844 Friar St, Woodland Hills, CA, 91367	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2134-034-005	1954
566684	131469	6301 Jumilla Avenue, Woodland Hills, CA, 91367	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2134-033-008	1954
566685	131470	6309 Jumilla Avenue, Woodland Hills, CA, 91367	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2134-033-007	1954
566686	131471	6313 Jumilla Avenue, Woodland Hills, CA, 91367	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2134-033-006	1954
566687	131472	6321 Jumilla Avenue, Woodland Hills, CA, 91367	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2134-033-005	1954
566688	131473	6329 Jumilla Avenue, Woodland Hills, CA, 91367	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2134-033-004	1954
566582	131571	6040 Lindley Avenue, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2159-010-001	1949
566190	131989	6101 Lindley Avenue, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-015-040	1948
566066	132023	6170 Melvin Avenue, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2153-028-015	1938
566067	132024	6175 Melvin Avenue, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2153-023-017	1952
566065	132022	6162 Melvin Avenue, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2153-028-016	1939
566082	132040	18924 Oxnard St, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2156-018-034	1949
566081	132039	18920 Oxnard St, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2156-018-033	1949

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566083	132041	18970 Oxnard St, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2156-014-037	1954
566080	132038	18914 Oxnard St, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	24156-018-039	1937
566088	132046	19108 Oxnard St, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2156-008-014	1951
566090	132048	19117 Oxnard St, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2156-001-019	1951
566093	132051	19102 Oxnard St, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2156-008-015	1951
566677	131462	6324 Quartz Avenue, Woodland Hills, CA, 91367	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2134-033-015	1954
566683	131468	6327 Quartz Avenue, Woodland Hills, CA, 91367	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2134-034-012	1954
566100	132058	6075 Reseda Boulevard, Reseda, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2127-018-001	1950
566101	132059	6134 Shirley Avenue, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2153-029-008	1943
566469	131664	6110 Shoshone Avenue, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2229-035-015	1950
566540	131742	6115 Sylvia Avenue, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-018-002	1953
566348	131746	6114 Tampa Avenue, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2128-018-011	1953
566107	132065	6029 Topeka Drive, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2156-014-020	1953
566109	132067	17911 Topham St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-024-028	1923
566112	132070	17921 Topham St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-024-021	1949
566115	132073	17945 Topham St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-024-013	1926
566108	132066	17901 Topham St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-024-018	1940
566116	132074	17953 Topham St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-024-012	1923
566120	132078	18013 Topham St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-024-008	1924
566122	132080	18027 Topham St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-024-043	1920
566118	132076	18007 Topham St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-024-009	1947
566129	132087	18201 Topham St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-015-037	1947
566125	132083	18119 Topham St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-015-022	1947
566126	132084	18125 Topham St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-015-032	1946
566130	132088	18215 Topham St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-015-012	1953

OTIS ID	Property Number	Address	Evaluation Status	Parcel_Number	Year Built
565943	132092	18241 Topham St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-015-006	1930
566128	132086	18137 Topham St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-015-019	1946
566123	132081	18043 Topham St, Encino, CA, 91316	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2123-024-005	1931
565945	132094	18253 Topham St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-015-004	1952
565941	132089	18229 Topham St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-015-010	1954
565946	132095	18259 Topham St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-015-004	1952
565942	132091	18239 Topham St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2124-015-008	1953
565948	132097	18709 Topham St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2127-017-019	1952
566131	132098	18731 Topham St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2127-017-016	1946
566408	132099	18819 Topham St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2127-017-023	1920
566410	132101	18837 Topham St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2127-017-007	1946
566409	132100	18831 Topham St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2127-017-008	1923
566094	132052	19150 Topham St, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2156-001-017	1951
566084	132042	19138 Topham St, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2156-001-018	1951
566091	132049	19158 Topham St, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2156-001-016	1951
566412	132103	19204 Topham St, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2156-001-004	1942
566095	132053	19166 Topham St, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2156-001-015	1951
566413	132104	19222 Topham St, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2156-001-001	1954
566414	132105	19326 Topham St, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2153-035-008	1947
566417	132109	19622 Topham St, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2153-023-018	1945
566416	132108	19422 Topham St, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2153-029-006	1953
566411	132102	18841 Topham St, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2127-017-003	1948
566415	132106	19350 Topham St, Tarzana, CA, 91356	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2153-035-026	1940
667957		17653 Bullock St, Encino, CA, 91316	Determined ineligible for NR pursuant to Section 106 without review by SHPO		1949
565964	132176	6100 Wilbur Avenue, Los Angeles, CA, 91335	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing	2127-017-002	1949

AECOM

Attachment 2

DPR Forms

PRIMARY RECORD

Primary#____________________
HRI#____________________
Trinomial____________________
NRHP Status Code 6Z

Other Listings ____________________
Review Code Reviewer Date __________

 ***Resource Name or #:** (Assigned by recorder) Topham Trunk Line

P1. Other Identifier: Topham and Canoga Park Pipe Line; Topham Pipe Line
***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Los Angeles
***b. USGS 7.5' Quad** Canoga Park **T** n/a; **R** n/a; _ **¼ of** _ **¼ of Sec** Unsectioned; **B.M.** San Bernardino
c. Address N/A **City** Los Angeles **Zip** 91356
d. UTM: (Give more than one for large and/or linear resources) Zone 11S; 353653.30 m E / 3784173.70 m N; Zone 11S; 360445.59 m E/ 3783191.02 m N
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The Topham Trunk Line consists of approximately 14,160 Linear Feet (LF) of the original alignment of 24-inch diameter riveted-steel pipe beginning at De Soto Avenue and Victory Boulevard and terminating at Tampa Avenue and Ventura Boulevard. Expansions in 1936 and 1937 added 18,625 LF to the alignment. In 1936, 6,045 LF of 36-inch diameter riveted-steel pipe was added (Unit 43) west of De Soto Street to Canoga Avenue. In 1937, the portion of Ventura Trunk Line connecting Topham Trunk Line to Encino Inlet Line was installed, consisting of consists of approximately 11,210 LF of 24-inch diameter welded-steel pipe and 1,370 LF of 24-inch diameter ductile iron pipe. The present total length of the Topham Trunk Line is approximately 32,785 LF (**Photographs 1-3**). (SEE CONTINUATION SHEET).

***P3b. Resource Attributes:** (List attributes and codes) HP 11. Engineering Structure
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐ Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing

P5b. Description of Photo: (view, date, accession #)
Photograph 1. Overview of an underground section at Topham Street and Tampa Avenue, view to north, April 28, 2022

***P6. Date Constructed/Age and Source:** ☒Historic ☐Prehistoric ☐Both 1917; expanded 1937

***P7. Owner and Address:** Los Angeles Department of Water and Power (LADWP), 111 North Hope Street, Los Angeles, CA 70012

***P8. Recorded by:** (Name, affiliation, address) Monica Wilson, AECOM, 401 West A Street, Suite 1200, San Diego, CA 92101

***P9. Date Recorded:** April 28, 2022

***P10. Survey Type:** Intensive

***P11. Report Citation**: AECOM, 2022. Topham Trunk Line Project - Cultural Resources Technical Memorandum.

***Attachments:** ☐NONE ☒Location Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

***NRHP Status Code** 6Z

***Resource Name or #** (Assigned by recorder) Topham Trunk Line

B1. Historic Name: Topham and Canoga Park Pipe Line
B2. Common Name: Topham Trunk Line
B3. Original Use: Water conveyance
B4. Present Use: Water conveyance
***B5. Architectural Style:** None
***B6. Construction History:** (Construction date, alterations, and date of alterations) (SEE CONTINUATION SHEET)

***B7. Moved?** X **No** __**Yes** __**Unknown** **Date:** ________ **Original Location:**____________
***B8. Related Features:** n/a

B9a. Architect: Bureau of Waterworks and Supply b. Builder: Bureau of Waterworks and Supply

***B10. Significance: Theme** Public Utilities **Area** Los Angeles
Period of Significance 1917 **Property Type** Water Conveyance **Applicable Criteria** n/a
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The Topham Trunk Line does not meet the criteria for listing in the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR).

(SEE CONTINUATION SHEET)

B11. Additional Resource Attributes: (List attributes and codes)

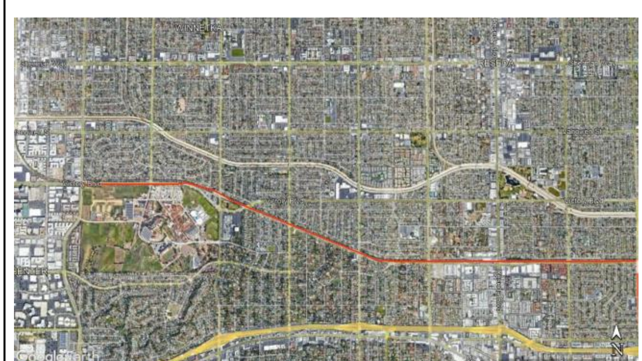
***B12. References:** SEE CONTINUATION SHEET

B13. Remarks:

***B14. Evaluator:** Monica Wilson

***Date of Evaluation:** April 2022

(Sketch Map with north arrow required.)

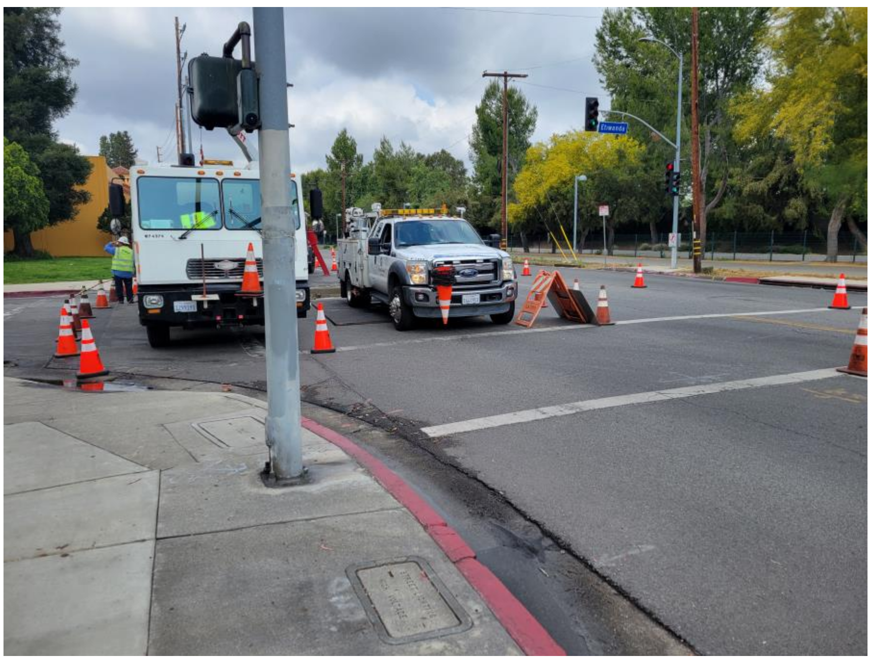


(This space reserved for official comments.)

***P3a. Description (continued):**

The Topham Trunk Line is an entirely underground pipeline with five major gate valves located along the alignment. The line is primarily serviced by the Winnetka Pump Station and the Wells Drive Pump Station which are connected to the Topham Trunk Line via major water mains. Under normal operations, the Topham Trunk Line supplies the southeastern De Soto Trunk Line (1123-foot service zone [SZ]) and the 1123SZ portion of Ventura Trunk Line with water from Rinaldi & De Soto Regulator Station (1196/1123SZ). The Encino Inlet Line supplies the southwestern 1134SZ through the 1134SZ portion of Ventura Trunk Line with water from Los Angeles Reservoir. However, when Ventura & Wilbur Seasonal Gate is open, Topham Trunk Line conveys Los Angeles Reservoir water from Ventura Trunk Line to De Soto Trunk Line. Although classified as a seasonally operated major gate valve, Ventura & Wilbur is now normally closed.

P5b. Photographs (continued):



Photograph 2. Overview of an underground section being repaired at West Oxnard Street and Etiwanda Avenue, view to west, April 28, 2022

***Resource Name or #** (Assigned by recorder) Topham Trunk Line
Recorded by: M. Wilson ***Date:** April 2022 ☒ Continuation ☐ Update

Photograph 3. Overview of an underground section at Mason Avenue and Victory Boulevard, view to east, April 28, 2022

***B6. Construction History (continued):**

Originally constructed in 1917, subsequent alterations have lengthened the Topham Trunk Line. The original length of the Topham Trunk Line was approximately 14,160 LF. As a result of expansion projects in 1936 and 1937, 18,625 LF of pipe of various sizes and materials was added to the original 14,160 LF alignment. Only 43% of the Topham Trunk Line is original. The present total length of the Topham Trunk Line is approximately 32,785 LF

In 1936, 6,045 LF of 36-inch diameter riveted-steel pipe with welded cement caulked joints was added (Unit 43) west of De Soto Street to Canoga Avenue. Also, in 1936, as part of an experimental program the interior of the Topham Trunk Line (and various other pipelines) was sandblasted, enameled, and coated with red lead primer (City of Los Angeles Board of Water and Power Commissioners 1936). In 1937, the portion of Ventura Trunk Line connecting Topham Trunk Line to Encino Inlet Line was installed, consisting of consists of approximately 11,210 LF of 24-inch diameter welded-steel pipe and 1,370 LF of 24-inch diameter ductile iron pipe. According to records kept by LADWP, major rupture repairs occurred in 2006, 2011 and 2014; and there were four rupture events in 2017. The June 2017, rupture was repaired along the line at Tampa Avenue and Topham Street and was documented in the *Los Angeles Times* (Plate 3) (Los Angeles Times 2017).

Extensive alterations throughout the entire Topham Trunk Line have included modifications for modern use, service expansion, and technological developments; repairs, replacements, and reconstructions following disaster events and failures; cement and slip lining sections; and ongoing maintenance. Additionally, connections to pumping stations, valves, and other improvements were installed along the pipeline.

***B10. Significance (continued):**

Historic Context
The following historic context includes sections excerpted from the *Historical Evaluation of Los Angeles City Trunk Line, Memorandum* (AECOM 2022) and incorporates information from the *Los Angeles Citywide Historic Context Statement, Context: Public and Private Institutional Development, 1850-1980, Sub-Context: Municipal Infrastructure and Services, 1900-1980; Theme: Municipal Water and Power, 1902-1980* (SurveyLA 2017) and *Water Conveyance Systems in California: Historic Context Development and Evaluation Procedures* (JRP and Caltrans 2000) and additional information related to the Topham Trunk Line.

Los Angeles
In 1781, a small group of *pobladores* of African, Native American, and Spanish descent settled the west bank of the Los Angeles River (Rio Porciúncula) and established the Pueblo de la Reina de Los Angeles (the Pueblo of the Queen of the Angels, or Los Angeles) (NPS n.d.). The pueblo manifested as an outpost for Spanish colonial ambitions that intended to create a series of civilian pueblos to support Catholic religious missions and military *presidios* while expanding colonial influence in the area. The Los Angeles pueblo slowly gained importance as a center of commerce and hosted a population of 315 by 1800. In 1821, Mexico won its independence from Spain, and the authority of the California missions began to decline, ending with their secularization in 1834. In response, Spain initiated a series of land grants to colonize Alta California in the long term. These land grants, also known as ranchos, commonly fell under ownership of Spanish loyalists. Before the American period that began in 1848 with the signing of the Treaty of Guadalupe Hidalgo, the Pueblo de la Reina de Los Angeles and its surrounding area continued to operate as a center of economic activity and farmland, virtually unaffected by any political changes (Robinson 1981).

The Southern California cattle industry boomed in the 1850s because of the demand for goods and services by the miners in Northern California during the Gold Rush. In the 1860s, many rancho families lost titles to their land, creating room for development by new U.S. settlers. By the 1870s, Los Angeles expanded beyond the original pueblo with new subdivisions and tracts. In that period, Southern California's citrus industry flourished, and the San Fernando Valley to the north emerged as the center for wheat cultivation. Between 1876 and 1887, the completion of the Southern Pacific Railroad and the Atchison, Topeka & Santa Fe Railway ignited a real estate boom that created hundreds of new towns and further expanded Los Angeles. The city's population grew from 5,700 in 1870 to 50,000 in 1890. By the turn of the twentieth century, Los Angeles had become a leading West Coast metropolis (Fogelson 1967).

In the first half of the twentieth century, Los Angeles continued to grow as agriculture became a crucial part of the local economy. In 1915, the City of Los Angeles annexed the neighboring San Fernando Valley, a rapidly growing agricultural center due to the new water supply from William Mulholland's Los Angeles Aqueduct completed in 1913. By the 1920s, the citrus industry fueled the local economy, driving the price of land for orange and lemon orchards as high as $5,000 an acre, eight times greater than the cost of other land (County of Los Angeles n.d.). Other local crops included olives, alfalfa, apricots, asparagus, barley, hay, beans, beets, cabbage, citrus, corn, lettuce, melons, peaches, potatoes, pumpkins, squash, tomatoes, and walnuts (County of Los Angeles n.d.).

During the first three decades of the twentieth century, more than two million people moved to Los Angeles County, transforming it from a largely agricultural region into a major metropolitan area. By 1945, Los Angeles had undertaken 95 annexations, expanding from a 28-square-mile agrarian pueblo into a densely populated city, covering more than 450 square miles (Robinson 1979). Following World War II, developers increasingly purchased large portions of agricultural land in response to the city's growing population. The 1950s saw large tracts of land developing into new neighborhoods and the construction of the city's complex freeway system. During the postwar era, Los Angeles developed as a sprawling metropolis that came to represent modern American culture with its freeway system, entertainment industry, affordable neighborhoods, and high-tech aqueducts (Robinson 1979).

Los Angeles Water Supply
Historically, the Los Angeles pueblo relied on the Los Angeles River for its water supply, using a system of ditches

branching from a main ditch, the Zanja Madre. After the City of Los Angeles incorporated in 1850, the short-lived Los Angeles Water Works built a water tank to supply the city in 1858, but failed along with other various enterprises to establish a viable water system. In 1868, the privately owned Los Angeles City Water Company incorporated and was granted exclusive rights to construct and operate a water system in the city. By 1878, the system had over 300 miles of water mains, six major reservoirs, infiltration galleries, and pumping plants. At the time, Fred Eaton served as the superintendent and William Mulholland began working for the company. In 1886, Mulholland became the superintendent, when Eaton became the City Engineer. In 1902, the company had 337 miles of water mains and 676 fire hydrants (Water and Power Associates 2022; SurveyLA 2017:8).

After years of disputes between the City and the Los Angeles City Water Company, the City acquired the company in 1902 to form the first municipal water system under the Los Angeles Water Department (the predecessor of LADWP) with Mulholland as its superintendent. The new department sought to enlarge and improve existing water storage capacity. New reservoirs constructed included Ivanhoe (built 1906) and Silver Lake (built 1907), which were fed by a new supply line from an intake on the Los Angeles River near Griffith Park. The Garvanza Reservoir (later renamed Highland), originally built circa 1886, became part of the City's municipal system in 1902 and was upgraded with a new pumping station and enlarged between 1907-09. Linked to these early reservoirs was the system's first steel tank constructed on LeMoyne Avenue in 1906. The tank was supplied by water pumped from the newly constructed Ivanhoe-Silver Lake reservoirs. This reliance on a few large reservoirs and on multiple local tanks placed at high elevations and supplied by pumps became the pattern the water department followed in subsequent decades (SurveyLA 2017:8–9, 26).

In 1905, the City sunk a well at Slauson and Compton avenues to pump water directly into the city water mains via a pumping station. Two years later, the City built another well and pumping station at Figueroa Street and Slauson Avenue. These two groundwater systems were a new source of water supply and also boosted water pressure in the area. In this way, these two early wells served the same purpose as a balancing reservoir or kickback tank within the water distribution system but were constructed and operated at a fraction of the cost (Hurlbut 1932:1686-7). By 1910, the City's water distribution system was still centered around the Los Angeles River as the primary water source (Hurlbut 1932:1684).

Water Distribution System

With the coming of the aqueduct, the Water Department, later Bureau of Water Works and Supply, under Mulholland had been laying an "interior" system of city main lines and laterals amounting to over 46 miles of pipeline laid between 1909 and 1914. Between 1912 and 1913, the City purchased 11,690 tons of cast iron pipe to expand the municipal water system, and by July 1913, the City controlled over 586 miles of lateral mains with 4-inch or larger diameters (Mulholland 1913: 20-21; Mulholland 1914:15-16).

Besides the expansion of interior municipal distribution system within City limits, Mulholland also planned for a Los Angeles trunk system to connect the aqueduct to the City's system. The trunk system would include storage and distribution reservoirs, trunk lines, water mains, distribution lines, pumping stations, and other infrastructure. Due to the existing mandates and uncertainties related to the City's ability to sell its surplus water to other communities, the Los Angeles trunk system that would directly connect the aqueduct water supply to the municipal distribution system was the first priority. In 1912, Mulholland presented plans for the Los Angeles trunk system that included two new reservoirs near the discharge of the aqueduct, the Upper and Lower San Fernando Reservoirs (later renamed for Bureau of Water Works and Supply Chief Engineer Harvey Arthur Van Norman), which connected to a main Los Angeles City Trunk Line that would siphon the water down the San Fernando Valley up to the new Franklin Tunnel leading to two new reservoirs at Franklin Canyon in the Santa Monica Mountains. The two Franklin Canyon Reservoirs required a 4,000-foot tunnel cut through the Santa Monica Mountains to connect to the Los Angeles City Trunk Line. From the Franklin Canyon, the main line would extend south as far as Inglewood.

***Resource Name or #** (Assigned by recorder) Topham Trunk Line
Recorded by: M. Wilson ***Date:** April 2022 ☒ Continuation ☐ Update

Mulholland's plans also included regional distribution of the City's new abundant water supply to the surrounding communities, particularly in the San Fernando Valley. Annexation and selling surplus water for irrigation in the San Fernando Valley were also highly anticipated outcomes of the operation of the aqueduct. Other planned reservoirs, including the Chatsworth Reservoir, and trunk lines were not initially part of the Los Angeles trunk system but would serve other areas with surplus water primarily for irrigation. Several trunk lines stemming from the San Fernando Reservoirs and the aqueduct itself were proposed to carry water to other communities (**Plate 1**).

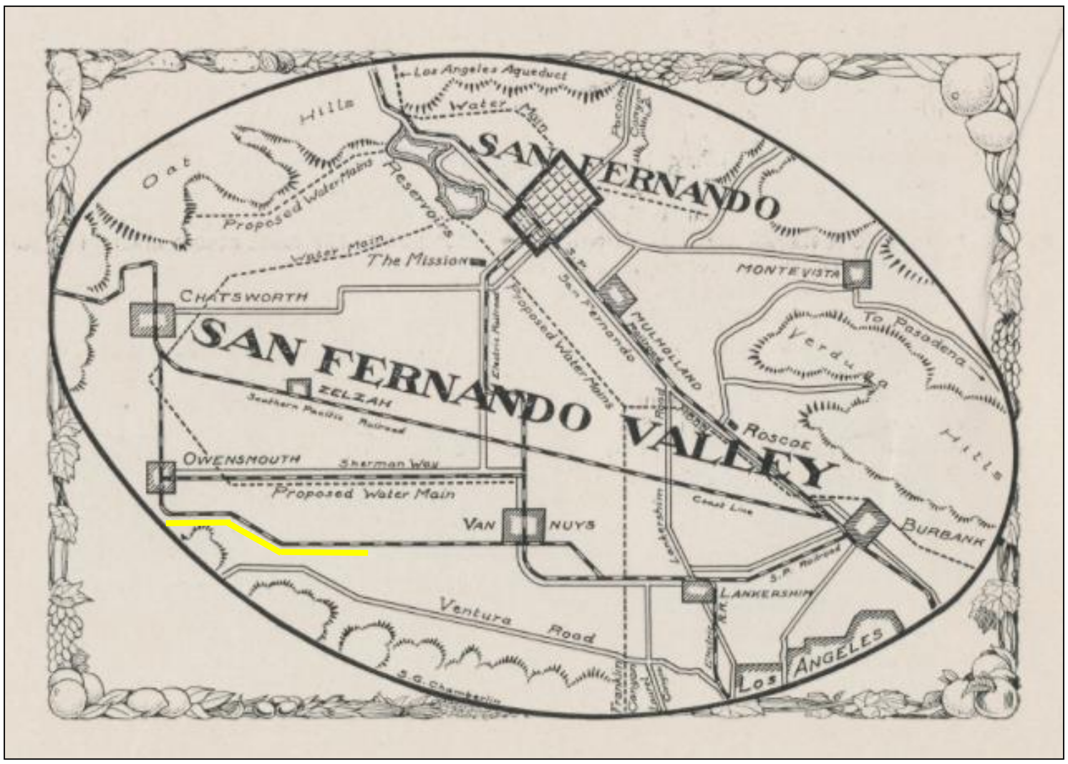


Plate 1: Map depicting several proposed mains (or trunk lines) after completion of the Los Angeles Aqueduct in 1913, San Fernando Reservoir at top (Water and Power Associates 2021a). Note the future location of the Topham Trunk Line is identified along the Southern Pacific Railroad alignment.

Trunk lines serve as major distribution arteries that deliver water between larger lines, tanks, and reservoirs to smaller water mains and connect to lateral or branch lines, distribution mains, and service lines. The approximately 144-inch-diameter Los Angeles Aqueduct pipe connects to several trunk lines that average between 36 and 72 inches in diameter. By 1940, the trunk line system within the San Fernando Valley was greater in mileage than that of the entire Los Angeles Metropolitan area with an intricate network of distribution mains and service lines (*Van Nuys News* 1940). Several other trunk lines have stemmed from the Van Norman Reservoir, including the Chatsworth High Line, a concrete box conduit constructed in 1916 and decommissioned in 1979; the 60-inch diameter Stone Canyon Inlet Trunk Line completed 1940; the Hayvenhurst Trunk Line 54-inch diameter pipeline constructed 1966; the Rinaldi Trunk Line constructed in 1979 (to replace the 1916 Chatsworth High Line); and the Sepulveda Trunk Line constructed in 2000.

Topham Trunk Line

The Topham Trunk Line was originally constructed in 1917 and named the Topham and Canoga Park Pipe Line. In 1936, 6,045 LF of 36-inch diameter riveted-steel pipe was added (Unit 43) west of De Soto Street to Canoga Avenue. In 1937, the portion of Ventura Trunk Line connecting Topham Trunk Line to Encino Inlet Line was installed, consisting of consists of approximately 11,210 LF of 24-inch diameter welded-steel pipe and 1,370 LF of 24-inch diameter ductile iron pipe.

In 1936, as part of an experimental program conducted by the Bureau of Water Works and Supply the interior of the Topham Trunk Line was sandblasted, enameled, and coated with red lead primer (City of Los Angeles Board of Water and Power Commissioners 1936). Several other pipelines were also included in this program, including the: Western Avenue-Stone Canyon Trunk Line, Saticoy Street Pipe Line, Fallbrook Pipe Line, San Fernando By-Pass Line, Diaz Avenue Pipe Line, Fletcher Drive Pipe Line, Elysian Reservoir Pipe Line, and the Ventura Boulevard Pipe Line (City of Los Angeles Board of Water and Power Commissioners 1936). Although many of these pipes were less than twenty years old at the time, the effects of corrosion were already evident. During the early twentieth century, red lead paint was promoted as ideal for protecting iron and steel work including pipes, bridges, tanks, and structural steel (*Keystone Catalog* 1926). Research on this topic continued into the late 1960s on finding effective ways to stop corrosion and finding effective barrier materials that would insulate the pipes (McComb 1967).

By 1980, LADWP's trunk lines were being constructed with ductile iron pipes, which replaced the gray cast iron pipes and steel (riveted and welded) pipes that had been in use since the 1910s (Hamada et al. 1994). Gray cast iron pipes were used in a very small percentage of historic-age trunk lines in Los Angeles, with steel pipe, asbestos cement pipe, and ductile iron pipe being the most ubiquitous construction material used in trunk line construction from 1913-1980 (Hamada et al. 1994).

Extensive alterations throughout the entire Topham Trunk Line have included modifications for modern use, service expansion, and technological developments; repairs, replacements, and reconstructions following disaster events and failures; cement and slip lining sections; and ongoing maintenance. Additionally, connections to pumping stations, valves, and other improvements were installed along the pipeline. In 2017, a rupture was repaired along the line at Tampa Avenue and Topham Street (*Los Angeles Times* 2017) (**Plate 3**).

Plate 3: Rupture repair at Tampa Avenue and Topham Street, 2017 (*Los Angeles Times* 2017)

Other Trunk Lines and Water Distribution Infrastructure

Because of the geographic span of Los Angeles, the water distribution system is supplied by several series of reservoirs, trunk lines, distribution lines, water mains, pumping stations, and other infrastructure. Sixteen storage reservoirs were eventually constructed within the city for year-round water supply and delivery. The locations of these reservoirs were the driving factor behind the design of the overall water distribution system (Hurlbut 1932:1688).

The impact of the new water supply was not immediately felt by large areas of the enlarged city until after World War I, when a series of additional reservoirs were constructed to connect to the Los Angeles Aqueduct. The Chatsworth Reservoir (built 1919) served the northwestern section of the San Fernando Valley, the Encino Reservoir (built 1921) served the southern San Fernando Valley, the Stone Canyon Reservoir (built 1921) served Westwood and the West Side, and the Mulholland Dam and Hollywood Reservoir (built between 1923-24) served the Hollywood area (SurveyLA:11–12, 28).

In the early 1930s, the municipal water distribution system for Los Angeles still relied on the Los Angeles River and four large reservoirs (Stone Canyon, Franklin, Hollywood, and Silver Lake) situated in the ring formed by the Santa Monica Mountains and the Los Feliz Hills. These major points of distribution extend along a line about 14 miles long and from them come the large trunk lines forming the skeleton of the distribution system for the city. The four larger reservoirs were built primarily to provide part of the storage required for the Los Angeles Aqueduct (Hurlbut:1932:1689-90). From west to east were three additional smaller reservoirs (Rowena [built 1901], Elysian [built 1903], and Buena Vista [built 1868-69]) utilized as part of the city water system that were already in place by 1911 and pre-dated the construction of the Topham Trunk Line (Hurlbut 1932:1686). The reservoirs within the city water system served the dual purposes of storage and distribution. Their use decentralizes the trunk lines supplying the smaller mains of the water distribution system and therefore provides a readily available and safe water supply as backup for any failures of the aqueduct or other portion of the larger system (Hurlbut 1932:1690).

By 1932, additional trunk lines were constructed to decentralize the trunk line system so that the failure of any one trunk line did not paralyze a large portion of the system (Hurlbut 1932:1693). The Los Angeles water distribution system was not designed to place too great reliance on any particular trunk line but designed as a system such that its various units will function under normal or emergency conditions that may be placed upon it (Hurlbut 1932:1688). Many of the trunk lines built in the subsequent decades were in less developed areas and spurred additional population growth and development in those areas (LADWP n.d.). By 1940, nearly half of the city's 300 miles of trunk lines were already installed, with nearly 7,000 miles of distribution pipes installed by 1994. In the subsequent decades, additional infrastructure was added to the city water distribution and hundreds of miles of trunk lines were constructed into the 1960s to meet increased water demands of the growing city population (LADWP n.d.). The following table lists some of the trunk lines constructed by LADWP over the decades (LADWP n.d.).

Trunk Lines constructed by LADWP

Name	Date Completed
Los Angeles City Trunk Line	1915
Third Street	1915
Topham	1917
Westgate	1921
Pico	1923
Harbor	1935
Franklin-Baldwin	1950
Sheldon Street	1953
Eagle Rock-Hollywood	1956
Riverside Drive	1960
Fourth Street	1960
Sunland Boulevard	1960
Granada/Granada Extension to Girard Reservoir	1963
Sunland Boulevard Extension	1964
Susana	1966
Susana Extension	1969
Rinaldi	1979
East Los Angeles	1988

Of the other trunk lines built to connect with the Los Angeles Aqueduct and/or Los Angeles municipal distribution system, a notable example is the Bouquet Canyon Reservoir Pipeline that was constructed in 1934. At the time of its construction, it was the largest single-weld project of its kind in the world and an engineering feat for traversing mountainous terrain (Van Nuys News 1940). The Harbor Trunk Line, which also connects to the Los Angeles Aqueduct, was instrumental in the permitting development for providing an adequate water supply to the Municipal Airport in 1935 (later known as the Los Angeles International Airport, LAX) (LADWP n.d.:16).

Even with the expansion of the city's water storage system, by the late 1920s it was already apparent that the city required additional water and a bond was passed to extend the Los Angeles Aqueduct 100 miles northward into the Mono Basin. Once completed in 1940, it increased water flows into the Los Angeles Aqueduct by 35 percent. Later, when the second Los Angeles Aqueduct was completed in 1970, the capacity of the system increased by 50 percent (SurveyLA:13, 20). The second Los Angeles Aqueduct was placed into operation in 1970 to increase the city's water supply; beginning at Haiwee Reservoir, this project was shorter, narrower, and easier to build as a result of improved construction equipment and the lower cost of steel pipe (Water and Power Associates 2021b).

As of 2015, approximately 542 miles of trunk line served the 3.9 million people who live in the city's more than 473-square-mile service area. Of the hundreds of miles of trunk lines, those constructed during the 1910-19 period, which includes the Topham Trunk Line, accounted for 55.9 miles or approximately 10 percent of the total system. In comparison, large-scale expansions to the LADWP system in the 1930-39 and 1950-59 periods were nearly double at 95.5 and 95.9 miles, respectively (LADWP 2015).

Evaluation

NRHP Criterion A and CRHR Criterion 1

Under NRHP Criterion A or CRHR Criterion 1, the Topham Trunk Line has no significant association with important historic events. Built in 1917, the Topham Trunk Line is associated with the supply of water, which is one of the most significant themes in the history and development of Los Angeles, and more specifically with the development of the Los Angeles municipal water distribution system after the landmark completion of the Los Angeles Aqueduct from the Owens Valley to the San Fernando Valley. The Topham Trunk Line is not the oldest trunk line in Los Angeles and is one of many trunk lines which convey water from Los Angeles Reservoir. The Topham Trunk Line was constructed during the period of significance for potentially significant water delivery resources (1902-1980) and provided for water delivery; however, the Topham Trunk Line does not distinctively “reflect significant trends in community planning relating to the expansion of publicly owned utilities to provide water and power services to a city growing in both area and population” (SurveyLA 2017:31).

The Topham Trunk Line was designed and constructed as part of the overall early twentieth-century expansion of Los Angeles’s water distribution system to realize Fred Eaton’s and William Mulholland’s aspirations for a growing metropolis, but it does not reflect a specific significant trend in planning related to the development of a particular community. Rather, it served as a fairly simple conduit within the Los Angeles municipal water distribution system. The Topham Trunk Line does not reflect a significant contribution to local history that would meet NRHP Criterion A or CRHR Criterion 1.

NRHP Criterion B and CRHR Criterion 2

Under NRHP Criterion B or CRHR Criterion 2, the Topham Trunk Line is not significant for any associations with the lives of persons important to history. Research did not indicate that any individuals involved with the construction or design of the resource’s surviving elements made demonstrably important contributions to history at the local, state, or national level.

NRHP Criterion C and CRHR Criterion 3

Under NRHP Criterion C or CRHR Criterion 3, the Topham Trunk Line is not significant because it is not an important example of a type, period, or method of construction. The Topham Trunk Line is a typical, example reflecting the twentieth century construction methods. The Topham Trunk Line was designed as an approximately 14,160 LF pipeline consisting of 24-inch diameter riveted steel pipe. Of typical design, materials, and construction methods, the Topham Trunk Line does not “illustrate technological innovations in civil engineering relating to the development of the city’s water storage and distribution system” (SurveyLA 2017:31-32). Further, the Caltrans historic context, *Water Conveyance Systems in California*, notes properties eligible under NRHP Criterion C/CRHR Criterion 3 may have unique values or they may be the best or good examples of a type of water conveyance property. The earliest, best preserved, largest, or sole surviving examples of particular types of water conveyance systems or a property that introduced a design innovation may be eligible as examples of evolutionary trends in engineering. To be considered a good representative of that type, period, or method of construction, a water conveyance system must possess “distinctive characteristics,” the common features or traits of that type, period, or method of construction. Through those distinctive characteristics, a property must clearly illustrate one or more of the following: the pattern of features common to a particular class of resources; the individuality or variation of features that occurs within the class; the evolution of that class; or the transition between classes of resources (JRP and Caltrans 2000).

Designed by the engineers of the Bureau of Waterworks and Supply circa 1917, the engineering of the Topham Trunk Line employed basic principles of a main water distribution line. The pipeline materials, consisting of riveted prefabricated steel pipes and poured/board-formed concrete, were ubiquitous materials used for the Los Angeles water distribution system pipelines from 1913 until the 1980s. This process of manufacturing water pipes from steel sheets and plates that were rolled and riveted together was first pioneered during the late 1850s. This method of fabrication was not only economical but was versatile enough to meet the requirements of individually designed projects wherein pipe wall thickness could readily be adjusted to fit different heads of a pipeline (Cates 1971). Additionally, the construction methods involving the assembly of prefabricated elements adjacent to open trenching were unremarkable and the standard method employed by the Water Department to lay pipe.

The Topham Trunk Line is not the earliest, best preserved, largest, or sole surviving example of its type. The Topham Trunk Line does not represent the work of a master. The utilitarian pipeline does not possess high artistic values because it was designed for function and utility and not for aesthetic quality. Therefore, the Topham Trunk Line does not meet NRHP Criterion C or CRHR Criterion 3.

NRHP Criterion D and CRHR Criterion 4

The Topham Trunk Line is not likely to yield further information important to history or prehistory because the construction history and use of this resource is well documented. Therefore, this resource does not meet NRHP Criterion D or CRHR Criterion 4.

Integrity Analysis

Although the Topham Trunk Line does not meet the NRHP or CRHR criteria, this evaluation assessed its integrity to a potential period of significance, which would date to 1917, the year the line was completed. The Topham Trunk Line retains integrity of location, feeling, and association, but does not retain integrity of design, materials, workmanship, or setting. It is in its original location and retains its feeling and association because it expresses its historic purpose as a functional, primarily underground water system. However, the design, materials, and workmanship have lost integrity. The design of the pipeline has been substantially altered. As a result of expansion projects in 1936 and 1937, 18,625 LF of pipe of various sizes and materials was added to the original 14,160 LF alignment. Only 43% of the Topham Trunk Line is original. The Topham Trunk Line as a whole has been actively maintained and upgraded during a century of use. Integrity of workmanship is also lost because the system has been altered with modern construction methods, not the outdated metal riveting technology used during its construction in 1917. The Topham Trunk Line does not retain integrity of materials because the alterations have added new sections and introduced new materials into the water system. While the Topham Trunk Line continues to carry water through the distribution system, the resource no longer retains the integrity of design, materials, or workmanship of a 1917-constructed water pipeline.

In summary, the Topham Trunk Line retains only three aspects of integrity, including location, feeling, and association. Based on the parameters for eligibility established by OHR, an eligible resource must retain integrity of five of the seven aspects of integrity: design, materials, location, feeling, and association (SurveyLA 2017:31–32). The Topham Trunk Line does not retain integrity of design, materials, workmanship, or setting and no longer retains the integrity of an underground water system constructed in 1917.

***B12. References (continued):**

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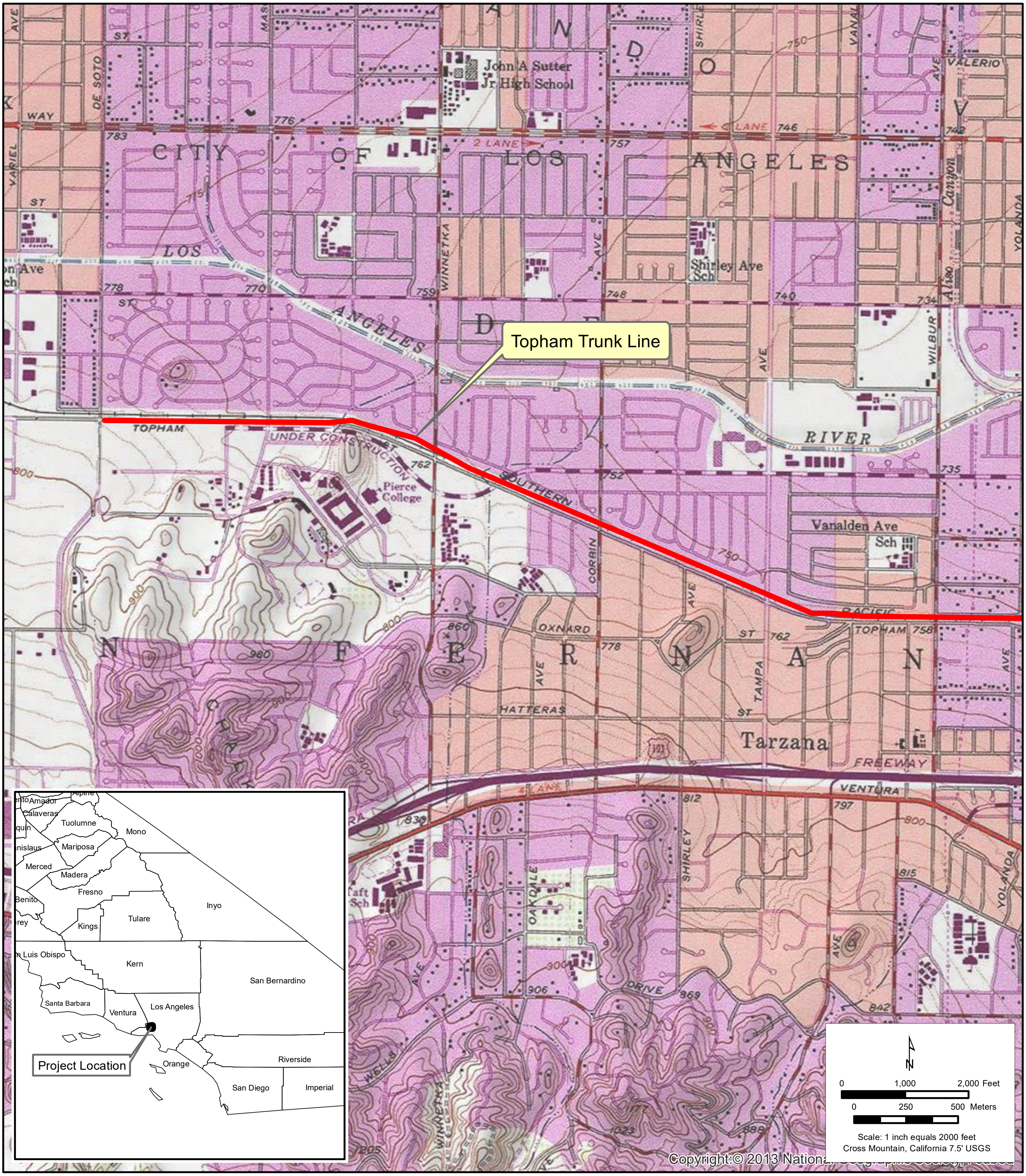
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary #
HRI#
Trinomial

*Resource Name or # (Assigned by recorder) Topham Trunk Line

*Map Name: Canoga, Ca *Scale: 1:24,000 *Date of Map: 2015



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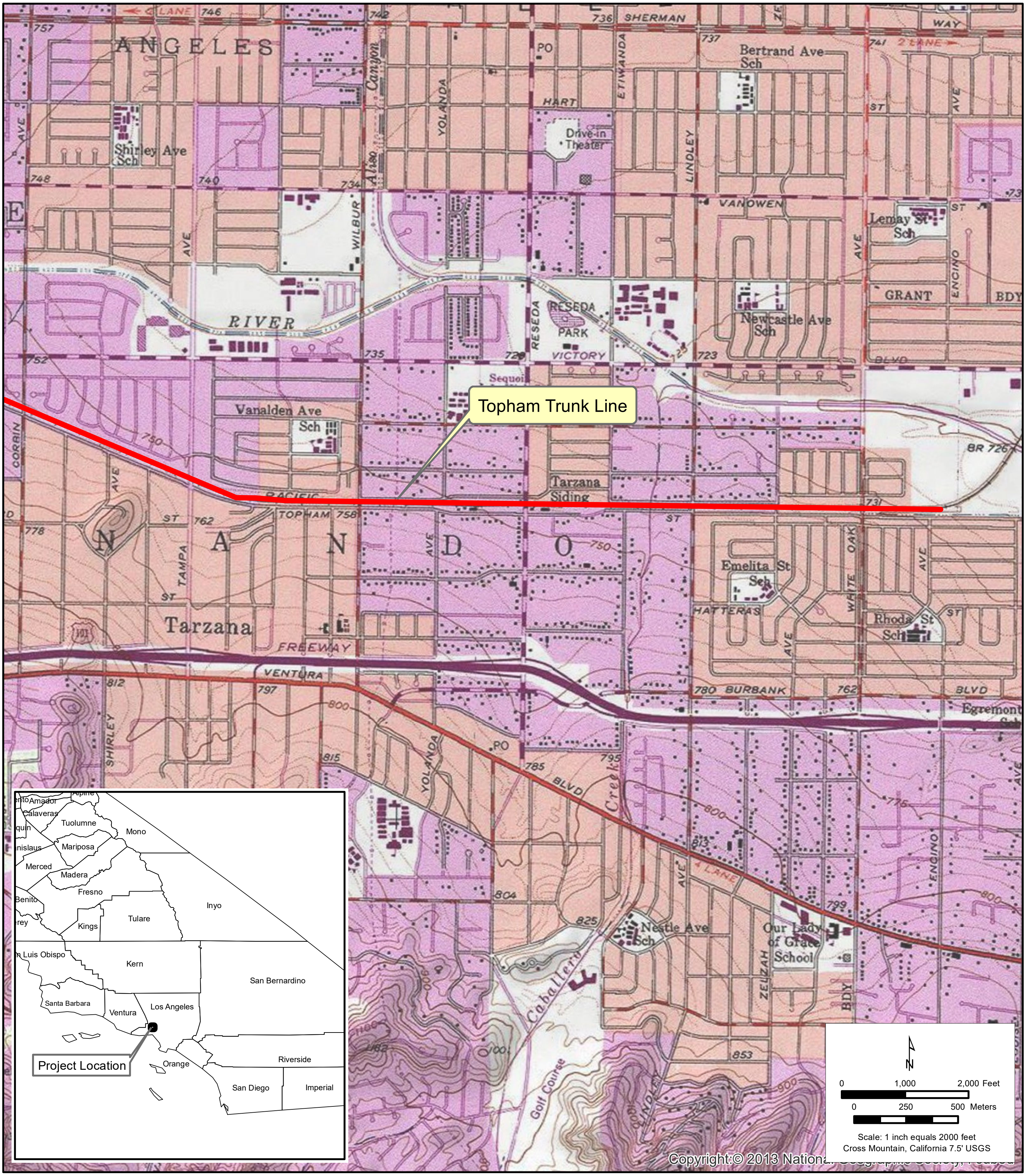


AECOM

Attachment 3

NAHC SLF Search Results

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

NATIVE AMERICAN HERITAGE COMMISSION

December 13, 2021

Marshall Styers
Los Angeles Department of Water and Power

Via Email to: Marshall.Styers@ladwp.com

Re: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, Topham Trunk Line Project, Los Angeles County

Dear Mr. Styers:

Pursuant to Public Resources Code section 21080.3.1 (c), attached is a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the above-listed project. Please note that the intent of the AB 52 amendments to CEQA is to avoid and/or mitigate impacts to tribal cultural resources, (Pub. Resources Code §21084.3 (a)) ("Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.")

Public Resources Code sections 21080.3.1 and 21084.3(c) require CEQA lead agencies to consult with California Native American tribes that have requested notice from such agencies of proposed projects in the geographic area that are traditionally and culturally affiliated with the tribes on projects for which a Notice of Preparation or Notice of Negative Declaration or Mitigated Negative Declaration has been filed on or after July 1, 2015. Specifically, Public Resources Code section 21080.3.1 (d) provides:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The AB 52 amendments to CEQA law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction prior to receiving requests for notification of projects in the tribe's areas of traditional and cultural affiliation. The Native American Heritage Commission (NAHC) recommends, but does not require, early consultation as a best practice to ensure that lead agencies receive sufficient information about cultural resources in a project area to avoid damaging effects to tribal cultural resources.

The NAHC also recommends, but does not require that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

- A listing of any and all known cultural resources that have already been recorded on or adjacent to the APE, such as known archaeological sites;
- Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
- Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and
- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

    - Any report that may contain site forms, site significance, and suggested mitigation measures.

      All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code section 6254.10.

3. The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was positive. Please contact the tribes on the attached list for more information.

4. Any ethnographic studies conducted for any area including all or part of the APE; and

5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

APPENDIX D

Energy Assessment

taha
environmental planners

Technical Memorandum

TO: Hallie Fitzpatrick, AICP
AECOM

FROM: Terry A. Hayes Associates Inc.

DATE: May 24, 2023

RE: Los Angeles Department of Water and Power (LADWP)
Topham Trunk Line Replacement Project – Energy Impacts Assessment

Introduction

Terry A. Hayes Associates Inc. (TAHA) completed an Energy Assessment for the Topham Trunk Line Replacement [TTLR] Project (proposed project) in accordance with the provisions of the California Environmental Quality Act (CEQA) Statutes and Guidelines. This Assessment is organized as follows:

- Introduction
- Project Description
- Energy Topical Information
- Regulatory Framework
- Existing Setting
- Significance Thresholds
- Methodology
- Impact Assessment
- References

Project Description

Project Location and Setting

The Los Angeles Department of Water and Power (LADWP) proposes to install approximately 23,300 linear feet (LF) of a 36-inch diameter underground pipe along Victory Boulevard, Topham Street, and Oxnard Street, in the west San Fernando Valley area of the City of Los Angeles. The installation of the new 36-inch diameter trunk line (referred to herein as the Topham Trunk Line Replacement [TTLR] Project, the project, or proposed project) would replace the aging and deteriorating existing 24-inch Topham Trunk Line to provide greater operational flexibility for water flow and to improve system redundancy and resiliency. The proposed project would also include approximately 6,599 LF of new 12-inch diameter underground distribution mainline that would connect the proposed TTLR Project to the existing distribution system on Mason Avenue, Victory Boulevard, and Topham Street. In addition, the proposed project would include approximately 3,429 LF of new 16-inch diameter underground distribution mainline that would replace the existing 8-inch diameter distribution mainline on Tampa Avenue, south of Topham Street. The TTLR and the distribution mainlines would be installed mostly parallel to their respective existing lines; once installation is completed, the existing lines would be abandoned in place and decommissioned accordingly.

Terry A. Hayes Associates Inc.
3535 Hayden Avenue, Suite 350
Culver City, California 90232
310.839.4200 fax 310.839.4201

The proposed project would be located in the western San Fernando Valley of the City of Los Angeles within the communities of Winnetka, Woodland Hills, Tarzana, Encino, and the Sepulveda Basin (**Figures 1 through 3**). Approximately 23,300 LF of the new 36-inch diameter trunk line would be installed along Victory Boulevard, Topham Street, and Oxnard Street, beginning just east of the intersection of De Soto Avenue and Victory Boulevard and ending at the intersection of Oxnard Street and Encino Avenue. A portion of the new 36-inch trunk line would be installed within an existing LADWP easement located at the Los Angeles County Metropolitan Transportation Authority (Metro)'s Pierce College Station parking lot and north of the baseball fields at Winnetka Avenue and Victory Boulevard. In addition, approximately 6,599 LF of the new 12-inch diameter distribution would be installed along Mason Avenue (from Kittridge Street to Victory Boulevard), Victory Boulevard (at the intersection of Mason Avenue and Victory Boulevard), and Topham Street (from Victory Boulevard to Tampa Avenue). Approximately 3,429 LF of the new 16-inch diameter distribution mainline would be installed along Topham Street (from Tampa Avenue to Evenhaim Lane) and Tampa Avenue (from Topham Street to Ventura Boulevard). As described previously, the TTLR and the distribution mainlines would be installed mostly parallel to their respective existing lines; once installation is completed, the existing lines would be abandoned in place and decommissioned accordingly.

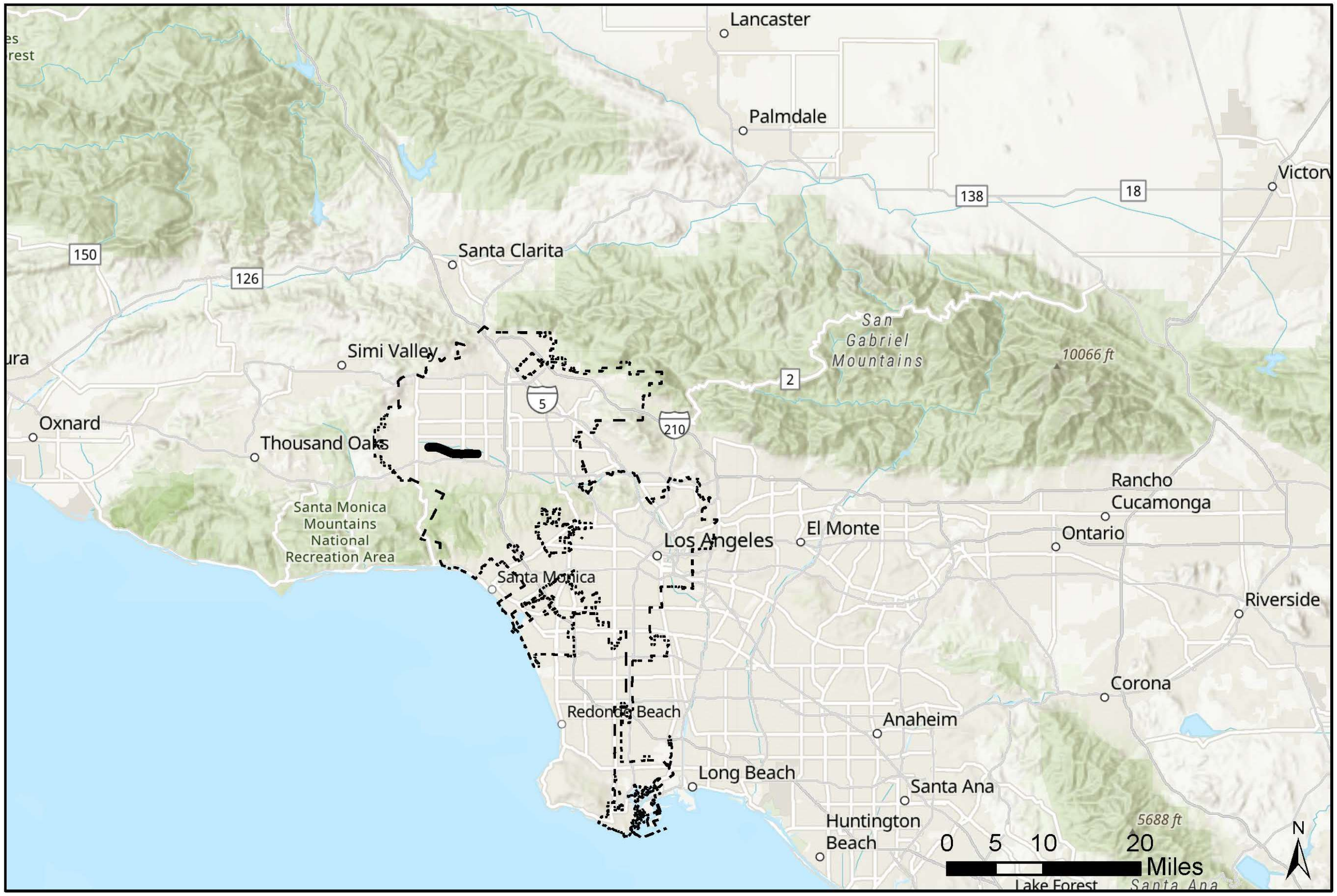
Land uses along Victory Boulevard, Topham Street, Oxnard Street, and Tampa Avenue are mixed and include residential, religious, commercial, public transit (Metro Orange Line), one private school (Woodcrest Preschool), limited manufacturing, open space, and public facilities including Pierce College. The Los Angeles River runs east-west, approximately 0.25 to 0.5 mile north of the proposed project.

Proposed TTLR Components and Location

The primary component of the proposed project is a new 36-inch diameter underground trunk line, which would replace the existing Topham Trunk Line. As previously discussed, the replacement line would be routed mainly within Victory Boulevard, Topham Street, and Oxnard Street. On the east, the TTLR would connect directly to the existing Encino Inlet Line, identified as the 1134SZ at Encino Avenue. On the west, the TTLR would connect directly to the De Soto Trunk Line, identified as the 1123SZ at De Soto Avenue. Because the existing Topham Trunk Line must remain in service until the proposed project is completed, the TTLR would be installed in an alignment parallel to, rather than removing and replacing, the existing trunk line.

The TTLR would consist of WSP, which is considered a continuous pipeline because the joints between pipe segments are welded together. Seismic loads created by ground displacement from a seismic event are accommodated by the capability of the walls of the WSP to stretch and bend.

Because the TTLR would interconnect directly to the 1123SZ and 1134SZ to provide system redundancy and operational flexibility, the proposed project would also include the installation of approximately 6,599 LF of new 12-inch diameter underground distribution mainline and approximately 3,429 LF of new 16-inch diameter underground distribution mainline. The 12-inch diameter distribution mainline and 16-inch diameter distribution mainline would be connected to existing distribution mainlines throughout the alignment to provide direct service to the 1123SZ. Both distribution mainlines would consist of earthquake resistant ductile iron pipe (ERDIP) to provide resilience during seismic events. Segments of ERDIP are joined with a gasket rather than being fused together, which provides flexibility at the joints to accommodate seismic loads by allowing the pipeline not only to bend laterally but also expand and contract lengthwise.



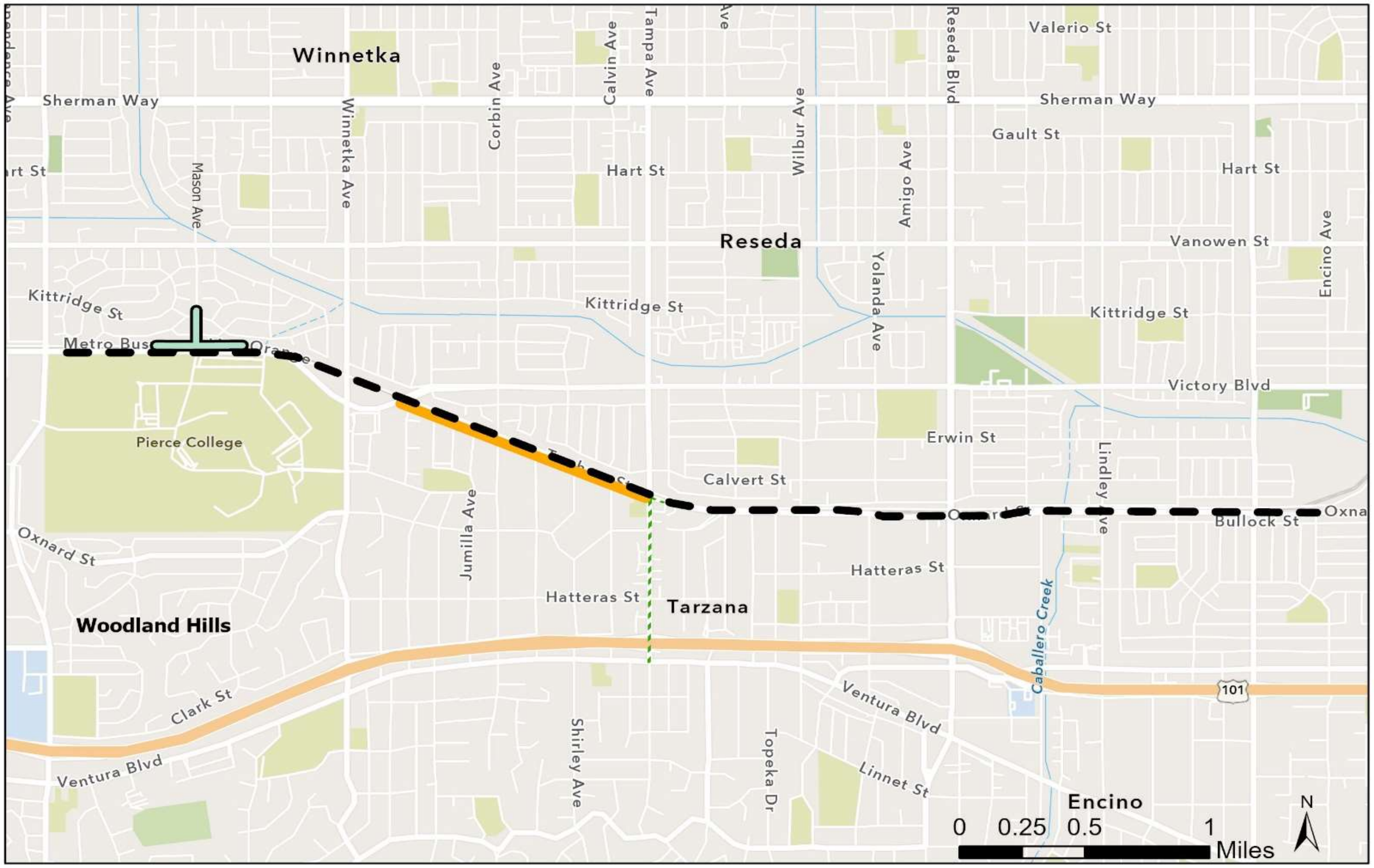
Legend

Proposed Topham Trunk Line Project

City of Los Angeles Boundary

Figure 1
Project Vicinity Map

County of Los Angeles, California State Parks, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, Esri, USGS

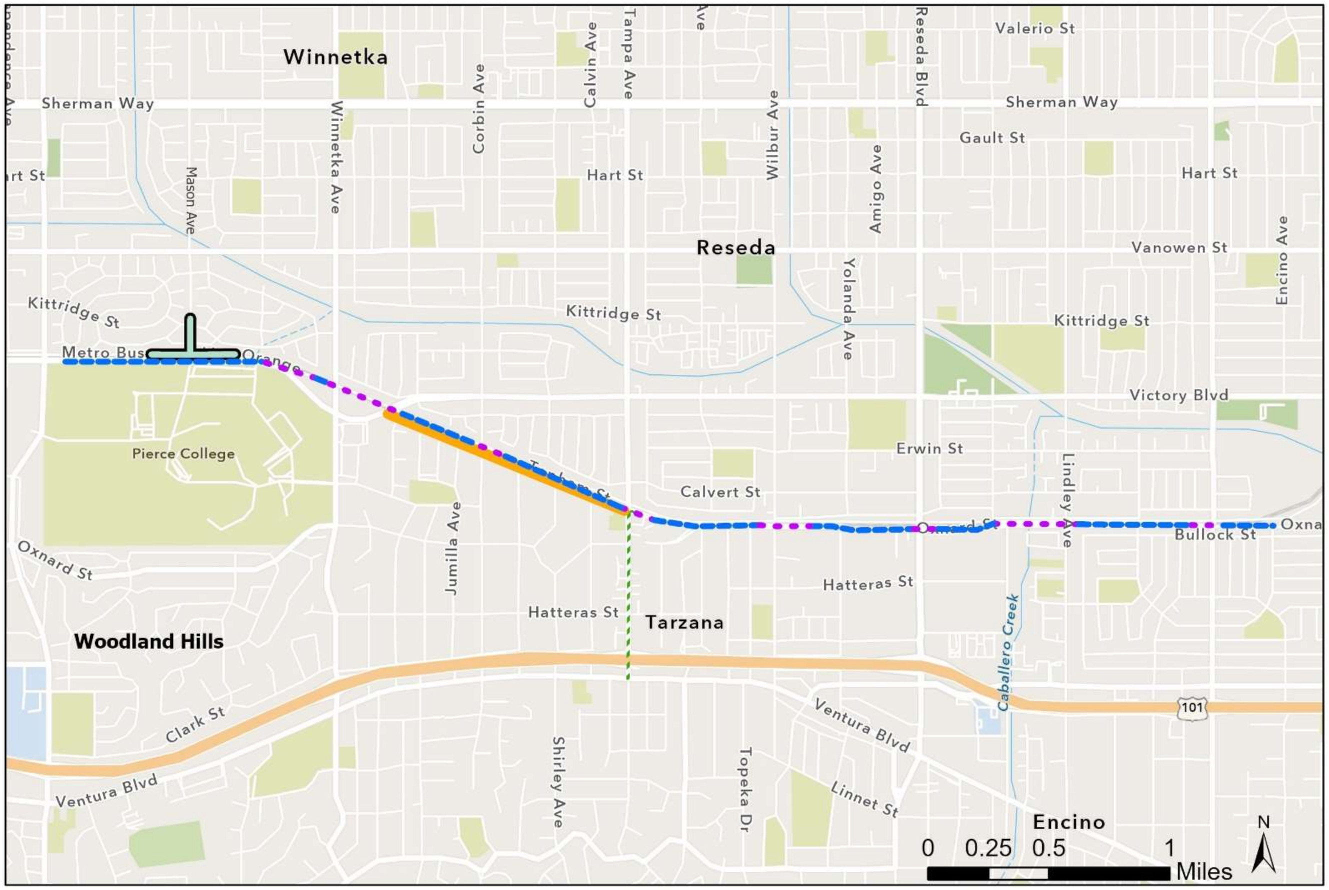


Legend

- Proposed Topham Trunk Line Project
- Proposed 12" Victory Blvd & Mason Ave Mainline Open Cut
- Proposed 12" Topham St Mainline Open Cut
- Proposed 16" Tampa Ave Mainline Open Cut

Figure 2
Project Overview Map

County of Los Angeles, California State Parks, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA



Legend

Construction Method

- Proposed Topham Tunk Line Jacking
- Proposed Topham Tunk Line Open Cut
- Proposed 12" Victory Blvd & Mason Ave Mainline Open Cut
- Proposed 12" Topham St Mainline Open Cut
- Proposed 16" Tampa Ave Mainline Open Cut

Figure 3
Project Construction Methods Overview

County of Los Angeles, California State Parks, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA

In addition to the above, several appurtenant facilities necessary to support the operation of the proposed trunk line and mainline would be installed. These include isolation valves, a flow meter, and a flow recorder. The isolation valves and flow meter would be located underground within the public road ROW. The flow recorder would be installed in an aboveground cabinet (72 inches tall, 48 inches wide, and 24 inches deep) located on the western end of the project alignment on Victory Boulevard (just east of De Soto Avenue), within the public road ROW. After the TTLR is operational, the existing Topham Trunk Line would be isolated from the drinking water system and abandoned in place.

Project Construction – Construction Schedule

Construction for the proposed project is estimated to begin in Fall 2023 and would take approximately 7 years to complete (**Figure 4**).

Figure 4
Project Construction Schedule

As shown above in Figure 4, the 12-inch diameter distribution mainline would be installed first from approximately third quarter 2023 to third quarter 2024, followed by the 16-inch diameter distribution mainline, which would be installed from approximately third quarter 2024 to second quarter 2025. The TTLR would be installed a few months after the 16-inch diameter distribution mainline is completed from approximately third quarter 2025 to third quarter 2030.

Construction activities for the TTLR would occur between 7:00 a.m. and 6:00 p.m., Monday through Friday. For the 12-inch and 16-inch diameter distribution mainlines, construction activities would occur between 9:00 a.m. and 3:30 p.m., Monday through Friday, but some nighttime construction may be required.

Project Construction – Trunk Line and Mainline Open-Trench Construction

The 12-inch and 16-inch diameter distribution mainlines as well as the majority of the TTLR would be installed through an open-trench method of construction whereby a trench is excavated in the roadway, pipeline segments are placed in the trench, the trench is backfilled, and the road is repaved.

In order to achieve the open-trench construction in an effective, efficient, and safe manner, work zones would be established in the roadway within which open-trench construction activities could proceed unimpeded. Preliminarily, the work zones for the 12-inch and 16-inch diameter distribution mainlines would total approximately 2,400 feet in length, and the work zones for the TTLR would total approximately 3,000 feet in length. These work zones would include the active construction work area (400 feet for the 12-inch and 16-inch diameter distribution mainlines and 1,000 feet for the TTLR), and traffic control tapering on each end of the work area, at 1,000 feet in length at each end.

The work zones would be the minimum width required to accommodate barriers or cones separating traffic from construction activities, safety setbacks adjacent to the trench, shoring required to stabilize the trench walls (for the TTLR installation), the trench itself, and adequate area to safely and effectively operate equipment and trucks, as well as the flexibility to avoid existing substructures in the road. With these measures, the work zones would be approximately 25 to 30 feet in width for the 12-inch and 16-inch diameter distribution mainlines, and 30 to 40 feet in width for the TTLR. Based on the width of the work zone, some street segments along the proposed project alignment may allow only for one traffic lane in each direction and no parking. For the TTLR construction, the following street segments may require full closure with local access only, due to the narrow curb to curb dimensions:

- Topham Street, between Victory Boulevard and Cahill Avenue
- Oxnard Street, between Cahill Avenue and Wilbur Avenue
- Oxnard Street, between Lindley Avenue and Encino Avenue

These work zones would allow for the continuous installation of the TTLR pipeline in longer spans without the requirement to frequently disassemble and relocate barriers, equipment, and construction support facilities and modify traffic control elements, all of which would hamper the pipeline installation process but not substantially improve the flow of traffic in the vicinity of the construction. In addition to the actual work zones, lane transition zones would be required extending outward from the work zone along Mason Avenue, Victory Boulevard, Topham Street, Oxnard Street, and Tampa Avenue to channel approaching traffic into the travel lanes adjacent to the work zone.

The open-trench construction process for the TTLR would involve several steps. The initial step of the installation would be establishing the construction work zone. This would be accomplished by first installing traffic controls, including restriping of lanes, signage, and traffic signal modifications, as necessary, to merge traffic and direct it safely around the work zone. K-rails and other traffic barriers or markers would then be installed around the actual work zone to demarcate the zone and provide a safe working area. Placing the K-rail barriers would require the use of a forklift or other type of construction equipment. Mobilization would include delivering construction equipment and materials to the work zone and establishing field offices and other personnel and construction support facilities necessary for trunk line installation to proceed.

Once the work zone has been established, subsurface utility exploration would be conducted to verify the vertical and horizontal location of underground utilities that must be avoided, protected, or relocated during pipeline installation. This would involve core drilling a small-diameter hole in the pavement and removing soil with a vacuum truck to expose the utilities. Once the precise alignment of the trunk line has been established based on this exploration, the pavement would be cut along both edges of a given length of the trench using a pavement saw, and the pavement over the trench would be stripped using an excavator and a front loader. The pavement would be loaded on trucks and hauled from the site and either reclaimed for use as paving material or road base material, or it would be taken to a landfill as inert debris that can be recycled as road base for internal landfill use.

Because of the depth of excavation for the trunk line, shoring to support the walls of the trench may be required to provide a stable and safe working environment. Cantilever or braced shoring methods would be utilized, but are dependent on soil investigation results. No impact pile-driving would be involved. Installing the piles would be accomplished using a drill rig and a hydraulic crane with various attachments, depending on the method of installation. These steps, from traffic control to installing the shoring piles, would be completed before any of the actual pipeline installation tasks would begin and would take approximately two months.

After the shoring piles are in place, work would begin on installing individual pipe segments. For the 36-inch diameter trunk line, the trench would be excavated approximately 5 to 6 feet wide and 8 to 15 feet deep. These depths are necessary to accommodate the 36-inch diameter trunk line, bedding material under the pipe, and the minimum of five feet of cover required over the trunk line.

The steel shoring plates would be lowered between the H-beams as the depth of the trench excavation increases. Approximately 250 to 300 LF of trench could be excavated and shored in a month for the TTLR. The excavated material would be loaded onto trucks parked adjacent to the trench and hauled from the work zone. While some of the excavated material may be utilized at other construction sites within the region, it is assumed for environmental analysis purposes that all material would be hauled to a local landfill.

In addition to the pipe segments, various appurtenances, such as valves, meters, and maintenance holes, would also be installed as required. The general process for installation of these appurtenances would be similar to the pipe segments and would occur within the designated work zones.

After completion of the work within a given work zone, equipment, materials, and facilities would be removed from the zone, the pavement would be restored and restriped, and the traffic barriers would be removed. Depending on the length of the work zone and actual conditions, active construction within an individual work zone may range for approximately 3 to 4 months. The entire process would then be repeated for the next construction work zone, which may or may not be in an adjacent section of the roadway.

The open-trench construction process for the 12-inch and 16-inch diameter distribution mainlines more simple than the TTLR. All traffic control materials would be setup prior to the start of every work shift and would be removed after work is completed for the day. The Underground Service Alert system will be utilized to map underground utilities along the alignment. The pavement cutting and excavation process would involve excavating will be similar as that of the TTLR except for the trench dimensions. For the 12-inch diameter distribution mainline, the trench would be excavated approximately 30 inches wide and 4 to 5 feet deep. For the 16-inch diameter distribution mainline, the trench would be excavated approximately 3 feet wide and 5 feet deep. For these depths, no shoring would be needed. These depths necessary to accommodate the 12-inch and 16-inch diameter distribution mainlines, bedding material under the lines, and the minimum of 3 feet of cover required over the mainlines. At the end of every work shift, any open trench would be covered with steel plates for the safety of the public. For the 12-inch diameter distribution mainline, approximately 20 to 40 LF of trench could be installed in a day. For the 16-inch diameter distribution mainline, approximately 20 to 25 LF of trench could be installed in a day.

Various pieces of construction equipment would be used to accomplish the open-trench installation of the TTLR as well as the 12-inch and 16-inch diameter distribution mainlines. For the TTLR, the construction equipment would include the following: drill rig, front loader, hydraulic cranes, pavement saw, sweeper, forklift, excavator, backhoe, blower, skid steer, wheel loader, carry deck, utility trucks (water truck, gang truck, slurry truck, flat bed pipe truck, four pick-up trucks, two axle dump trucks, and three axle dump trucks), and trailers (dump trailer, low bed trailer, weld truck with trailer). For the 12-inch and 16-inch diameter distribution mainlines, the construction equipment would include the following: backhoe, crane (or carry deck if overhead power is present or the work zone is within a narrow street), utility trucks (two axle dump truck, three axle dump truck, gang truck, flatbed for pipe), skid steer, sweeper truck, and carrier for backhoe (or trailer attached to a dump truck). However, these pieces of equipment serve specialized purposes during the pipeline installation and would generally only be operated for brief periods when required. For example, the saw would be used to cut the edges of the trench at the beginning of the construction process, the excavator would be used during trench excavation, and a crane would be used when installing the H-beam piles and the trunk line or mainline pipe segments. Therefore, individual pieces of equipment would not operate continuously during the day and generally would not operate simultaneously.

Trucks would haul debris and excavated material from the site and deliver construction materials, such as pipe segments and backfill material, to the site. The peak of haul truck trips would occur during the excavation of the trench, which may require an average of three dump trucks trips in a single day, assuming a 10-cubic yard truck capacity for the TTLR and a 20-cubic yard truck capacity for the 12-inch and 16-inch diameter distribution mainlines. The peak of delivery trucks would occur during the backfilling of the trench with the soil-cement slurry. Assuming a 10-cubic yard concrete truck capacity for the TTLR, this may require an average of one to two concrete trucks per day to backfill the trench within 5 feet of the surface after the installation of the trunk line. Also, assuming a 20-cubic yard dump truck capacity for the 12-inch and 16-inch diameter distribution mainlines, this may require an average of three to four dump trucks per day to backfill the trench within 3 feet of the surface after the installation of these distribution mainlines. These excavation and backfilling operations may occur simultaneously in different sections of the trench, which may result in a peak of approximately five truck trips per day within a given work zone.

Within a given work zone, the open-trench construction would require approximately 20 daily construction personnel for the trunk line and 8 daily construction personnel for the 12-inch and 16-inch diameter distribution mainlines installation. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

Project Construction – Trunk Line Microtunneling (Jacking)

While the majority of the TTLR would be installed using the above described open-trench method of construction, in certain areas, a microtunneling (also referred to as jacking) method would be employed to install the trunk line. The microtunneling method would use a cutting head that loosens the soil, then the soil is transported out. Microtunneling would be utilized where large substructures exist that cannot be easily relocated for the TTLR. These structures include major sewer, storm, natural gas, or water lines or other structures. Microtunneling involves installing the trunk line beneath these substructures at a depth sufficient to avoid direct conflicts as well as indirect impacts related to settlement of soil material above the tunnel. As the tunnel is bored, steel pipe casing is continually pushed forward into the tunnel by a hydraulic jacking system.

The total length of microtunneling is preliminarily estimated at approximately 6,161 LF of the total 23,300-LF TTLR (Figure 3). Microtunneling would occur at the following locations along the TTLR alignment: Victory Boulevard (just south of Oso Avenue) to the existing LADWP easement located at Metro's Pierce College Station parking lot and immediately north of the baseball fields at Winnetka Avenue and Victory Boulevard; Topham Street (at Corbin Avenue and Tampa Avenue, respectively); and, Oxnard Street (between Topeka Drive and Yolanda Avenue, at Reseda Boulevard, between Etiwanda Avenue and Lindley Avenue, and between Balcom Avenue and White Oak Avenue, respectively).

The microtunneling method requires excavating shafts at either end of the span. Similar to open-trench construction, the microtunneling would require a work zone to accommodate various pieces of equipment involved in the jacking process, delivery and haul trucks, and other construction support functions. Based on the width of these work zones, some street segments along the proposed project alignment may allow only for one traffic lane in each direction and no parking. The work zones for the End Tunnel Pit on Oxnard Street east of Lindley Avenue, the Jacking Pit on Oxnard Street west of Topeka Drive, or the pits on Topham Street, may require complete road closures and signage for detours would be posted accordingly. In addition, a portion of the work zone that occurs within the existing LADWP easement on Metro's Pierce College Station parking lot may require the northern portion of the parking lot to be closed for approximately one year for completion of the microtunneling work. The work zones surrounding each shaft would total approximately 3,000 feet in length. This would include the two launching and receiving work areas for the pits (approximately 12 feet wide, 35 feet long, and 30 feet deep), approximately 1,000 feet of spacing between the pits, and the traffic control tapering that extends about 1,000 feet beyond both sides of the work areas. They would overlap in location with the adjacent open-trench work zone but both work zones would not be active at the same time.

Cantilever or braced shoring methods would be utilized, but are dependent on soil investigation results. No impact pile-driving would be involved. After the piles have been installed, the shafts would be excavated, and the excavated material would be loaded onto trucks parked adjacent to the shaft and hauled from the construction work zone to a local landfill. The establishment of the shafts and installation of microtunneling equipment may take several weeks.

Several types of microtunnel boring machines may be utilized for pipeline installations. However, for the purposes of environmental analysis, it has been assumed that a closed-face slurry shield microtunneling boring machine (MTBM) would be employed. This type of MTBM permits microtunneling where groundwater may be encountered and limits groundwater intrusion into the launching and receiving shafts, minimizing the need for dewatering.

The microtunneling process would involve the installation of a steel casing pipe between the launching and receiving shafts. The MTBM process does not require construction personnel to enter the tunnel, as the machines are controlled from outside the tunnel. The MTBM would be lowered into the launching shaft and pushed forward by the hydraulic jacking frame as the cutter head of the MTBM removes soil at the leading edge of the tunnel. The slurry shield MTBM provides a closed environment within which soil particles are transferred into the interior of the cutter head, mixed with water that is pumped from the surface to the MTBM, and pumped through discharge lines to the surface as a slurry mixture. This process allows the MTBM to be advanced toward the receiving shaft by the hydraulic jack, with pipe casing segments, which are nominally 35 feet in length, continually lowered into the launching shaft and pushed forward behind the MTBM. Each new casing segment would be welded to the previous segment to extend the casing. The slurry mixture pumped to the surface would be processed in a separation plant to remove the spoils and recycle the water through the MTBM. The spoils would be transferred to a dump truck to be hauled off site.

The work zones surrounding each shaft would total approximately 4,000 feet in length. This would include the two launching and receiving work areas for the pits, approximately 2,000 feet of spacing between the pits, and the traffic control tapering that extends about 1,000 feet beyond both sides of the work areas. The work zones for the End Tunnel Pit on Oxnard Street east of Lindley Avenue may require complete road closure due to the narrow curb to curb width.

The average pace of installation for microtunneling would be approximately 40 feet per day, which would not include pit excavation or pipe installation. The actual time to complete a microtunneling installation for a given span would depend on factors such as soil conditions as well as the length of the span, with the total length of individual spans ranging from about 350 feet to 1,550 feet for microtunneling. However, the entire microtunneling operation at a given shaft location would be expected to be approximately 6 months.

Various pieces of construction equipment would be used to accomplish the microtunneling installation, including an excavator, front loader, hydraulic crane, utility truck, tunnel ventilation systems, slurry separator plant, tunnel boring machine, power generators, electrical systems, and high pressure water pump. Trucks would haul excavated material from the shaft and the spoils from the boring operation as well as deliver construction materials. The peak of haul truck trips would occur during the excavation of the launching and receiving shafts, which may require up to about two to three trucks per day, which may result in a peak of approximately three truck trips per day within a given work zone.

For microtunneling operations, the peak of delivery trucks would occur during the backfilling of the shafts with the soil-cement slurry. Assuming a 10-cubic yard truck capacity, this may require up to about three concrete trucks per day to backfill both shafts. Microtunneling would require approximately 28 construction personnel. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

Connections

As mentioned above, the existing Topham Trunk Line must remain in service during project construction. Therefore, the proposed project, including the 12-inch and 16-inch diameter distribution mainlines, would first be placed in service and supplied via a connection to the new De Soto Trunk Line Replacement at De Soto Avenue and Victory Boulevard at the west end. The existing Topham Trunk Line would remain in service and supplied by the existing Encino Inlet Line at Oxnard Street and Encino Avenue at the east end. This would allow connections from the 12-inch and 16-inch diameter distribution mainlines to the distribution system to be done with minimal impact to normal operations in the 1123SZ. Once these distribution connections have been made, the TTLR connection to the Encino Inlet Line at Oxnard Street and Encino Avenue would be made. The shutdown of the existing Topham Trunk Line would take place during the winter months when water demand is low to avoid potential supply issues. The existing Topham Trunk Line would be isolated from the drinking water system and abandoned in place once these final connections have been made.

Project Operations

The TTLR would interconnect the 1134SZ at the east end and the 1123SZ at the west end, allowing flow between the two zones, providing operational flexibility and system resiliency. The TTLR would be located entirely underground and would not be visible. Activities associated with long-term operations and maintenance would be minimal, limited to scheduled maintenance or emergency repair. No additional permanent LADWP workforce would be required to operate the TTLR.

Best Management Practices

The following best management practices (BMPs) would be employed during construction of the proposed project, to help minimize or eliminate potential impacts to the environment. BMPs are distinguished from mitigation measures because they are based on existing regulatory requirements and/or are standard practices and procedures of LADWP and/or its contractors not unique to the proposed project.

Air Quality

- **BMP-AQ-1:** The proposed project would comply with South Coast Air Quality Management District (SCAQMD) Rule 401 (Visible Emissions) and Rule 402 (Nuisance) to prevent the occurrence of public nuisances and visible dust plumes traveling off-site, and would implement Rule 403 dust control measures and Rule 1166 measures to control the emission of Volatile Organic Compounds (VOCs) from excavating, grading, handling and treating VOC-contaminated soil as required by the SCAQMD, including but not limited to the following:
    - Water shall be applied to exposed surfaces at least two times per day to prevent generation of dust plumes.
    - The construction contractor shall utilize at least one of the following measures at each vehicle egress from the project site to a paved public road:
        - Pave the surface extending at least 100 feet and at least 20 feet wide;
        - Utilize a wheel shaker/wheel spreading device consisting of raised dividers at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages; or
        - Install a wheel washing system to remove bulk material from tires and vehicle undercarriages.
    - All trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
    - Construction activity on exposed or unpaved dirt surfaces shall be suspended when wind speed exceeds 25 miles per hour (mph).
    - A community liaison shall be identified concerning on-site construction activity including resolution of issues related to dust generation.
    - Non-toxic soil stabilizers shall be applied according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more).
    - Streets shall be swept at the end of the day if visible soil is carried onto adjacent public paved roads. If feasible, water sweepers with reclaimed water shall be used.

Biological Resources

Because project construction activities would be continuous during the 7-year construction period, nesting bird season (which generally occurs February 15 through September 15, and as early as January for raptors) could not be avoided. Therefore, the following BMPs shall be employed to avoid and minimize impacts to nesting birds protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGC):

- **BMP-BIO-1:** A pre-construction nesting bird survey shall be conducted by a qualified biologist within 3 days prior to the start of construction activities during the nesting season to determine whether active nests are present within or directly adjacent to the construction zone. All nests found shall be recorded.
- **BMP-BIO-2:** In the event an active nest is detected, a qualified biologist shall monitor the nest to determine if a nest avoidance buffer zone is necessary to restrict construction activities in proximity to the nest to protect the nest from failing. Any buffer zone, within which construction activities may not occur, shall be established in coordination with the qualified biologist, who shall take into account existing baseline conditions (e.g., topography, buffering buildings or other structures, etc.). In addition, observed avian response to ambient conditions (e.g., existing traffic noise and human activity) shall factor into the requirement for and size of a nest avoidance buffer.
- **BMP-BIO-3**: The qualified biologist shall monitor all active nests, including those with and without an established buffer, at least once per week to determine whether birds are being disturbed. If signs of disturbance or stress are observed, the qualified biologist shall implement adaptive measures to reduce disturbance. These measures could include establishing or increasing buffer distances, or placing visual screens or sound dampening structures between the nest and construction activity until fledging is confirmed. The qualified biologist shall monitor each active nest until they determine that nestlings have fledged and dispersed, or the nest is no longer active.
- **BMP-BIO-4:** Should an active nest of any federal or state-listed bird species be detected during pre-construction surveys or subsequent construction monitoring, construction activity in the immediate area shall not commence or shall cease if already underway, and the applicable federal and/or state agency (e.g., United States Fish and Wildlife Service [USFWS], California Department of Fish and Wildlife [CDFW], etc.) shall be notified. Work in other areas of the project site may continue until the active nests has been evaluated.

Cultural Resources

- **BMP-CUL-1:** All field supervisors and all construction workers shall participate in training on cultural resources awareness prior to the initiation of project construction on project sites that involve ground-disturbing activities. The training shall include a description of the types of cultural resources (including tribal cultural resources and human remains) that could inadvertently be encountered during ground-disturbing activities, the sensitivity of the resources, the legal basis for protection of the resources, and the penalties for unauthorized collection of or knowingly damaging the resources. The training shall address the proper procedures in the event of an inadvertent discovery of a cultural resource, including the immediate halting of work in the area of the discovery, notification of appropriate individuals of the discovery, the establishment of appropriate protective buffer zones around the discovery, and the continued avoidance of the protected area until the resource has been evaluated by qualified individuals and an appropriate treatment plan has been developed and implemented. These procedures shall be documented in a cultural resources monitoring plan (CRMP) that shall establish, in the event of inadvertent discovery of cultural resources, monitoring procedures (including potential Native American monitors), notification procedures, key staff, and preliminary treatment measures for potential discoveries. The CRMP shall be written to ensure compliance with appropriate state and federal laws. The training presentation and CRMP shall be available to additional supervisory or construction personnel who may join after project construction has begun.

Paleontological Resources

- **BMP-GEO-1:** In the event previously unknown paleontological resources are encountered, the construction manager would halt construction activities in the immediate area in accordance with CEQA Guidelines Section 15064.5(f). LADWP would retain a qualified paleontologist to make an immediate evaluation of the significance and appropriate treatment of the resource. Construction activities may continue on other parts of the construction site while evaluation and any necessary treatment of paleontological resources take place.

Stormwater and Erosion Control

- **BMP-WQ-1:** A Storm Water Pollution Prevention Plan (SWPPP), which will include erosion and sedimentation BMPs, shall be developed and implemented for construction activities. The SWPPP may include, but would not be limited to, the following:
    - Minimizing the extent of disturbed areas and duration of exposure;
    - Stabilizing and protecting disturbed areas;
    - Keeping runoff velocities low; and
    - Retaining sediment within the construction area.
- **BMP-WQ-2:** Construction erosion and sediment control BMPs may include, but are not limited, to the following:
    - Temporary desilting basins;
    - Silt fences;
    - Gravel bag barriers;
    - Temporary soil stabilization with mattresses and mulching;
    - Temporary drainage inlet protection; and
    - Diversion dikes and interceptor swales.

Transportation

- **BMP-TRA-1**: Residences and businesses near the pipeline alignment would be notified prior to the start of construction (e.g., via flyers) of lane closures and parking restrictions in their vicinity. The notices would include a telephone number for comments or questions related to construction activities.

- **BMP-TRA-2** LADWP would coordinate with all applicable agencies regarding construction schedules and worksite traffic control and detour plans, including but not limited to the City of Los Angeles Department of Transportation, the City of Los Angeles Department of Public Works, Bureau of Engineering, the City of Los Angeles Fire Department, and the City of Los Angeles Police Department.

Utilities and Service Systems

- **BMP-UTL-1:** The proposed project construction would incorporate source reduction techniques and recycling measures and maintain a recycling program to divert waste in accordance with the Citywide Construction and Demolition Debris Recycling Ordinance.

Energy Topical Information

The analysis of direct and indirect energy resource consumption associated with implementation of the proposed project considers potential petroleum-based transportation fuels consumption, electricity use, and natural gas use during construction and future operations.

Transportation Fuels

The spark-ignited internal combustion engines of on-road motor vehicles and off-road equipment use fossil fuel petroleum energy for propulsion. Motor gasoline and diesel fuel are formulations of fossil fuels refined for use in various applications. Gasoline is the primary fuel source for most passenger automobiles, and diesel fuel is the primary fuel source for most off-road equipment and medium and heavy-duty trucks. As of 2015, approximately 15.1 billion gallons of gasoline and 4.2 gallons of diesel, including off-road diesel were sold and consumed throughout California. Approximately 97 percent of all gasoline consumed in California is utilized by light-duty cars, pickup trucks, and sport utility vehicles. Nearly all heavy-duty trucks, delivery vehicles, buses, trains, ships, boats and barges, farm, construction, and heavy-duty military vehicles have diesel engines.[1] More transportation fuels are consumed in Los Angeles County than any other county in California. The California Energy Commission estimates that approximately 3.56 billion gallons of gasoline and 276 million gallons of diesel fuel were purchased and consumed by Los Angeles County customers in 2019.[2]

Electricity Supply

Electricity is a form of energy produced through various means of expending natural resources (i.e., coal-fire power plants, solar energy facilities, hydroelectric dams, and geothermal plants) and is used to power buildings, lighting, appliances, and myriad other end uses. Electricity in the project area is provided by the LADWP. LADWP's power system supplies more than 22.5 million megawatt-hours (MWh) of electricity a year for the City of Los Angeles' 1.5 million residential and business customers as well as about 6,000 customers in Owens Valley. Typical residential energy use per customer is approximately 500 kilowatt-hours (kWh) per month. Business and industry consume approximately 70 percent of the electricity in Los Angeles. LADWP has a generation capacity of approximately 8,000 MW from a mix of energy sources. Approximately 34 percent of electricity is generated from

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[1]California Energy Commission, *Energy Almanac*, https://www.energy.ca.gov/data-reports/energy-almanac, accessed May 20, 2021.

[2]California Energy Commission, *2010-2019 CEC-A15 Results and Analysis*, 2020.

renewable energy, 34 percent from natural gas, nine percent from nuclear, three percent from hydroelectric, 19 percent from coal, and six percent from purchased power.[3]

Natural Gas

Natural gas is provided and distributed to residents and businesses in the City of Los Angeles by the Southern California Gas Company (SoCalGas). According to the 2018 California Gas Report, SoCalGas is expected to provide an average of 2,519,000,000 thousand british thermal unit (BTU) per day by 2022. SoCalGas projects total gas demand to decline at an annual rate of 0.74 percent from 2018 to 2035. The decline in throughput demand is due to modest economic growth, California Public Utilities Commission mandates energy efficiency standards and programs, tighter standards created by revised Title 24 Codes and Standards, renewable electricity goals, the decline in commercial and industrial demand, and conservation savings linked to Advanced Metering Infrastructure.[4]

Regulatory Framework

The following provides a brief summary of regulations and policies pertaining to energy resources. This is a not an exhaustive list of all regulations and policies.

Federal

On August 8, 2005, President George W. Bush signed the Energy Policy Act of 2005 into law. This comprehensive energy legislation contains several electricity related provisions that aim to:

- Help ensure that consumers receive electricity over a dependable, modern infrastructure;
- Remove outdated obstacles to investment in electricity transmission lines;
- Make electric reliability standards mandatory instead of optional; and
- Give federal officials the authority to site new power lines in Department of Energy designated national corridors in certain circumstances.

State

CEQA Guidelines Appendix F provides a goal of conserving energy in the state of California. The appendix indicates the following methods to achieve this goal: (1) decreasing overall per capita energy consumption, (2) decreasing reliance on natural gas and oil, and (3) increasing reliance on renewable energy sources.

The California Renewables Portfolio Standard (RPS) Program, which was established in 2002 under Senate Bill (SB) 1078, accelerated in 2006 under SB 107, expanded in 2011 under SB 2 and further expanded in 2015 under SB 350, California's RPS is one of the most ambitious renewable energy standards in the country. The RPS Program requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020. On September 12, 2002, then-Governor Gray Davis signed SB 1078. SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. In November 2008, then-Governor Arnold Schwarzenegger signed Executive Order S-14-08, which expands the RPS to 33 percent renewable

[3] Los Angeles Department of Water and Power, *2019-20 Briefing Book*, 2020.
[4] California Gas and Electric Utilities, *2018 California Gas Report*, 2018.

power by 2020. In September 2009, Governor Schwarzenegger continued California's commitment to the RPS by signing Executive Order S-21-09, which directs the California Air Resources Board (CARB) under its Assembly Bill (AB) 32 authority to enact regulations to help the state meet its RPS goal of 33 percent renewable energy by 2020.

The 33 percent by 2020 goal was codified in April 2011 with SB X1-2, which was signed by Governor Edmund G. Brown, Jr. This RPS preempts the CARB 33 percent Renewable Electricity Standard and applies to all electricity retailers in the state, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. These entities must adopt the new RPS goals of 20 percent of retail sales from renewables by the end of 2013 and 25 percent by the end of 2016, with the 33 percent requirement being met by the end of 2020.

The Clean Energy and Pollution Reduction Act of 2015, SB 350 (Chapter 547, Statutes of 2015) was approved by Governor Edmund G. Brown, Jr. on October 7, 2015. SB 350 does the following: (1) increases the standards of the RPS program by requiring that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased to 50 percent by December 31, 2030; (2) requires the State Energy Resources Conservation and Development Commission to establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030; (3) provides for the evolution of the Independent System Operator into a regional organization; and (4) requires the state to reimburse local agencies and school districts for certain costs mandated by the state through procedures established by statutory provisions. Among other objectives, the legislature intends to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation (SB 350, Clean Energy and Pollution Reduction Act 2015).

Title 24 of the California Code of Regulations comprises the State Building Standards Code. Part 6 of Title 24 is the California Energy Code that includes the building energy efficiency standards. The standards include provisions applicable to all buildings, residential and non-residential, and describe the requirements for documentation to certify that building designs meets the standards.

Executive Order S-06-06 establishes targets for the use and production of biofuels and bio-power and directs state agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. The executive order establishes the following target to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20 percent of its bio-fuels within California by 2010, 40 percent by 2020, and 75 percent by 2050.

On April 29, 2015, Governor Edmund G. Brown Jr. signed Executive Order B-30-15, establishing a new statewide goal to reduce greenhouse gas (GHG) emissions 40 percent below 1990 levels by 2030. SB 1389 requires the California Energy Commission to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety.

Local

On May 15, 2007, Los Angeles Mayor Antonio Villaraigosa released the "GREEN LA – An Action Plan to Lead the Nation in Fighting Global Warming" (GREEN LA Plan) that has an overall goal of reducing the City of Los Angeles' GHG emissions by 35 percent below 1990 levels by 2030. This goal exceeds the targets set by both California and the Kyoto Protocol and is the greatest reduction target of any large United States city. The cornerstone of the GREEN LA Plan is increasing the City's use of renewable energy to 35 percent by 2020.

On April 8, 2015, Mayor Eric Garcetti released the Sustainable City pLAn (pLAn), a roadmap to achieve back to basics short-term results while setting the path to strengthen and transform the City. The pLAn is made up of short-term (by 2017) and longer-term (by 2025 and 2035) targets in 14 categories to advance the City's environment, economy, and equity. The pLAn provides strategies to create a more sustainable and livable city by: improving land use planning to promote neighborhood quality of life; conserving energy and water; mitigating and adapting to climate change; building transit options for an accessible future; promoting affordability and environmental justice; and restoring and reinventing the Los Angeles River.

In April 2019, Mayor Eric Garcetti released L.A.'s Green New Deal (Sustainable City pLAn 2019). Rather than an adopted plan, the Green New Deal is a mayoral initiative that consists of a program of actions designed to create sustainability-based performance targets through 2050 that advance economic, environmental, and equity objectives. L.A.'s Green New Deal is the first four-year update to the City's first Sustainable City pLAn that was released in 2015. It augments, expands, and elaborates in even more detail Los Angeles' vision for a sustainable future, and it addresses climate change with accelerated targets and new aggressive goals. L.A.'s Green New Deal contains an extensive list of commitments to enhance energy efficiency through various initiatives throughout the City:

- Reduce potable water use per capita by 22.5 percent by 2025; 25 percent by 2035; and maintain or reduce 2035 per capita water use through 2050.
- Reduce building energy use per sf for all building types 22 percent by 2025; 34 percent by 2035; and 44 percent by 2050 (from a baseline of 68 million BTU/square feet in 2015).
- All new buildings will be net zero carbon by 2030 and 100 percent of buildings will be net zero carbon by 2050.
- Increase cumulative new housing unit construction to 150,000 by 2025; and 275,000 units by 2035.
- Ensure 57 percent of new housing units are built within 1,500 feet of transit by 2025; and 75 percent by 2035.
- Increase the percentage of all trips made by walking, biking, micro-mobility/matched rides or transit to at least 35 percent by 2025, 50 percent by 2035, and maintain at least 50 percent by 2050.
- Reduce vehicle miles traveled (VMT) per capita by at least 13 percent by 2025; 39 percent by 2035; and 45 percent by 2050.
- Increase the percentage of electric and zero emission vehicles in the city to 25 percent by 2025; 80 percent by 2035; and 100 percent by 2050.

- Increase landfill diversion rate to 90 percent by 2025; 95 percent by 2035 and 100 percent by 2050.
- Reduce municipal solid waste generation per capita by at least 15 percent by 2030, including phasing out single-use plastics by 2028 (from a baseline of 17.85 pounds of waste generated per capita per day in 2011).
- Eliminate organic waste going to landfill by 2028.
- Reduce urban/rural temperature differential by at least 1.7 degrees by 2025; and 3 degrees by 2035.
- Ensure proportion of Angelenos living within 0.5 miles of a park or open space is at least 65 percent by 2025; 75 percent by 2035; and 100 percent by 2050.

The 2017 LADWP Power Strategic Long-Term Resource Plan (SLTRP) is a 20-year roadmap that guides the LADWP power system in its efforts to supply reliable electricity in an environmentally responsible and cost-effective manner. One of the main focuses of the SLTRP is to reduce greenhouse gas emissions, while maintaining cost competitive rates and reliable electric service. The SLTRP examines multiple strategies to reduce GHG emissions, including early coal replacement, accelerated renewable portfolio standard, energy efficiency, local solar, energy storage, and transportation electrification. As LADWP starts the process to investigate, study, and determine the investments needed for a 100 percent clean energy portfolio, the 2017 SLTRP provides a path towards this goal with a combination of GHG reduction strategies, including early coal replacement two years ahead of schedule by 2025, accelerating renewable portfolio standard to 50 percent by 2025, 55 percent by 2030, and 65 percent by 2036, doubling of energy efficiency from 2017 through 2027, repowering coastal in-basin generating units with new, highly efficient potential clean energy projects by 2029 to provide grid reliability and critical ramping capability, accelerating electric transportation to absorb GHG emissions from the transportation sector, and investing in the Power System Reliability Program to maintain a robust and reliable Power System.[5]

Existing Setting

California contains abundant sources of nonrenewable and renewable energy. Nonrenewable resources include large crude oil and natural gas deposits that are located within six geological basins in the Central Valley and along the coast. Much of these reserves are concentrated in the southern San Joaquin Basin. Regarding renewable resources, the State leads the nation in net electricity generation from solar, geothermal, and biomass. California has considerable solar potential, especially in the southeastern deserts and several of the world's largest solar thermal plants are located in California's Mojave Desert. Although California's wind power potential is widespread, especially along the eastern and southern mountain ranges, much of the State is excluded from development of this resource because it is in wilderness areas, parks, or urban areas. The transportation sector is responsible for the most energy consumption of any sector within the State. More motor vehicles are registered in California than in any other state, and commute times in California rank among some of the longest in the country.

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[5] LADWP, *2017 Power Strategic Long-Term Resource Plan*, December 2017.

Significance Thresholds

This Assessment was undertaken to determine whether construction or operation of the proposed project would have the potential to result in significant environmental impacts related to Energy in the context of the Appendix G Environmental Checklist criteria of the CEQA Statute and Guidelines. Implementation of the proposed project may result in a significant environmental impact related to Energy Resources if the proposed project would:

- Result in potentially significant environment impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation; and/or,
- Conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

Methodology

Appendix F of the CEQA Guidelines states that the goal of conserving energy implies the wise and efficient use of energy, to be achieved by decreasing overall per capita energy consumption; decreasing reliance on natural gas and oil; and increasing reliance on renewable energy resources. To assure energy implications are considered in project decisions, CEQA requires that environmental impact reports include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy. Energy resource assessments should consider both direct and indirect expenditures of energy during construction and operation of projects. Other than the use of site security lighting during operations, which would consume a negligible amount for electricity, implementation of the proposed project would not introduce any new temporary or permanent uses or facilities that would require electricity or natural gas; therefore, these resources did not require any quantitative assessment.

Construction of the proposed project would employ off-road equipment and on-road vehicles powered by petroleum-based transportation fuels. The air quality analysis prepared for the proposed project, included in the appendix for the environmental documentation, includes an inventory of the construction equipment activity and estimates of carbon dioxide (CO_2) emissions that would be generated by vehicle trips that were prepared using the California Emissions Estimator Model (CalEEMod, Version 2020.4.0). Fuel consumption factors from the CARB off-road equipment model in terms of gallons per horsepower-hour (gal/hp-hr.) were used to estimate diesel fuel consumption in off-road equipment during proposed project construction.

On-road vehicle fuel consumption was estimated using the CalEEMod output for daily CO_2 emissions in pounds per day (lbs./day) from worker trips (motor gasoline) and vendor and haul truck trips (diesel fuel) and carbon content factors from the United States Environmental Protection Agency (USEPA) *Emission Factors for Greenhouse Gas Inventories* document.[6] The USEPA estimates the carbon intensity of motor gasoline and diesel fuel to be 19.36 lbs.-CO_2/gallon-gas and 22.51 lbs.-CO_2/gallon-diesel, respectively. Daily motor gasoline and diesel fuel consumption during each phase of construction were estimated by multiplying the daily CO_2 emissions from each vehicle type by the corresponding carbon intensity factor, then multiplying by the total number of workdays that would

[6]USEPA, Emission Factors for Greenhouse Gas Inventories, March 2020.

occur under each phase. Detailed emissions modeling files can be found in the **Appendix**, along with transportation fuels consumption calculations.

Impact Assessment

a) Would the proposed project result in potentially significant environment impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation? (Less-than-Significant Impact)

The following analysis discusses short-term (construction) and long-term (operational) use of electricity, natural gas, and petroleum.

Electricity

Construction. Construction of the proposed project would require electricity for operation of electrically powered hands tools. However, electricity for construction activities would be provided by diesel generators. Electricity would be generated by on-site use of petroleum products. Therefore, construction of the proposed project would result in a less than significant impact related to wasteful, inefficient, or unnecessary consumption of electricity.

Operation. Operation of the proposed project would not interfere with the existing electricity service infrastructure, nor would it impede LADWP efforts to expand its renewable resources. Therefore, implementation of the proposed project would have a less than significant impact related to operational electricity consumption.

Natural Gas

Construction. Construction activities typically do not require the consumption of natural gas to power equipment or heavy machinery. Natural gas that would be consumed during construction would be negligible and would not result in a significant drain on natural gas resources. Therefore, construction of the proposed project would result in a less than significant impact related to wasteful, inefficient, or unnecessary consumption of natural gas.

Operation. Future operation of the proposed project would not use natural gas. Therefore, operation of the proposed project would not result in a significant impact related to wasteful, inefficient, or unnecessary consumption of natural gas.

Petroleum

Construction. Petroleum fuels would be consumed during construction activities by heavy-duty equipment, which is usually diesel powered, as well as on-road vehicles used by the construction crews, vendor deliveries, and haul trucks. **Table 1** shows that a one-time expenditure of approximately 418,390 gallons of diesel fuel and 139,118 gallons of gasoline would be needed to construct the proposed project. Averaged over the 7-year construction timeline, equipment and vehicles employed to construct the proposed project would consume approximately 59,770 gallons of diesel fuel and 19,874 gallons of gasoline per year.

TABLE 1: CONSTRUCTION PETROLEUM DEMAND	
Fuel Type/End Use	**Gallons**
DIESEL	
Off-Road Equipment	326,539
Vendor Delivery Trips	18,159
Disposal Hauling Trips	73,692
Total Diesel Consumption	**418,390**
Annual Average Consumption (gallons/year)	***59,770***
GASOLINE	
Construction Crew Trips	139,118
Total Gasoline Consumption	**139,118**
Annual Average Consumption (gallons/year)	***19,874***
SOURCE: CARB, 2018; USEPA, 2020; TAHA, 2023.	

The proposed project would use best practices to eliminate the potential for the wasteful consumption of petroleum. Exported materials (e.g., demolition debris and soil hauling) would be disposed of at the closest facility that is able to accept such materials, and the proposed project would be required to comply with CARB's Airborne Toxics Control Measure, which restricts heavy-duty diesel vehicle idling time to five minutes. Therefore, because petroleum use would be minimized to the extent feasible and represents a relatively small amount of fuel consumption, construction of the proposed project would result in a less than significant impact related to wasteful, inefficient, or unnecessary consumption of petroleum.

Operation. Activities associated with long-term operations and maintenance would be minimal, limited to scheduled maintenance or emergency repair. No additional permanent LADWP workforce would be required to operate the TTLR. Periodic maintenance would require a small amount of transportation fuel for site inspections. Furthermore, by replacing the existing trunk line the TTLR project would reduce the necessary frequency of maintenance and servicing trips to the trunk line compared to existing maintenance requirements. Therefore, operation of the proposed project would not result in a significant impact related to wasteful, inefficient, or unnecessary consumption of petroleum products.

Mitigation Measures

No mitigation measures are required.

b) Would the proposed project conflict with or obstruct a State or local plan for renewable energy or energy efficiency? (Less-than-Significant Impact)

There is no potential for the project to conflict with renewable energy or energy efficiency plans. The proposed project would use a significant amount of transportation fuel, electricity, or natural gas. Construction activities would use best practices to eliminate the potential for the wasteful consumption of energy (e.g., compliance with CARB's Airborne Toxics Control Measure, which restricts heavy-duty diesel vehicle idling time to five minutes). Therefore, the proposed project would result in no impact related to energy plans and energy efficiency.

Mitigation Measures

No mitigation measures are required.

References

42 United States Code, *Section 13201 et seq. Energy Policy Act*, 2005.

California Air Resources Board, *2017 Off-road Diesel Emission Factors*, 2017.

California Code of Regulations, *Title 24 Building Energy Efficiency Standards*, 2019.

California Energy Commission, *2010-2019 CEC-A15 Results and Analysis*, 2020.

California Energy Commission, *Energy Almanac,* available at https://www.energy.ca.gov/data-reports/energy-almanac, accessed April 19, 2022.

California Gas and Electric Utilities, *2018 California Gas Report*, 2018.

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City of Los Angeles, *L.A.'s Green New Deal (Sustainable City pLAn 2019)*, December 2019.

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Los Angeles Department of Water and Power, *Briefing Book 2019-20*, March 2020.

Los Angeles Department of Water and Power, *Briefing Book 2021-22*, November 2022.

The Climate Registry, General Reporting *Protocol*, 2019.

U.S. Energy Information Administration, *California Natural Gas Consumption by End Use*, December 31, 2019.

U.S. Energy Information Administration, *California State Electricity Profile 2018*, December 2019.

U.S. Energy Information Administration, *California State Energy Profile*, November 15, 2018.

United States Environmental Protection Agency, *Emission Factors for Greenhouse Gas Inventories*, March 2020.

Appendix

- CalEEMod Daily Output Files:
  - Distribution Mainlines Construction
  - Topham Trunk Line Open-Trench Construction
  - Topham Trunk Line Microtunnel Construction
- Calculation Worksheets:
  - Distribution Mainlines Construction
  - Topham Trunk Line Open-Trench Construction
  - Topham Trunk Line Microtunnel Construction

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Topham Trunk Line Replacement Project - 12"/16" Dist. Mainlines

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	0.60	1000sqft	0.01	600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2030
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	691.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction Only - Open Trench method for 12" dist. mainline & 16" dist. mainline

Land Use - Representative daily active work zone area.

Construction Phase - Single representative construction day.

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Trips and VMT - Max 12 construction vehicles/day.
Max 6 hauling disposal loads/day.
Max 3 material delivery trucks/day.
Max 3 asphalt trucks/day.

Demolition - Max 3 haul load disposals/day.

Grading - Max 3 haul disposal loads per day.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Area Coating -

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	2.00	1.00
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDays	5.00	1.00
tblGrading	MaterialExported	0.00	45.00
tblGrading	MaterialExported	0.00	45.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Backfill Trench (12/16 DML)
tblOffRoadEquipment	PhaseName		Trench Excavation (12/16 DML)
tblOffRoadEquipment	PhaseName		Trench Excavation (12/16 DML)

tblOffRoadEquipment	PhaseName		Backfill Trench (12/16 DML)
tblOffRoadEquipment	PhaseName		Trench Excavation (12/16 DML)
tblOffRoadEquipment	PhaseName		Install Pipeline (12/16 DML)
tblOffRoadEquipment	PhaseName		Backfill Trench (12/16 DML)
tblOffRoadEquipment	PhaseName		Paving (12/16 DML)
tblOffRoadEquipment	PhaseName		Backfill Trench (12/16 DML)
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	4.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblTripsAndVMT	HaulingTripNumber	5.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	13.00	24.00
tblTripsAndVMT	WorkerTripNumber	10.00	24.00
tblTripsAndVMT	WorkerTripNumber	10.00	24.00
tblTripsAndVMT	WorkerTripNumber	0.00	24.00
tblTripsAndVMT	WorkerTripNumber	10.00	24.00
tblTripsAndVMT	WorkerTripNumber	8.00	24.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.6890	6.1092	7.4160	0.0173	1.4782	0.2742	1.6245	0.2715	0.2599	0.4076	0.0000	1,743.5339	1,743.5339	0.3295	0.1285	1,781.3315
Maximum	**0.6890**	**6.1092**	**7.4160**	**0.0173**	**1.4782**	**0.2742**	**1.6245**	**0.2715**	**0.2599**	**0.4076**	**0.0000**	**1,743.5339**	**1,743.5339**	**0.3295**	**0.1285**	**1,781.3315**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.6890	6.1092	7.4160	0.0173	0.8256	0.2742	0.9718	0.1727	0.2599	0.3311	0.0000	1,743.5339	1,743.5339	0.3295	0.1285	1,781.3315
Maximum	**0.6890**	**6.1092**	**7.4160**	**0.0173**	**0.8256**	**0.2742**	**0.9718**	**0.1727**	**0.2599**	**0.3311**	**0.0000**	**1,743.5339**	**1,743.5339**	**0.3295**	**0.1285**	**1,781.3315**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**44.15**	**0.00**	**40.18**	**36.39**	**0.00**	**18.77**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.6000e-004	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		1.3000e-004	1.3000e-004	0.0000		1.4000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.6000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**1.3000e-004**	**1.3000e-004**	**0.0000**	**0.0000**	**1.4000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.6000e-004	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		1.3000e-004	1.3000e-004	0.0000		1.4000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.6000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**1.3000e-004**	**1.3000e-004**	**0.0000**	**0.0000**	**1.4000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Utility Exploration & Road Stripping (12/16 DML)	Demolition	8/7/2023	8/7/2023	5	1	Subsurface exploration to identify utilities; Remove pavement from work zone.
2	Shoring (12/16 DML)	Site Preparation	8/8/2023	8/8/2023	5	1	Install shoring piles.
3	Trench Excavation (12/16 DML)	Grading	8/9/2023	8/9/2023	5	1	Excavate trench segment.
4	Install Pipeline (12/16 DML)	Building Construction	8/10/2023	8/10/2023	5	1	
5	Backfill Trench (12/16 DML)	Trenching	8/11/2023	8/11/2023	5	1	
6	Paving (12/16 DML)	Paving	8/14/2023	8/14/2023	5	1	Roadway Restoration

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.01

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Utility Exploration & Road Stripping (12/16 DML)	Bore/Drill Rigs	1	2.00	221	0.50
Utility Exploration & Road Stripping (12/16 DML)	Concrete/Industrial Saws	1	1.00	81	0.73
Utility Exploration & Road Stripping (12/16 DML)	Excavators	1	4.00	158	0.38
Utility Exploration & Road Stripping (12/16 DML)	Forklifts	1	4.00	89	0.20

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Utility Exploration & Road Stripping (12/16 DML)	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Shoring (12/16 DML)	Bore/Drill Rigs	1	2.00	221	0.50
Shoring (12/16 DML)	Cranes	1	4.00	231	0.29
Shoring (12/16 DML)	Excavators	1	4.00	158	0.38
Shoring (12/16 DML)	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Trench Excavation (12/16 DML)	Cranes	1	2.00	231	0.29
Trench Excavation (12/16 DML)	Excavators	1	4.00	158	0.38
Trench Excavation (12/16 DML)	Forklifts	1	2.00	89	0.20
Trench Excavation (12/16 DML)	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Install Pipeline (12/16 DML)	Cranes	1	6.00	231	0.29
Install Pipeline (12/16 DML)	Generator Sets	1	6.00	84	0.74
Install Pipeline (12/16 DML)	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Backfill Trench (12/16 DML)	Cement and Mortar Mixers	1	4.00	9	0.56
Backfill Trench (12/16 DML)	Excavators	1	4.00	158	0.38
Backfill Trench (12/16 DML)	Other Material Handling Equipment	1	6.00	168	0.40
Backfill Trench (12/16 DML)	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Paving (12/16 DML)	Pavers	1	6.00	130	0.42
Paving (12/16 DML)	Paving Equipment	1	6.00	132	0.36
Paving (12/16 DML)	Rollers	1	6.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Utility Exploration & Road Stripping (12/16	5	24.00	0.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Shoring (12/16 DML)	4	24.00	6.00	6.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trench Excavation (12/16 DML)	4	24.00	0.00	12.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Pipeline (12/16 DML)	3	24.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill Trench (12/16 DML)	4	24.00	4.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Paving (12/16 DML)	3	24.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Utility Exploration & Road Stripping (12/16 DML) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0700	0.0000	1.0700	0.1620	0.0000	0.1620			0.0000			0.0000
Off-Road	0.3168	2.8549	4.2823	8.0500e-003		0.1380	0.1380		0.1282	0.1282		777.7905	777.7905	0.2312		783.5716
Total	**0.3168**	**2.8549**	**4.2823**	**8.0500e-003**	**1.0700**	**0.1380**	**1.2080**	**0.1620**	**0.1282**	**0.2902**		**777.7905**	**777.7905**	**0.2312**		**783.5716**

3.2 Utility Exploration & Road Stripping (12/16 DML) - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.0988**	**1.1491**	**1.0797**	**6.9300e-003**	**0.4083**	**8.2100e-003**	**0.4165**	**0.1095**	**7.8100e-003**	**0.1173**		**742.0349**	**742.0349**	**0.0344**	**0.0877**	**769.0141**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4173	0.0000	0.4173	0.0632	0.0000	0.0632			0.0000			0.0000
Off-Road	0.3168	2.8549	4.2823	8.0500e-003		0.1380	0.1380		0.1282	0.1282	0.0000	777.7905	777.7905	0.2312		783.5716
Total	**0.3168**	**2.8549**	**4.2823**	**8.0500e-003**	**0.4173**	**0.1380**	**0.5553**	**0.0632**	**0.1282**	**0.1914**	**0.0000**	**777.7905**	**777.7905**	**0.2312**		**783.5716**

3.2 Utility Exploration & Road Stripping (12/16 DML) - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.0988**	**1.1491**	**1.0797**	**6.9300e-003**	**0.4083**	**8.2100e-003**	**0.4165**	**0.1095**	**7.8100e-003**	**0.1173**		**742.0349**	**742.0349**	**0.0344**	**0.0877**	**769.0141**

3.3 Shoring (12/16 DML) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0900e-003	0.0000	5.0900e-003	7.7000e-004	0.0000	7.7000e-004			0.0000			0.0000
Off-Road	0.3617	3.5759	3.6121	8.6100e-003		0.1530	0.1530		0.1408	0.1408		833.7074	833.7074	0.2696		840.4483
Total	**0.3617**	**3.5759**	**3.6121**	**8.6100e-003**	**5.0900e-003**	**0.1530**	**0.1581**	**7.7000e-004**	**0.1408**	**0.1416**		**833.7074**	**833.7074**	**0.2696**		**840.4483**

3.3 Shoring (12/16 DML) - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0122	0.8175	0.2118	3.5100e-003	0.1050	4.9500e-003	0.1100	0.0288	4.7400e-003	0.0335		386.0025	386.0025	0.0212	0.0613	404.7995
Vendor	6.6700e-003	0.2411	0.0920	1.1200e-003	0.0384	1.1600e-003	0.0396	0.0111	1.1100e-003	0.0122		120.3722	120.3722	4.0100e-003	0.0173	125.6347
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.1014**	**1.1177**	**1.1011**	**6.8800e-003**	**0.4117**	**7.7200e-003**	**0.4195**	**0.1110**	**7.3400e-003**	**0.1183**		**733.7395**	**733.7395**	**0.0314**	**0.0845**	**759.7156**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.9800e-003	0.0000	1.9800e-003	3.0000e-004	0.0000	3.0000e-004			0.0000			0.0000
Off-Road	0.3617	3.5759	3.6121	8.6100e-003		0.1530	0.1530		0.1408	0.1408	0.0000	833.7074	833.7074	0.2696		840.4483
Total	**0.3617**	**3.5759**	**3.6121**	**8.6100e-003**	**1.9800e-003**	**0.1530**	**0.1550**	**3.0000e-004**	**0.1408**	**0.1411**	**0.0000**	**833.7074**	**833.7074**	**0.2696**		**840.4483**

3.3 Shoring (12/16 DML) - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0122	0.8175	0.2118	3.5100e-003	0.1050	4.9500e-003	0.1100	0.0288	4.7400e-003	0.0335		386.0025	386.0025	0.0212	0.0613	404.7995
Vendor	6.6700e-003	0.2411	0.0920	1.1200e-003	0.0384	1.1600e-003	0.0396	0.0111	1.1100e-003	0.0122		120.3722	120.3722	4.0100e-003	0.0173	125.6347
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.1014**	**1.1177**	**1.1011**	**6.8800e-003**	**0.4117**	**7.7200e-003**	**0.4195**	**0.1110**	**7.3400e-003**	**0.1183**		**733.7395**	**733.7395**	**0.0314**	**0.0845**	**759.7156**

3.4 Trench Excavation (12/16 DML) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0900e-003	0.0000	5.0900e-003	7.7000e-004	0.0000	7.7000e-004			0.0000			0.0000
Off-Road	0.2835	2.7360	3.4893	5.9700e-003		0.1305	0.1305		0.1200	0.1200		577.5536	577.5536	0.1868		582.2234
Total	**0.2835**	**2.7360**	**3.4893**	**5.9700e-003**	**5.0900e-003**	**0.1305**	**0.1356**	**7.7000e-004**	**0.1200**	**0.1208**		**577.5536**	**577.5536**	**0.1868**		**582.2234**

3.4 Trench Excavation (12/16 DML) - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0244	1.6349	0.4237	7.0300e-003	0.2101	9.9000e-003	0.2200	0.0576	9.4700e-003	0.0671		772.0050	772.0050	0.0424	0.1226	809.5991
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.1069**	**1.6941**	**1.2209**	**9.2800e-003**	**0.4783**	**0.0115**	**0.4898**	**0.1287**	**0.0110**	**0.1397**		**999.3699**	**999.3699**	**0.0486**	**0.1285**	**1,038.8804**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.9800e-003	0.0000	1.9800e-003	3.0000e-004	0.0000	3.0000e-004			0.0000			0.0000
Off-Road	0.2835	2.7360	3.4893	5.9700e-003		0.1305	0.1305		0.1200	0.1200	0.0000	577.5536	577.5536	0.1868		582.2234
Total	**0.2835**	**2.7360**	**3.4893**	**5.9700e-003**	**1.9800e-003**	**0.1305**	**0.1325**	**3.0000e-004**	**0.1200**	**0.1203**	**0.0000**	**577.5536**	**577.5536**	**0.1868**		**582.2234**

3.4 Trench Excavation (12/16 DML) - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0244	1.6349	0.4237	7.0300e-003	0.2101	9.9000e-003	0.2200	0.0576	9.4700e-003	0.0671		772.0050	772.0050	0.0424	0.1226	809.5991
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.1069**	**1.6941**	**1.2209**	**9.2800e-003**	**0.4783**	**0.0115**	**0.4898**	**0.1287**	**0.0110**	**0.1397**		**999.3699**	**999.3699**	**0.0486**	**0.1285**	**1,038.8804**

3.5 Install Pipeline (12/16 DML) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6065	6.0501	5.8013	0.0116		0.2726	0.2726		0.2585	0.2585		1,112.5727	1,112.5727	0.2293		1,118.3042
Total	**0.6065**	**6.0501**	**5.8013**	**0.0116**		**0.2726**	**0.2726**		**0.2585**	**0.2585**		**1,112.5727**	**1,112.5727**	**0.2293**		**1,118.3042**

3.5 Install Pipeline (12/16 DML) - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.0825**	**0.0592**	**0.7972**	**2.2500e-003**	**0.2683**	**1.6100e-003**	**0.2699**	**0.0711**	**1.4900e-003**	**0.0726**		**227.3649**	**227.3649**	**6.1400e-003**	**5.9200e-003**	**229.2814**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6065	6.0501	5.8013	0.0116		0.2726	0.2726		0.2585	0.2585	0.0000	1,112.5727	1,112.5727	0.2293		1,118.3042
Total	**0.6065**	**6.0501**	**5.8013**	**0.0116**		**0.2726**	**0.2726**		**0.2585**	**0.2585**	**0.0000**	**1,112.5727**	**1,112.5727**	**0.2293**		**1,118.3042**

3.5 Install Pipeline (12/16 DML) - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.0825**	**0.0592**	**0.7972**	**2.2500e-003**	**0.2683**	**1.6100e-003**	**0.2699**	**0.0711**	**1.4900e-003**	**0.0726**		**227.3649**	**227.3649**	**6.1400e-003**	**5.9200e-003**	**229.2814**

3.6 Backfill Trench (12/16 DML) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4300	3.6826	6.2750	9.6100e-003		0.1872	0.1872		0.1728	0.1728		921.2509	921.2509	0.2924		928.5610
Total	**0.4300**	**3.6826**	**6.2750**	**9.6100e-003**		**0.1872**	**0.1872**		**0.1728**	**0.1728**		**921.2509**	**921.2509**	**0.2924**		**928.5610**

3.6 Backfill Trench (12/16 DML) - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	4.4500e-003	0.1608	0.0614	7.5000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.4000e-004	8.1200e-003		80.2481	80.2481	2.6700e-003	0.0116	83.7564
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.1032**	**1.3098**	**1.1411**	**7.6800e-003**	**0.4339**	**8.9900e-003**	**0.4429**	**0.1169**	**8.5500e-003**	**0.1255**		**822.2830**	**822.2830**	**0.0371**	**0.0992**	**852.7705**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4300	3.6826	6.2750	9.6100e-003		0.1872	0.1872		0.1728	0.1728	0.0000	921.2509	921.2509	0.2924		928.5610
Total	**0.4300**	**3.6826**	**6.2750**	**9.6100e-003**		**0.1872**	**0.1872**		**0.1728**	**0.1728**	**0.0000**	**921.2509**	**921.2509**	**0.2924**		**928.5610**

3.6 Backfill Trench (12/16 DML) - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	4.4500e-003	0.1608	0.0614	7.5000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.4000e-004	8.1200e-003		80.2481	80.2481	2.6700e-003	0.0116	83.7564
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.1032**	**1.3098**	**1.1411**	**7.6800e-003**	**0.4339**	**8.9900e-003**	**0.4429**	**0.1169**	**8.5500e-003**	**0.1255**		**822.2830**	**822.2830**	**0.0371**	**0.0992**	**852.7705**

3.7 Paving (12/16 DML) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3873	3.8219	5.4691	8.5500e-003		0.1913	0.1913		0.1760	0.1760		827.8441	827.8441	0.2677		834.5376
Paving	0.0262					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4135**	**3.8219**	**5.4691**	**8.5500e-003**		**0.1913**	**0.1913**		**0.1760**	**0.1760**		**827.8441**	**827.8441**	**0.2677**		**834.5376**

3.7 Paving (12/16 DML) - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.6700e-003	0.2411	0.0920	1.1200e-003	0.0384	1.1600e-003	0.0396	0.0111	1.1100e-003	0.0122		120.3722	120.3722	4.0100e-003	0.0173	125.6347
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.0892**	**0.3003**	**0.8893**	**3.3700e-003**	**0.3067**	**2.7700e-003**	**0.3095**	**0.0822**	**2.6000e-003**	**0.0848**		**347.7370**	**347.7370**	**0.0102**	**0.0232**	**354.9160**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3873	3.8219	5.4691	8.5500e-003		0.1913	0.1913		0.1760	0.1760	0.0000	827.8441	827.8441	0.2677		834.5376
Paving	0.0262					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4135**	**3.8219**	**5.4691**	**8.5500e-003**		**0.1913**	**0.1913**		**0.1760**	**0.1760**	**0.0000**	**827.8441**	**827.8441**	**0.2677**		**834.5376**

3.7 Paving (12/16 DML) - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.6700e-003	0.2411	0.0920	1.1200e-003	0.0384	1.1600e-003	0.0396	0.0111	1.1100e-003	0.0122		120.3722	120.3722	4.0100e-003	0.0173	125.6347
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.0892**	**0.3003**	**0.8893**	**3.3700e-003**	**0.3067**	**2.7700e-003**	**0.3095**	**0.0822**	**2.6000e-003**	**0.0848**		**347.7370**	**347.7370**	**0.0102**	**0.0232**	**354.9160**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.529534	0.067658	0.193471	0.126518	0.024260	0.006985	0.011675	0.007885	0.000939	0.000569	0.026493	0.000724	0.003288

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.6000e-004	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		1.3000e-004	1.3000e-004	0.0000		1.4000e-004
Unmitigated	2.6000e-004	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		1.3000e-004	1.3000e-004	0.0000		1.4000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	5.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.1000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		1.3000e-004	1.3000e-004	0.0000		1.4000e-004
Total	**2.7000e-004**	**0.0000**	**6.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.3000e-004**	**1.3000e-004**	**0.0000**		**1.4000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	5.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.1000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		1.3000e-004	1.3000e-004	0.0000		1.4000e-004
Total	**2.7000e-004**	**0.0000**	**6.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.3000e-004**	**1.3000e-004**	**0.0000**		**1.4000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Topham Trunk Line Replacement Project - Open Trench

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	1.20	1000sqft	0.03	1,200.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2030
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	691.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction Only - Open Trench method for majority of TTLR

Land Use - Representative of daily active work area.

Construction Phase - Representative single-day activities.

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Trips and VMT - Max 6 daily haul+material delivery trucks.

Grading -

Vehicle Emission Factors - X

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Vehicle Emission Factors -

Vehicle Emission Factors -

Area Coating -

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	2.00	1.00
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDays	5.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	4.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripNumber	5.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	13.00	50.00
tblTripsAndVMT	WorkerTripNumber	10.00	50.00

tblTripsAndVMT	WorkerTripNumber	10.00	50.00
tblTripsAndVMT	WorkerTripNumber	1.00	50.00
tblTripsAndVMT	WorkerTripNumber	10.00	50.00
tblTripsAndVMT	WorkerTripNumber	8.00	50.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	0.7773	6.2952	8.9519	0.0207	1.8389	0.2525	1.9578	0.3678	0.2390	0.4785	0.0000	2,080.0924	2,080.0924	0.3763	0.1295	2,119.6266
Maximum	**0.7773**	**6.2952**	**8.9519**	**0.0207**	**1.8389**	**0.2525**	**1.9578**	**0.3678**	**0.2390**	**0.4785**	**0.0000**	**2,080.0924**	**2,080.0924**	**0.3763**	**0.1295**	**2,119.6266**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	0.7773	6.2952	8.9519	0.0207	1.1862	0.2525	1.3051	0.2690	0.2390	0.3946	0.0000	2,080.0924	2,080.0924	0.3763	0.1295	2,119.6266
Maximum	**0.7773**	**6.2952**	**8.9519**	**0.0207**	**1.1862**	**0.2525**	**1.3051**	**0.2690**	**0.2390**	**0.3946**	**0.0000**	**2,080.0924**	**2,080.0924**	**0.3763**	**0.1295**	**2,119.6266**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**35.49**	**0.00**	**33.34**	**26.87**	**0.00**	**17.53**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**0.0000**	**2.8000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**0.0000**	**2.8000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Utility Exploration & Road Stripping (TTLR)	Demolition	8/4/2025	8/4/2025	5	1	Subsurface exploration to identify utilities; Remove pavement from work zone.
2	Shoring (TTLR)	Site Preparation	8/5/2025	8/5/2025	5	1	Install shoring piles.
3	Trench Excavation (TTLR)	Grading	8/6/2025	8/6/2025	5	1	Excavate trench segment.
4	Install Pipeline	Building Construction	8/7/2025	8/7/2025	5	1	Install pipeline segments.
5	Backfill Trench	Trenching	8/8/2025	8/8/2025	5	1	Backfill trench with fill/concrete.
6	Paving	Paving	8/11/2025	8/11/2025	5	1	Roadway Restoration.

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.03

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Utility Exploration & Road Stripping (TTLR)	Bore/Drill Rigs	1	2.00	221	0.50
Utility Exploration & Road Stripping (TTLR)	Concrete/Industrial Saws	1	1.00	81	0.73
Utility Exploration & Road Stripping (TTLR)	Excavators	1	4.00	158	0.38
Utility Exploration & Road Stripping (TTLR)	Forklifts	1	4.00	89	0.20

Topham Trunk Line Replacement Project - Open Trench - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Utility Exploration & Road Stripping (TTLR)	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Shoring (TTLR)	Bore/Drill Rigs	1	2.00	221	0.50
Shoring (TTLR)	Cranes	1	4.00	231	0.29
Shoring (TTLR)	Excavators	1	4.00	158	0.38
Shoring (TTLR)	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Trench Excavation (TTLR)	Cranes	1	2.00	231	0.29
Trench Excavation (TTLR)	Excavators	1	6.00	158	0.38
Trench Excavation (TTLR)	Forklifts	1	2.00	89	0.20
Trench Excavation (TTLR)	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Install Pipeline	Cranes	1	7.00	231	0.29
Install Pipeline	Generator Sets	1	7.00	84	0.74
Install Pipeline	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Backfill Trench	Cement and Mortar Mixers	1	6.00	9	0.56
Backfill Trench	Excavators	1	6.00	158	0.38
Backfill Trench	Other Material Handling Equipment	1	6.00	168	0.40
Backfill Trench	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Utility Exploration & Road Stripping (TTLR)	5	50.00	0.00	12.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Shoring (TTLR)	4	50.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trench Excavation (TTLR)	4	50.00	0.00	12.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Pipeline	3	50.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill Trench	4	50.00	4.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Paving		3	50.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Utility Exploration & Road Stripping (TTLR) - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0700	0.0000	1.0700	0.1620	0.0000	0.1620			0.0000			0.0000
Off-Road	0.2823	2.4377	4.2761	8.0600e-003		0.1058	0.1058		0.0983	0.0983		778.6080	778.6080	0.2311		784.3860
Total	**0.2823**	**2.4377**	**4.2761**	**8.0600e-003**	**1.0700**	**0.1058**	**1.1758**	**0.1620**	**0.0983**	**0.2603**		**778.6080**	**778.6080**	**0.2311**		**784.3860**

3.2 Utility Exploration & Road Stripping (TTLR) - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0239	1.6289	0.4367	6.7800e-003	0.2101	0.0100	0.2201	0.0576	9.5600e-003	0.0672		747.5370	747.5370	0.0433	0.1188	784.0235
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1747**	**1.7277**	**1.8745**	**0.0112**	**0.7689**	**0.0131**	**0.7820**	**0.2058**	**0.0124**	**0.2182**		**1,192.2063**	**1,192.2063**	**0.0538**	**0.1295**	**1,232.1425**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4173	0.0000	0.4173	0.0632	0.0000	0.0632			0.0000			0.0000
Off-Road	0.2823	2.4377	4.2761	8.0600e-003		0.1058	0.1058		0.0983	0.0983	0.0000	778.6080	778.6080	0.2311		784.3860
Total	**0.2823**	**2.4377**	**4.2761**	**8.0600e-003**	**0.4173**	**0.1058**	**0.5231**	**0.0632**	**0.0983**	**0.1615**	**0.0000**	**778.6080**	**778.6080**	**0.2311**		**784.3860**

3.2 Utility Exploration & Road Stripping (TTLR) - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0239	1.6289	0.4367	6.7800e-003	0.2101	0.0100	0.2201	0.0576	9.5600e-003	0.0672		747.5370	747.5370	0.0433	0.1188	784.0235
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1747**	**1.7277**	**1.8745**	**0.0112**	**0.7689**	**0.0131**	**0.7820**	**0.2058**	**0.0124**	**0.2182**		**1,192.2063**	**1,192.2063**	**0.0538**	**0.1295**	**1,232.1425**

3.3 Shoring (TTLR) - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3253	2.9949	3.5644	8.6200e-003		0.1261	0.1261		0.1160	0.1160		834.4086	834.4086	0.2699		841.1552
Total	**0.3253**	**2.9949**	**3.5644**	**8.6200e-003**	**0.0000**	**0.1261**	**0.1261**	**0.0000**	**0.1160**	**0.1160**		**834.4086**	**834.4086**	**0.2699**		**841.1552**

3.3 Shoring (TTLR) - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1549**	**0.2590**	**1.4968**	**5.1200e-003**	**0.5845**	**3.8400e-003**	**0.5884**	**0.1556**	**3.5700e-003**	**0.1592**		**522.2943**	**522.2943**	**0.0132**	**0.0219**	**529.1461**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3253	2.9949	3.5644	8.6200e-003		0.1261	0.1261		0.1160	0.1160	0.0000	834.4086	834.4086	0.2699		841.1552
Total	**0.3253**	**2.9949**	**3.5644**	**8.6200e-003**	**0.0000**	**0.1261**	**0.1261**	**0.0000**	**0.1160**	**0.1160**	**0.0000**	**834.4086**	**834.4086**	**0.2699**		**841.1552**

3.3 Shoring (TTLR) - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1549**	**0.2590**	**1.4968**	**5.1200e-003**	**0.5845**	**3.8400e-003**	**0.5884**	**0.1556**	**3.5700e-003**	**0.1592**		**522.2943**	**522.2943**	**0.0132**	**0.0219**	**529.1461**

3.4 Trench Excavation (TTLR) - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3244	2.9142	4.8343	8.0400e-003		0.1301	0.1301		0.1197	0.1197		778.5096	778.5096	0.2518		784.8042
Total	**0.3244**	**2.9142**	**4.8343**	**8.0400e-003**	**0.0000**	**0.1301**	**0.1301**	**0.0000**	**0.1197**	**0.1197**		**778.5096**	**778.5096**	**0.2518**		**784.8042**

3.4 Trench Excavation (TTLR) - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0239	1.6289	0.4367	6.7800e-003	0.2101	0.0100	0.2201	0.0576	9.5600e-003	0.0672		747.5370	747.5370	0.0433	0.1188	784.0235
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1747**	**1.7277**	**1.8745**	**0.0112**	**0.7689**	**0.0131**	**0.7820**	**0.2058**	**0.0124**	**0.2182**		**1,192.2063**	**1,192.2063**	**0.0538**	**0.1295**	**1,232.1425**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3244	2.9142	4.8343	8.0400e-003		0.1301	0.1301		0.1197	0.1197	0.0000	778.5096	778.5096	0.2518		784.8042
Total	**0.3244**	**2.9142**	**4.8343**	**8.0400e-003**	**0.0000**	**0.1301**	**0.1301**	**0.0000**	**0.1197**	**0.1197**	**0.0000**	**778.5096**	**778.5096**	**0.2518**		**784.8042**

3.4 Trench Excavation (TTLR) - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0239	1.6289	0.4367	6.7800e-003	0.2101	0.0100	0.2201	0.0576	9.5600e-003	0.0672		747.5370	747.5370	0.0433	0.1188	784.0235
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1747**	**1.7277**	**1.8745**	**0.0112**	**0.7689**	**0.0131**	**0.7820**	**0.2058**	**0.0124**	**0.2182**		**1,192.2063**	**1,192.2063**	**0.0538**	**0.1295**	**1,232.1425**

3.5 Install Pipeline - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6224	6.0362	6.6724	0.0135		0.2486	0.2486		0.2354	0.2354		1,298.4271	1,298.4271	0.2638		1,305.0213
Total	**0.6224**	**6.0362**	**6.6724**	**0.0135**		**0.2486**	**0.2486**		**0.2354**	**0.2354**		**1,298.4271**	**1,298.4271**	**0.2638**		**1,305.0213**

3.5 Install Pipeline - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1549**	**0.2590**	**1.4968**	**5.1200e-003**	**0.5845**	**3.8400e-003**	**0.5884**	**0.1556**	**3.5700e-003**	**0.1592**		**522.2943**	**522.2943**	**0.0132**	**0.0219**	**529.1461**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6224	6.0362	6.6724	0.0135		0.2486	0.2486		0.2354	0.2354	0.0000	1,298.4271	1,298.4271	0.2638		1,305.0213
Total	**0.6224**	**6.0362**	**6.6724**	**0.0135**		**0.2486**	**0.2486**		**0.2354**	**0.2354**	**0.0000**	**1,298.4271**	**1,298.4271**	**0.2638**		**1,305.0213**

3.5 Install Pipeline - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1549**	**0.2590**	**1.4968**	**5.1200e-003**	**0.5845**	**3.8400e-003**	**0.5884**	**0.1556**	**3.5700e-003**	**0.1592**		**522.2943**	**522.2943**	**0.0132**	**0.0219**	**529.1461**

3.6 Backfill Trench - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4367	3.4345	7.1640	0.0111		0.1606	0.1606		0.1486	0.1486		1,059.4401	1,059.4401	0.3343		1,067.7982
Total	**0.4367**	**3.4345**	**7.1640**	**0.0111**		**0.1606**	**0.1606**		**0.1486**	**0.1486**		**1,059.4401**	**1,059.4401**	**0.3343**		**1,067.7982**

3.6 Backfill Trench - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0160	1.0860	0.2911	4.5200e-003	0.1400	6.6600e-003	0.1467	0.0384	6.3800e-003	0.0448		498.3580	498.3580	0.0289	0.0792	522.6823
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1709**	**1.3450**	**1.7879**	**9.6400e-003**	**0.7245**	**0.0105**	**0.7351**	**0.1940**	**9.9500e-003**	**0.2039**		**1,020.6523**	**1,020.6523**	**0.0420**	**0.1011**	**1,051.8284**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4367	3.4345	7.1640	0.0111		0.1606	0.1606		0.1486	0.1486	0.0000	1,059.4401	1,059.4401	0.3343		1,067.7982
Total	**0.4367**	**3.4345**	**7.1640**	**0.0111**		**0.1606**	**0.1606**		**0.1486**	**0.1486**	**0.0000**	**1,059.4401**	**1,059.4401**	**0.3343**		**1,067.7982**

3.6 Backfill Trench - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0160	1.0860	0.2911	4.5200e-003	0.1400	6.6600e-003	0.1467	0.0384	6.3800e-003	0.0448		498.3580	498.3580	0.0289	0.0792	522.6823
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1709**	**1.3450**	**1.7879**	**9.6400e-003**	**0.7245**	**0.0105**	**0.7351**	**0.1940**	**9.9500e-003**	**0.2039**		**1,020.6523**	**1,020.6523**	**0.0420**	**0.1011**	**1,051.8284**

3.7 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4576	4.2908	7.2890	0.0114		0.2093	0.2093		0.1925	0.1925		1,103.3726	1,103.3726	0.3569		1,112.2939
Paving	0.0786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5362**	**4.2908**	**7.2890**	**0.0114**		**0.2093**	**0.2093**		**0.1925**	**0.1925**		**1,103.3726**	**1,103.3726**	**0.3569**		**1,112.2939**

3.7 Paving - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1549**	**0.2590**	**1.4968**	**5.1200e-003**	**0.5845**	**3.8400e-003**	**0.5884**	**0.1556**	**3.5700e-003**	**0.1592**		**522.2943**	**522.2943**	**0.0132**	**0.0219**	**529.1461**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4576	4.2908	7.2890	0.0114		0.2093	0.2093		0.1925	0.1925	0.0000	1,103.3726	1,103.3726	0.3569		1,112.2939
Paving	0.0786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5362**	**4.2908**	**7.2890**	**0.0114**		**0.2093**	**0.2093**		**0.1925**	**0.1925**	**0.0000**	**1,103.3726**	**1,103.3726**	**0.3569**		**1,112.2939**

3.7 Paving - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1549**	**0.2590**	**1.4968**	**5.1200e-003**	**0.5845**	**3.8400e-003**	**0.5884**	**0.1556**	**3.5700e-003**	**0.1592**		**522.2943**	**522.2943**	**0.0132**	**0.0219**	**529.1461**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.529534	0.067658	0.193471	0.126518	0.024260	0.006985	0.011675	0.007885	0.000939	0.000569	0.026493	0.000724	0.003288

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Unmitigated	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	9.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**		**2.8000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	9.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**		**2.8000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Topham Trunk Line Replacement Project - Microtunnel

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	1.20	1000sqft	0.03	1,200.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2031
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	691.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction only - microtunneling (jacking) activities.

Land Use - Representative daily active work area: 15 ft wide x 40 ft long x 2 shafts = 1,200 sf

Construction Phase - Schedule provided by applicant.

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - k

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Trips and VMT - Max three haul loads per work zone

Demolition -

Grading - Up to 3 haul loads per day (15 CY/load)

Area Coating -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	2.00	1.00
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	PhaseEndDate	8/15/2025	8/4/2025
tblConstructionPhase	PhaseEndDate	8/18/2025	8/5/2025
tblConstructionPhase	PhaseEndDate	8/20/2025	8/6/2025
tblConstructionPhase	PhaseEndDate	1/7/2026	8/7/2025
tblConstructionPhase	PhaseEndDate	8/20/2025	8/8/2025
tblConstructionPhase	PhaseEndDate	1/14/2026	8/11/2025
tblConstructionPhase	PhaseStartDate	8/16/2025	8/5/2025
tblConstructionPhase	PhaseStartDate	8/19/2025	8/6/2025
tblConstructionPhase	PhaseStartDate	8/21/2025	8/7/2025
tblConstructionPhase	PhaseStartDate	8/21/2025	8/8/2025
tblConstructionPhase	PhaseStartDate	1/8/2026	8/11/2025
tblGrading	MaterialExported	0.00	45.00
tblGrading	MaterialExported	0.00	45.00
tblOffRoadEquipment	HorsePower	9.00	81.00
tblOffRoadEquipment	HorsePower	84.00	150.00
tblOffRoadEquipment	LoadFactor	0.56	0.73
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	2.00

tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblTripsAndVMT	HaulingTripNumber	7.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	13.00	70.00
tblTripsAndVMT	WorkerTripNumber	13.00	70.00
tblTripsAndVMT	WorkerTripNumber	13.00	70.00
tblTripsAndVMT	WorkerTripNumber	1.00	70.00
tblTripsAndVMT	WorkerTripNumber	10.00	70.00
tblTripsAndVMT	WorkerTripNumber	10.00	70.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	1.1984	8.6557	14.0134	0.0358	2.4282	0.3438	2.5549	0.4696	0.3306	0.5882	0.0000	3,469.155 2	3,469.155 2	0.4600	0.0912	3,490.120 6
Maximum	**1.1984**	**8.6557**	**14.0134**	**0.0358**	**2.4282**	**0.3438**	**2.5549**	**0.4696**	**0.3306**	**0.5882**	**0.0000**	**3,469.155 2**	**3,469.155 2**	**0.4600**	**0.0912**	**3,490.120 6**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	1.1984	8.6557	14.0134	0.0358	1.4884	0.3438	1.6151	0.3273	0.3306	0.5492	0.0000	3,469.155 2	3,469.155 2	0.4600	0.0912	3,490.120 6
Maximum	**1.1984**	**8.6557**	**14.0134**	**0.0358**	**1.4884**	**0.3438**	**1.6151**	**0.3273**	**0.3306**	**0.5492**	**0.0000**	**3,469.155 2**	**3,469.155 2**	**0.4600**	**0.0912**	**3,490.120 6**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**38.71**	**0.00**	**36.79**	**30.30**	**0.00**	**6.63**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**0.0000**	**2.8000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**0.0000**	**2.8000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Subsurface Exploration & Pavement Removal	Demolition	8/4/2025	8/4/2025	5	1	
2	Install Sheet Pile Shoring	Site Preparation	8/5/2025	8/5/2025	5	1	
3	Shaft Excavation	Grading	8/6/2025	8/6/2025	5	1	
4	Install Casing & Trunk Line	Building Construction	8/7/2025	8/7/2025	5	1	
5	Backfill Shafts	Trenching	8/8/2025	8/8/2025	5	1	
6	Repave Roadway	Paving	8/11/2025	8/11/2025	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.03

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Subsurface Exploration & Pavement Removal	Bore/Drill Rigs	1	2.00	221	0.50
Subsurface Exploration & Pavement Removal	Concrete/Industrial Saws	1	2.00	81	0.73
Subsurface Exploration & Pavement Removal	Excavators	1	4.00	158	0.38
Subsurface Exploration & Pavement Removal	Forklifts	1	4.00	89	0.20

Subsurface Exploration & Pavement Removal	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Install Sheet Pile Shoring	Bore/Drill Rigs	1	2.00	221	0.50
Install Sheet Pile Shoring	Cranes	1	4.00	231	0.29
Install Sheet Pile Shoring	Excavators	1	4.00	158	0.38
Install Sheet Pile Shoring	Forklifts	1	2.00	89	0.20
Install Sheet Pile Shoring	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Shaft Excavation	Bore/Drill Rigs	1	2.00	221	0.50
Shaft Excavation	Cranes	1	2.00	231	0.29
Shaft Excavation	Excavators	1	6.00	158	0.38
Shaft Excavation	Forklifts	1	2.00	89	0.20
Shaft Excavation	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Install Casing & Trunk Line	Bore/Drill Rigs	1	7.00	221	0.50
Install Casing & Trunk Line	Cranes	1	4.00	231	0.29
Install Casing & Trunk Line	Forklifts	1	7.00	89	0.20
Install Casing & Trunk Line	Generator Sets	1	7.00	150	0.74
Install Casing & Trunk Line	Pumps	1	7.00	84	0.74
Backfill Shafts	Cement and Mortar Mixers	1	6.00	81	0.73
Backfill Shafts	Excavators	1	6.00	158	0.38
Backfill Shafts	Other Material Handling Equipment	1	6.00	168	0.40
Backfill Shafts	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Repave Roadway	Cement and Mortar Mixers	1	6.00	9	0.56
Repave Roadway	Pavers	1	7.00	130	0.42
Repave Roadway	Rollers	1	7.00	80	0.38
Repave Roadway	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Subsurface Exploration & Paveme	5	70.00	0.00	6.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Sheet Pile Shoring	5	70.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Shaft Excavation	5	70.00	0.00	6.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Casing & Trunk Line	5	70.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill Shafts	4	70.00	6.00	6.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Repave Roadway	4	70.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Subsurface Exploration & Pavement Removal - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.5407	0.0000	1.5407	0.2333	0.0000	0.2333			0.0000			0.0000
Off-Road	0.3192	2.7213	4.7317	8.8400e-003		0.1174	0.1174		0.1099	0.1099		852.6913	852.6913	0.2344		858.5506
Total	**0.3192**	**2.7213**	**4.7317**	**8.8400e-003**	**1.5407**	**0.1174**	**1.6582**	**0.2333**	**0.1099**	**0.3432**		**852.6913**	**852.6913**	**0.2344**		**858.5506**

3.2 Subsurface Exploration & Pavement Removal - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.8145	0.2184	3.3900e-003	0.1050	5.0000e-003	0.1100	0.0288	4.7800e-003	0.0336		373.7685	373.7685	0.0217	0.0594	392.0117
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2230**	**0.9527**	**2.2312**	**9.5500e-003**	**0.8875**	**9.2900e-003**	**0.8968**	**0.2363**	**8.7300e-003**	**0.2450**		**996.3055**	**996.3055**	**0.0363**	**0.0744**	**1,019.3784**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.6009	0.0000	0.6009	0.0910	0.0000	0.0910			0.0000			0.0000
Off-Road	0.3192	2.7213	4.7317	8.8400e-003		0.1174	0.1174		0.1099	0.1099	0.0000	852.6913	852.6913	0.2344		858.5506
Total	**0.3192**	**2.7213**	**4.7317**	**8.8400e-003**	**0.6009**	**0.1174**	**0.7183**	**0.0910**	**0.1099**	**0.2009**	**0.0000**	**852.6913**	**852.6913**	**0.2344**		**858.5506**

3.2 Subsurface Exploration & Pavement Removal - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.8145	0.2184	3.3900e-003	0.1050	5.0000e-003	0.1100	0.0288	4.7800e-003	0.0336		373.7685	373.7685	0.0217	0.0594	392.0117
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2230**	**0.9527**	**2.2312**	**9.5500e-003**	**0.8875**	**9.2900e-003**	**0.8968**	**0.2363**	**8.7300e-003**	**0.2450**		**996.3055**	**996.3055**	**0.0363**	**0.0744**	**1,019.3784**

3.3 Install Sheet Pile Shoring - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0900e-003	0.0000	5.0900e-003	7.7000e-004	0.0000	7.7000e-004			0.0000			0.0000
Off-Road	0.3470	3.1996	3.8478	9.0000e-003		0.1371	0.1371		0.1261	0.1261		871.4163	871.4163	0.2818		878.4621
Total	**0.3470**	**3.1996**	**3.8478**	**9.0000e-003**	**5.0900e-003**	**0.1371**	**0.1422**	**7.7000e-004**	**0.1261**	**0.1269**		**871.4163**	**871.4163**	**0.2818**		**878.4621**

3.3 Install Sheet Pile Shoring - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2173**	**0.3787**	**2.1014**	**7.2400e-003**	**0.8209**	**5.4700e-003**	**0.8263**	**0.2186**	**5.0700e-003**	**0.2236**		**738.9745**	**738.9745**	**0.0187**	**0.0318**	**748.9072**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.9800e-003	0.0000	1.9800e-003	3.0000e-004	0.0000	3.0000e-004			0.0000			0.0000
Off-Road	0.3470	3.1996	3.8478	9.0000e-003		0.1371	0.1371		0.1261	0.1261	0.0000	871.4163	871.4163	0.2818		878.4621
Total	**0.3470**	**3.1996**	**3.8478**	**9.0000e-003**	**1.9800e-003**	**0.1371**	**0.1390**	**3.0000e-004**	**0.1261**	**0.1264**	**0.0000**	**871.4163**	**871.4163**	**0.2818**		**878.4621**

3.3 Install Sheet Pile Shoring - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2173**	**0.3787**	**2.1014**	**7.2400e-003**	**0.8209**	**5.4700e-003**	**0.8263**	**0.2186**	**5.0700e-003**	**0.2236**		**738.9745**	**738.9745**	**0.0187**	**0.0318**	**748.9072**

3.4 Shaft Excavation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0900e-003	0.0000	5.0900e-003	7.7000e-004	0.0000	7.7000e-004			0.0000			0.0000
Off-Road	0.3767	3.3805	5.3434	0.0104		0.1454	0.1454		0.1338	0.1338		1,007.8221	1,007.8221	0.3260		1,015.9709
Total	**0.3767**	**3.3805**	**5.3434**	**0.0104**	**5.0900e-003**	**0.1454**	**0.1505**	**7.7000e-004**	**0.1338**	**0.1346**		**1,007.8221**	**1,007.8221**	**0.3260**		**1,015.9709**

3.4 Shaft Excavation - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.8145	0.2184	3.3900e-003	0.1050	5.0000e-003	0.1100	0.0288	4.7800e-003	0.0336		373.7685	373.7685	0.0217	0.0594	392.0117
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2230**	**0.9527**	**2.2312**	**9.5500e-003**	**0.8875**	**9.2900e-003**	**0.8968**	**0.2363**	**8.7300e-003**	**0.2450**		**996.3055**	**996.3055**	**0.0363**	**0.0744**	**1,019.3784**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.9800e-003	0.0000	1.9800e-003	3.0000e-004	0.0000	3.0000e-004			0.0000			0.0000
Off-Road	0.3767	3.3805	5.3434	0.0104		0.1454	0.1454		0.1338	0.1338	0.0000	1,007.8221	1,007.8221	0.3260		1,015.9709
Total	**0.3767**	**3.3805**	**5.3434**	**0.0104**	**1.9800e-003**	**0.1454**	**0.1474**	**3.0000e-004**	**0.1338**	**0.1341**	**0.0000**	**1,007.8221**	**1,007.8221**	**0.3260**		**1,015.9709**

3.4 Shaft Excavation - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.8145	0.2184	3.3900e-003	0.1050	5.0000e-003	0.1100	0.0288	4.7800e-003	0.0336		373.7685	373.7685	0.0217	0.0594	392.0117
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2230**	**0.9527**	**2.2312**	**9.5500e-003**	**0.8875**	**9.2900e-003**	**0.8968**	**0.2363**	**8.7300e-003**	**0.2450**		**996.3055**	**996.3055**	**0.0363**	**0.0744**	**1,019.3784**

3.5 Install Casing & Trunk Line - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9811	8.2771	11.9121	0.0286		0.3383	0.3383		0.3256	0.3256		2,730.1808	2,730.1808	0.4413		2,741.2134
Total	**0.9811**	**8.2771**	**11.9121**	**0.0286**		**0.3383**	**0.3383**		**0.3256**	**0.3256**		**2,730.1808**	**2,730.1808**	**0.4413**		**2,741.2134**

3.5 Install Casing & Trunk Line - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2173**	**0.3787**	**2.1014**	**7.2400e-003**	**0.8209**	**5.4700e-003**	**0.8263**	**0.2186**	**5.0700e-003**	**0.2236**		**738.9745**	**738.9745**	**0.0187**	**0.0318**	**748.9072**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9811	8.2771	11.9121	0.0286		0.3383	0.3383		0.3256	0.3256	0.0000	2,730.1808	2,730.1808	0.4413		2,741.2134
Total	**0.9811**	**8.2771**	**11.9121**	**0.0286**		**0.3383**	**0.3383**		**0.3256**	**0.3256**	**0.0000**	**2,730.1808**	**2,730.1808**	**0.4413**		**2,741.2134**

3.5 Install Casing & Trunk Line - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2173**	**0.3787**	**2.1014**	**7.2400e-003**	**0.8209**	**5.4700e-003**	**0.8263**	**0.2186**	**5.0700e-003**	**0.2236**		**738.9745**	**738.9745**	**0.0187**	**0.0318**	**748.9072**

3.6 Backfill Shafts - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3926	3.1583	6.9327	0.0106		0.1498	0.1498		0.1378	0.1378		1,021.5529	1,021.5529	0.3304		1,029.8126
Total	**0.3926**	**3.1583**	**6.9327**	**0.0106**		**0.1498**	**0.1498**		**0.1378**	**0.1378**		**1,021.5529**	**1,021.5529**	**0.3304**		**1,029.8126**

3.6 Backfill Shafts - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.8145	0.2184	3.3900e-003	0.1050	5.0000e-003	0.1100	0.0288	4.7800e-003	0.0336		373.7685	373.7685	0.0217	0.0594	392.0117
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2292**	**1.1932**	**2.3197**	**0.0106**	**0.9259**	**0.0105**	**0.9364**	**0.2474**	**9.8500e-003**	**0.2572**		**1,112.7430**	**1,112.7430**	**0.0403**	**0.0912**	**1,140.9189**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3926	3.1583	6.9327	0.0106		0.1498	0.1498		0.1378	0.1378	0.0000	1,021.5529	1,021.5529	0.3304		1,029.8126
Total	**0.3926**	**3.1583**	**6.9327**	**0.0106**		**0.1498**	**0.1498**		**0.1378**	**0.1378**	**0.0000**	**1,021.5529**	**1,021.5529**	**0.3304**		**1,029.8126**

3.6 Backfill Shafts - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.8145	0.2184	3.3900e-003	0.1050	5.0000e-003	0.1100	0.0288	4.7800e-003	0.0336		373.7685	373.7685	0.0217	0.0594	392.0117
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2292**	**1.1932**	**2.3197**	**0.0106**	**0.9259**	**0.0105**	**0.9364**	**0.2474**	**9.8500e-003**	**0.2572**		**1,112.7430**	**1,112.7430**	**0.0403**	**0.0912**	**1,140.9189**

3.7 Repave Roadway - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4316	4.0922	6.3319	9.6700e-003		0.1864	0.1864		0.1724	0.1724		922.6094	922.6094	0.2901		929.8612
Paving	0.0786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5102**	**4.0922**	**6.3319**	**9.6700e-003**		**0.1864**	**0.1864**		**0.1724**	**0.1724**		**922.6094**	**922.6094**	**0.2901**		**929.8612**

3.7 Repave Roadway - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2173**	**0.3787**	**2.1014**	**7.2400e-003**	**0.8209**	**5.4700e-003**	**0.8263**	**0.2186**	**5.0700e-003**	**0.2236**		**738.9745**	**738.9745**	**0.0187**	**0.0318**	**748.9072**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4316	4.0922	6.3319	9.6700e-003		0.1864	0.1864		0.1724	0.1724	0.0000	922.6094	922.6094	0.2901		929.8612
Paving	0.0786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5102**	**4.0922**	**6.3319**	**9.6700e-003**		**0.1864**	**0.1864**		**0.1724**	**0.1724**	**0.0000**	**922.6094**	**922.6094**	**0.2901**		**929.8612**

3.7 Repave Roadway - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2173**	**0.3787**	**2.1014**	**7.2400e-003**	**0.8209**	**5.4700e-003**	**0.8263**	**0.2186**	**5.0700e-003**	**0.2236**		**738.9745**	**738.9745**	**0.0187**	**0.0318**	**748.9072**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.527779	0.068094	0.194119	0.126693	0.024448	0.007090	0.011744	0.007802	0.000938	0.000564	0.026705	0.000730	0.003294

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Unmitigated	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	9.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**		**2.8000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	9.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**		**2.8000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Diesel Equipment

			gal/bhp-hr
HP>100	BSFC (lb/hp-hr)	0.367	0.051625427
HP<100	BSFC (lb/hp-hr)	0.408	0.057392846
	Unit conversion (lb/gallon)	7.1089	

12"/16" Dist. Mainlines Open Trench

Approx 10,028 feet

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Daily Gallons	Days	Total Diesel (Gallons)
Utility Exploration & Road Stripping (12/16 DML)	Bore/Drill Rigs	1	2	221	0.5	11.4	200.0	2281.843886
Utility Exploration & Road Stripping (12/16 DML)	Concrete/Industrial Saws	1	1	81	0.73	3.4	200.0	678.7277919
Utility Exploration & Road Stripping (12/16 DML)	Excavators	1	4	158	0.38	12.4	200.0	2479.672523
Utility Exploration & Road Stripping (12/16 DML)	Forklifts	1	4	89	0.2	4.1	200.0	817.2741212
Utility Exploration & Road Stripping (12/16 DML)	Tractors/Loaders/Backhoes	1	4	97	0.37	8.2	200.0	1647.863383
Shoring (12/16 DML)	Bore/Drill Rigs	1	2	221	0.5	11.4	200.0	2281.843886
Shoring (12/16 DML)	Cranes	1	4	231	0.29	13.8	200.0	2766.709899
Shoring (12/16 DML)	Excavators	1	4	158	0.38	12.4	200.0	2479.672523
Shoring (12/16 DML)	Tractors/Loaders/Backhoes	1	2	97	0.37	4.1	200.0	823.9316913
Trench Excavation (12/16 DML)	Cranes	1	2	231	0.29	6.9	200.0	1383.354949
Trench Excavation (12/16 DML)	Excavators	1	4	158	0.38	12.4	200.0	2479.672523
Trench Excavation (12/16 DML)	Forklifts	1	2	89	0.2	2.0	200.0	408.6370606
Trench Excavation (12/16 DML)	Tractors/Loaders/Backhoes	1	4	97	0.37	8.2	200.0	1647.863383
Install Pipeline (12/16 DML)	Cranes	1	6	231	0.29	20.8	400.0	8300.129697
Install Pipeline (12/16 DML)	Generator Sets	1	6	84	0.74	21.4	400.0	8562.094276
Install Pipeline (12/16 DML)	Tractors/Loaders/Backhoes	1	6	97	0.37	12.4	400.0	4943.590148
Backfill Trench (12/16 DML)	Cement and Mortar Mixers	1	4	9	0.56	1.2	200.0	231.4079534
Backfill Trench (12/16 DML)	Excavators	1	4	158	0.38	12.4	200.0	2479.672523
Backfill Trench (12/16 DML)	Other Material Handling Equipment	1	6	168	0.4	20.8	200.0	4163.074456
Backfill Trench (12/16 DML)	Tractors/Loaders/Backhoes	1	6	97	0.37	12.4	200.0	2471.795074
Paving (12/16 DML)	Pavers	1	6	130	0.42	16.9	200.0	3382.497995
Paving (12/16 DML)	Paving Equipment	1	6	132	0.36	14.7	200.0	2943.888365
Paving (12/16 DML)	Rollers	1	6	80	0.38	10.5	200.0	2093.691007
								61748.90911

Topham Construction Petroleum Fuels Construction

	total LF
25 LF/day	10030

12/16 DML Open Trench	Total CO2	CH4	N2O	CO2e	Days	On-Road Gallons
Subsurface Exploration & Pavement Removal						
Fugitive Dust	0.0			0.0		
Off-Road	777.8	0.2		783.6	200.0	
Total	777.8	0.2		783.6		
Hauling	514.7	0.0	0.1	539.7	200.0	4572.981
Vendor	0.0	0.0	0.0	0.0	200.0	
Worker	227.4	0.0	0.0	229.3	200.0	2349.228
Total	742.0	0.0	0.1	769.0		
	1,519.8	0.3	0.1	1,552.6		
Shoring						
Fugitive Dust	0.0			0.0		
Off-Road	833.7	0.3		840.4	200.0	
Total	833.7	0.3		840.4		
Hauling	386.0	0.0	0.1	404.8	200.0	3429.735
Vendor	120.4	0.0	0.0	125.6	200.0	1069.539
Worker	227.4	0.0	0.0	229.3	200.0	2349.228
Total	733.7	0.0	0.1	759.7		
	1,567.4	0.3	0.1	1,600.2		
Trench Excavation						
Fugitive Dust	0.0			0.0		
Off-Road	577.6	0.2		582.2	200.0	
Total	577.6	0.2		582.2		
Hauling	772.0	0.0	0.1	809.6	200.0	6859.471
Vendor	0.0	0.0	0.0	0.0	200.0	0
Worker	227.4	0.0	0.0	229.3	200.0	2349.228
Total	999.4	0.0	0.1	1,038.9		
	1,576.9	0.2	0.1	1,621.1		
Pipe Install						
Off-Road	1,112.6	0.2		1,118.3	400.0	
Total	1,112.6	0.2		1,118.3		
Hauling	514.7	0.0	0.1	539.7	400.0	9145.961
Vendor	80.2	0.0	0.0	83.8	400.0	1426.052
Worker	227.4	0.0	0.0	229.3	400.0	4698.456
Total	822.3	0.0	0.1	852.8		
	1,934.9	0.3	0.1	1,971.1		

Topham Construction Petroleum Fuels Construction

Backfill Trench							
Off-Road		921.3	0.3		928.6	200.0	
Total		921.3	0.3		928.6		
Hauling		514.7	0.0	0.1	539.7	200.0	4572.981
Vendor		80.2	0.0	0.0	83.8	200.0	713.0258
Worker		227.4	0.0	0.0	229.3	200.0	2349.228
Total		822.3	0.0	0.1	852.8		
		1,743.5	0.3	0.1	1,781.3		
Paving							
Off-Road		827.8	0.3		834.5	200.0	
Paving		0.0			0.0		
Total		827.8	0.3		834.5		
Hauling		0.0	0.0	0.0	0.0		
Vendor		120.4	0.0	0.0	125.6	200.0	1069.539
Worker		227.4	0.0	0.0	229.3	200.0	2349.228
Total		347.7	0.0	0.0	354.9		
		1,175.6	0.3	0.0	1,189.5		
Construction Total (Gal)							
E	326,539.0					E	61,748.9
H	73,692.0					H	28,581.1
V	18,159.0					V	4,278.2
W	139,118.0					W	16,444.6
Annual Avg	19874						
Total Diesel	418,390.0						
Annual Avg	59770						

Topham Open Trench

Approx 17,139 feet

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Daily Gallons	Days	Total Diesel (Gallons)
Utility Exploration & Road Stripping (TTLR)	Bore/Drill Rigs	1	2	221	0.5	11.4	300.0	3422.765829
Utility Exploration & Road Stripping (TTLR)	Concrete/Industrial Saws	1	1	81	0.73	3.4	300.0	1018.091688
Utility Exploration & Road Stripping (TTLR)	Excavators	1	4	158	0.38	12.4	300.0	3719.508785
Utility Exploration & Road Stripping (TTLR)	Forklifts	1	4	89	0.2	4.1	300.0	1225.911182
Utility Exploration & Road Stripping (TTLR)	Tractors/Loaders/Backhoes	1	4	97	0.37	8.2	300.0	2471.795074
Shoring (TTLR)	Bore/Drill Rigs	1	2	221	0.5	11.4	500.0	5704.609715
Shoring (TTLR)	Cranes	1	4	231	0.29	13.8	500.0	6916.774747
Shoring (TTLR)	Excavators	1	4	158	0.38	12.4	500.0	6199.181308
Shoring (TTLR)	Tractors/Loaders/Backhoes	1	2	97	0.37	4.1	500.0	2059.829228
Trench Excavation (TTLR)	Cranes	1	2	231	0.29	6.9	500.0	3458.387374
Trench Excavation (TTLR)	Excavators	1	6	158	0.38	18.6	500.0	9298.771962
Trench Excavation (TTLR)	Forklifts	1	2	89	0.2	2.0	500.0	1021.592651
Trench Excavation (TTLR)	Tractors/Loaders/Backhoes	1	6	97	0.37	12.4	500.0	6179.487684
Install Pipeline	Cranes	1	7	231	0.29	24.2	1000.0	24208.71162
Install Pipeline	Generator Sets	1	7	84	0.74	25.0	1000.0	24972.77497
Install Pipeline	Tractors/Loaders/Backhoes	1	7	97	0.37	14.4	1000.0	14418.8046
Backfill Trench	Cement and Mortar Mixers	1	6	9	0.56	1.7	500.0	867.7798253
Backfill Trench	Excavators	1	6	158	0.38	18.6	500.0	9298.771962
Backfill Trench	Other Material Handling Equipment	1	6	168	0.4	20.8	500.0	10407.68614
Backfill Trench	Tractors/Loaders/Backhoes	1	6	97	0.37	12.4	500.0	6179.487684
Paving	Pavers	1	8	130	0.42	22.5	300.0	6764.995991
Paving	Paving Equipment	1	8	132	0.36	19.6	300.0	5887.776731
Paving	Rollers	1	8	80	0.38	14.0	300.0	4187.382014
								159890.8788

Topham Construction Petroleum Fuels Construction

total LF
17139

TTLR Open Trench	Total CO2	CH4	N2O	CO2e	Days	On-Road Gallons
Subsurface Exploration & Pavement Removal						
Fugitive Dust	0.0			0.0		
Off-Road	778.6	0.2		784.4	300.0	
Total	778.6	0.2		784.4		
Hauling	747.5	0.0	0.1	784.0	300.0	9963.099
Vendor	0.0	0.0	0.0	0.0	300.0	0
Worker	444.7	0.0	0.0	448.1	300.0	6891.76
Total	1,192.2	0.1	0.1	1,232.1		
	1,970.8	0.3	0.1	2,016.5		
Shoring						
Fugitive Dust	0.0			0.0		
Off-Road	834.4	0.3		841.2	500.0	
Total	834.4	0.3		841.2		
Hauling	0.0	0.0	0.0	0.0	500.0	0
Vendor	77.6	0.0	0.0	81.0	500.0	1724.297
Worker	444.7	0.0	0.0	448.1	500.0	11486.27
Total	522.3	0.0	0.0	529.1		
	1,356.7	0.3	0.0	1,370.3		
Trench Excavation						
Fugitive Dust	0.0			0.0		
Off-Road	778.5	0.3		784.8	500.0	
Total	778.5	0.3		784.8		
Hauling	747.5	0.0	0.1	784.0	500.0	16605.17
Vendor	0.0	0.0	0.0	0.0	500.0	0
Worker	444.7	0.0	0.0	448.1	500.0	11486.27
Total	1,192.2	0.1	0.1	1,232.1		
	1,970.7	0.3	0.1	2,016.9		
Pipe Install						
Off-Road	1,298.4	0.3		1,305.0	1,000.0	
Total	1,298.4	0.3		1,305.0		
Hauling	0.0	0.0	0.0	0.0	1,000.0	0
Vendor	77.6	0.0	0.0	81.0	1,000.0	3448.594
Worker	444.7	0.0	0.0	448.1	1,000.0	22972.53
Total	522.3	0.0	0.0	529.1		
	1,820.7	0.3	0.0	1,834.2		

Topham Construction Petroleum Fuels Construction

Backfill Trench						
Off-Road	1,059.4	0.3		1,067.8	500.0	
Total	1,059.4	0.3		1,067.8	500.0	
Hauling	498.4	0.0	0.1	522.7	500.0	11070.11
Vendor	77.6	0.0	0.0	81.0	500.0	1724.297
Worker	444.7	0.0	0.0	448.1	500.0	11486.27
Total	1,020.7	0.0	0.1	1,051.8		
	2,080.1	0.4	0.1	2,119.6		
Paving						
Off-Road	1,103.4	0.4		1,112.3	300.0	
Paving	0.0			0.0		
Total	1,103.4	0.4		1,112.3		
Hauling	0.0	0.0	0.0	0.0		
Vendor	77.6	0.0	0.0	81.0	300.0	1034.578
Worker	444.7	0.0	0.0	448.1	300.0	6891.76
Total	522.3	0.0	0.0	529.1		0
	1,625.7	0.4	0.0	1,641.4		
					E	159,890.9
					H	37,638.4
					V	7,931.8
					W	71,214.9

Microtunnel (jacking & MTBM)

7 tunneling zones (~14 launching/receiving shafts)

6161 linear feet

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Daily Gallons	Days	Total Diesel (Gallons)
Subsurface Exploration & Pavement Removal	Bore/Drill Rigs	1	2	221	0.5	11.4	150.0	1711.382914
Subsurface Exploration & Pavement Removal	Concrete/Industrial Saws	1	2	81	0.73	6.8	150.0	1018.091688
Subsurface Exploration & Pavement Removal	Excavators	1	2	158	0.38	6.2	150.0	929.8771962
Subsurface Exploration & Pavement Removal	Forklifts	1	4	89	0.2	4.1	150.0	612.9555909
Subsurface Exploration & Pavement Removal	Tractors/Loaders/Backhoes	1	4	97	0.37	8.2	150.0	1235.897537
Install Sheet Pile Shoring	Bore/Drill Rigs	1	2	221	0.5	11.4	300.0	3422.765829
Install Sheet Pile Shoring	Cranes	1	4	231	0.29	13.8	300.0	4150.064848
Install Sheet Pile Shoring	Excavators	1	4	158	0.38	12.4	300.0	3719.508785
Install Sheet Pile Shoring	Forklifts	1	2	89	0.2	2.0	300.0	612.9555909
Install Sheet Pile Shoring	Tractors/Loaders/Backhoes	1	2	97	0.37	4.1	300.0	1235.897537
Shaft Excavation	Bore/Drill Rigs	1	2	221	0.5	11.4	300.0	3422.765829
Shaft Excavation	Cranes	1	2	231	0.29	6.9	300.0	2075.032424
Shaft Excavation	Excavators	1	6	158	0.38	18.6	300.0	5579.263177
Shaft Excavation	Forklifts	1	2	89	0.2	2.0	300.0	612.9555909
Shaft Excavation	Tractors/Loaders/Backhoes	1	6	97	0.37	12.4	300.0	3707.692611
Install Casing & Trunk Line	Bore/Drill Rigs	1	7	221	0.5	39.9	450.0	17969.5206
Install Casing & Trunk Line	Cranes	1	4	231	0.29	13.8	450.0	6225.097272
Install Casing & Trunk Line	Forklifts	1	7	89	0.2	7.2	450.0	3218.016852
Install Casing & Trunk Line	Generator Sets	1	7	84	0.74	25.0	450.0	11237.74874
Install Casing & Trunk Line	Pumps	1	7	84	0.74	25.0	450.0	11237.74874
Backfill Shafts	Cement and Mortar Mixers	1	6	9	0.56	1.7	300.0	520.6678952
Backfill Shafts	Excavators	1	6	158	0.38	18.6	300.0	5579.263177
Backfill Shafts	Other Material Handling Equipment	1	6	168	0.4	20.8	300.0	6244.611684
Backfill Shafts	Tractors/Loaders/Backhoes	1	6	97	0.37	12.4	300.0	3707.692611
Repave Roadway	Pavers	1	7	130	0.42	19.7	100.0	1973.123831
Repave Roadway	Paving Equipment	1	7	132	0.36	17.2	100.0	1717.268213
Repave Roadway	Rollers	1	7	80	0.38	12.2	100.0	1221.319754
								104899.1865

Topham Construction Petroleum Fuels Construction

total LF						
6,161					1,600.0	
Microtunnel						
	Total CO2	**CH4**	**N2O**	**CO2e**	**Days**	**On-Road Gallons**
Subsurface Exploration & Pavement Removal						
Fugitive Dust	0.0			0.0		
Off-Road	852.7	0.2		858.6	150.0	
Total	852.7	0.2		858.6	150.0	
Hauling	373.8	0.0	0.1	392.0	150.0	2490.775
Vendor	0.0	0.0	0.0	0.0	150.0	0
Worker	622.5	0.0	0.0	627.4	150.0	4824.232
Total	996.3	0.0	0.1	1,019.4	150.0	
	1,849.0	0.3	0.1	1,877.9		
Install Sheet Pile Shoring						
Fugitive Dust	0.0			0.0		
Off-Road	871.4	0.3		878.5	300.0	
Total	871.4	0.3		878.5	300.0	
Hauling	0.0	0.0	0.0	0.0	300.0	0
Vendor	116.4	0.0	0.0	121.5	300.0	1551.868
Worker	622.5	0.0	0.0	627.4	300.0	9648.464
Total	739.0	0.0	0.0	748.9	300.0	
	1,610.4	0.3	0.0	1,627.4		
Shaft Excavation						
Fugitive Dust	0.0			0.0		
Off-Road	1,007.8	0.3		1,016.0	300.0	
Total	1,007.8	0.3		1,016.0		
Hauling	373.8	0.0	0.1	392.0	300.0	4981.55
Vendor	0.0	0.0	0.0	0.0	300.0	0
Worker	622.5	0.0	0.0	627.4	300.0	9648.464
Total	996.3	0.0	0.1	1,019.4		
	2,004.1	0.4	0.1	2,035.3		
Install Casing & Pipeline						
Off-Road	2,730.2	0.4		2,741.2	450.0	
Total	2,730.2	0.4		2,741.2	450.0	
Hauling	0.0	0.0	0.0	0.0	450.0	0
Vendor	116.4	0.0	0.0	121.5	450.0	2327.801
Worker	622.5	0.0	0.0	627.4	450.0	14472.7
Total	739.0	0.0	0.0	748.9		
	3,469.2	0.5	0.0	3,490.1		

Topham Construction Petroleum Fuels Construction

Backfill

Off-Road	1,021.6	0.3		1,029.8	300.0	
Total	1,021.6	0.3		1,029.8	300.0	
Hauling	373.8	0.0	0.1	392.0		0
Vendor	116.4	0.0	0.0	121.5	300.0	1551.868
Worker	622.5	0.0	0.0	627.4	300.0	9648.464
Total	1,112.7	0.0	0.1	1,140.9		
	2,134.3	0.4	0.1	2,170.7		

Repave

Off-Road	922.6	0.3		929.9	100.0	
Paving	0.0			0.0	100	
Total	922.6	0.3		929.9		
Hauling	0.0	0.0	0.0	0.0	100.0	0
Vendor	116.4	0.0	0.0	121.5	100.0	517.2892
Worker	622.5	0.0	0.0	627.4	100.0	3216.155
Total	739.0	0.0	0.0	748.9		
	1,661.6	0.3	0.0	1,678.8		
					E	104,899.2
					H	7,472.3
					V	5,948.8
					W	51,458.5

APPENDIX E

Greenhouse Gas Emissions Impacts Assessment

taha
environmental planners

Technical Memorandum

TO: Hallie Fitzpatrick, AICP
AECOM

FROM: Terry A. Hayes Associates Inc.

DATE: May 24, 2023

RE: Los Angeles Department of Water and Power (LADWP) Topham Trunk Line Replacement Project – Greenhouse Gas Emissions Impacts Assessment

Introduction

Terry A. Hayes Associates Inc. (TAHA) has completed a Greenhouse Gas (GHG) Emissions Assessment for the Topham Trunk Line Replacement [TTLR] Project (proposed project) in accordance with the provisions of the California Environmental Quality Act (CEQA) Statutes and Guidelines. This Assessment is organized as follows:

- Introduction
- Project Description
- Greenhouse Gas Emissions Topical Information
- Regulatory Framework
- Existing Setting
- Significance Thresholds
- Methodology
- Impact Assessment
- References

Project Description

Project Location and Setting

The Los Angeles Department of Water and Power (LADWP) proposes to install approximately 23,300 linear feet (LF) of a 36-inch diameter underground pipe along Victory Boulevard, Topham Street, and Oxnard Street, in the west San Fernando Valley area of the City of Los Angeles. The installation of the new 36-inch diameter trunk line (referred to herein as the Topham Trunk Line Replacement [TTLR] Project, the project, or proposed project) would replace the aging and deteriorating existing 24-inch Topham Trunk Line to provide greater operational flexibility for water flow and to improve system redundancy and resiliency. The proposed project would also include approximately 6,599 LF of new 12-inch diameter underground distribution mainline that would connect the proposed TTLR Project to the existing distribution system on Mason Avenue, Victory Boulevard, and Topham Street. In addition, the proposed project would include approximately 3,429 LF of new 16-inch diameter underground distribution mainline that would replace the existing 8-inch diameter distribution mainline on Tampa Avenue, south of Topham Street. The TTLR and the distribution mainlines would be installed mostly parallel to their respective existing lines, which would be abandoned in place and decommissioned.

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Culver City, California 90232
310.839.4200 fax 310.839.4201

The proposed project would be located in the western San Fernando Valley of the City of Los Angeles within the communities of Winnetka, Woodland Hills, Tarzana, Encino, and the Sepulveda Basin (**Figures 1 through 3**). Approximately 23,300 LF of the new 36-inch diameter trunk line would be installed along Victory Boulevard, Topham Street, and Oxnard Street, beginning just east of the intersection of De Soto Avenue and Victory Boulevard and ending at the intersection of Oxnard Street and Encino Avenue. A portion of the new 36-inch diameter trunk line would be installed within an existing LADWP easement located at the Los Angeles County Metropolitan Transportation Authority (Metro)'s Pierce College Station parking lot and north of the baseball fields at Winnetka Avenue and Victory Boulevard.

In addition, approximately 6,599 LF of the new 12-inch diameter distribution would be installed along Mason Avenue (from Kittridge Street to Victory Boulevard), Victory Boulevard (at the intersection of Mason Avenue and Victory Boulevard), and Topham Street (from Victory Boulevard to Tampa Avenue). Approximately 3,429 LF of the new 16-inch diameter distribution mainline would be installed along Topham Street (from Tampa Avenue to Evenhaim Lane) and Tampa Avenue (from Topham Street to Ventura Boulevard). As described previously, the TTLR and the distribution mainlines would be installed mostly parallel to their respective existing lines; once installation is completed, the existing lines would be abandoned in place and decommissioned accordingly.

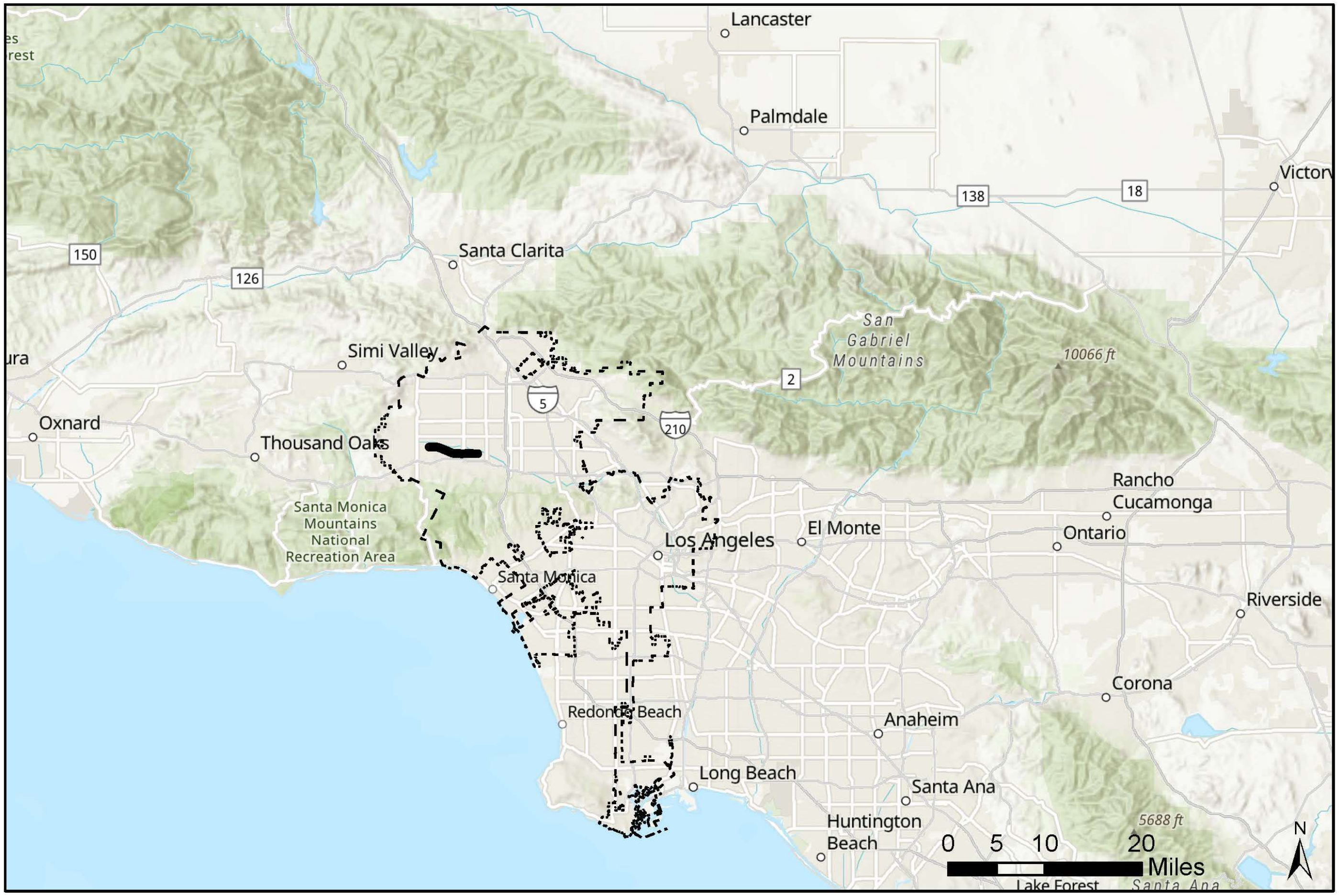
Land uses along Victory Boulevard, Topham Street, Oxnard Street, and Tampa Avenue are mixed and include residential, religious, commercial, public transit (Metro Orange Line), one private school (Woodcrest Preschool), limited manufacturing, open space, and public facilities including Pierce College. The Los Angeles River runs east-west, approximately 0.25 to 0.5 mile north of the proposed project.

Proposed TTLR Components and Location

The primary component of the proposed project is a new 36-inch diameter underground trunk line, which would replace the existing Topham Trunk Line. As previously discussed, the replacement line would be routed mainly within Victory Boulevard, Topham Street, and Oxnard Street. On the east, the TTLR would connect directly to the existing Encino Inlet Line, identified as the 1134SZ at Encino Avenue. On the west, the TTLR would connect directly to the De Soto Trunk Line, identified as the 1123SZ at De Soto Avenue. Because the existing Topham Trunk Line must remain in service until the proposed project is completed, the TTLR would be installed in an alignment parallel to, rather than removing and replacing, the existing trunk line.

The TTLR would consist of WSP, which is considered a continuous pipeline because the joints between pipe segments are welded together. Seismic loads created by ground displacement from a seismic event are accommodated by the capability of the walls of the WSP to stretch and bend.

Because the TTLR would interconnect directly to the 1123SZ and 1134SZ to provide system redundancy and operational flexibility, the proposed project would also include the installation of approximately 6,599 LF of new 12-inch diameter underground distribution mainline and approximately 3,429 LF of new 16-inch diameter underground distribution mainline. The 12-inch diameter distribution mainline and 16-inch diameter distribution mainline would be connected to existing distribution mainlines throughout the alignment to provide direct service to the 1123SZ. Both distribution mainlines would consist of earthquake resistant ductile iron pipe (ERDIP) to provide resilience during seismic events. Segments of ERDIP are joined with a gasket rather than being fused together, which provides flexibility at the joints to accommodate seismic loads by allowing the pipeline not only to bend laterally but also expand and contract lengthwise.



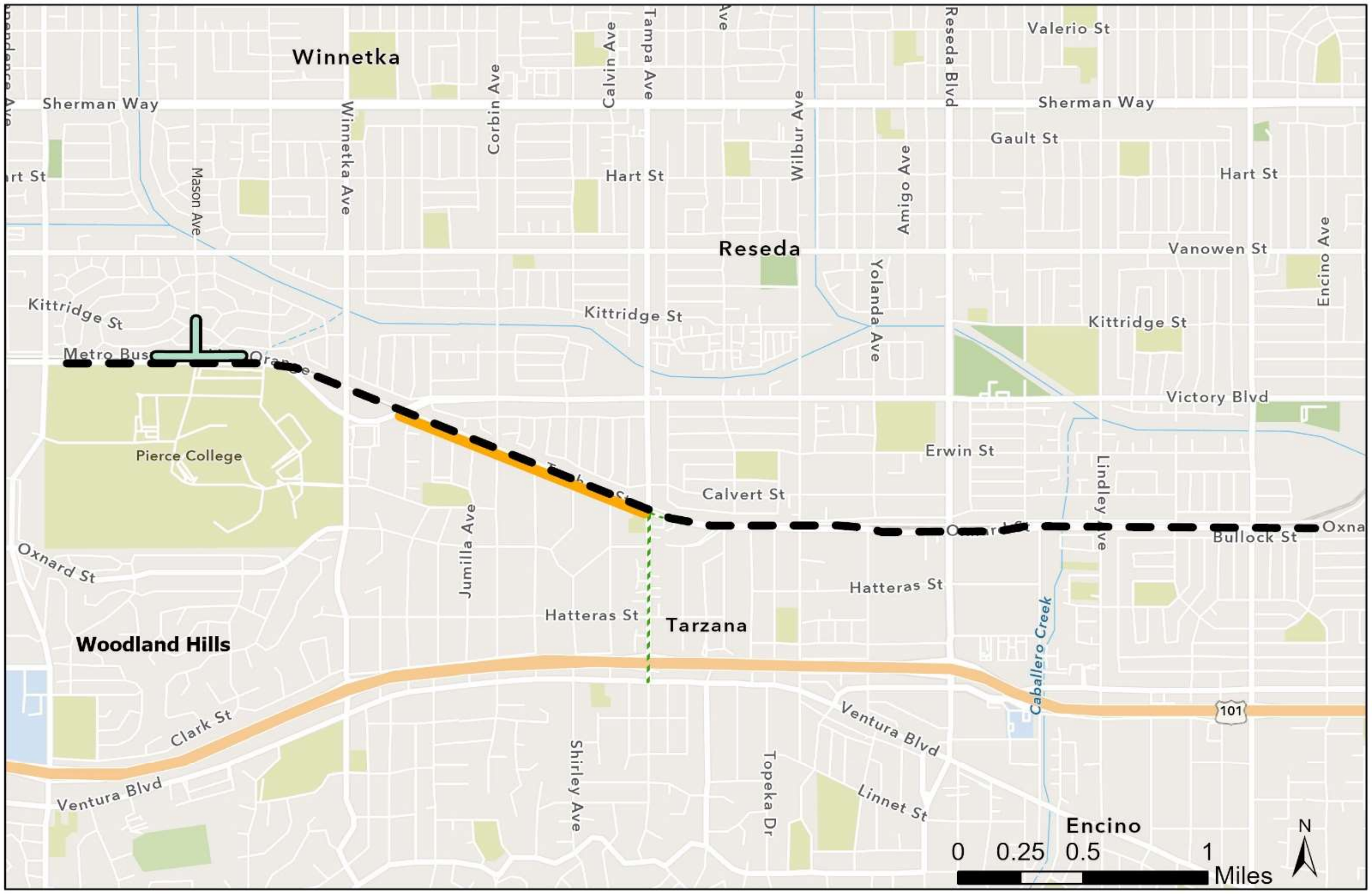
Legend

Proposed Topham Trunk Line Project

City of Los Angeles Boundary

Figure 1
Project Vicinity Map

County of Los Angeles, California State Parks, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, Esri, USGS

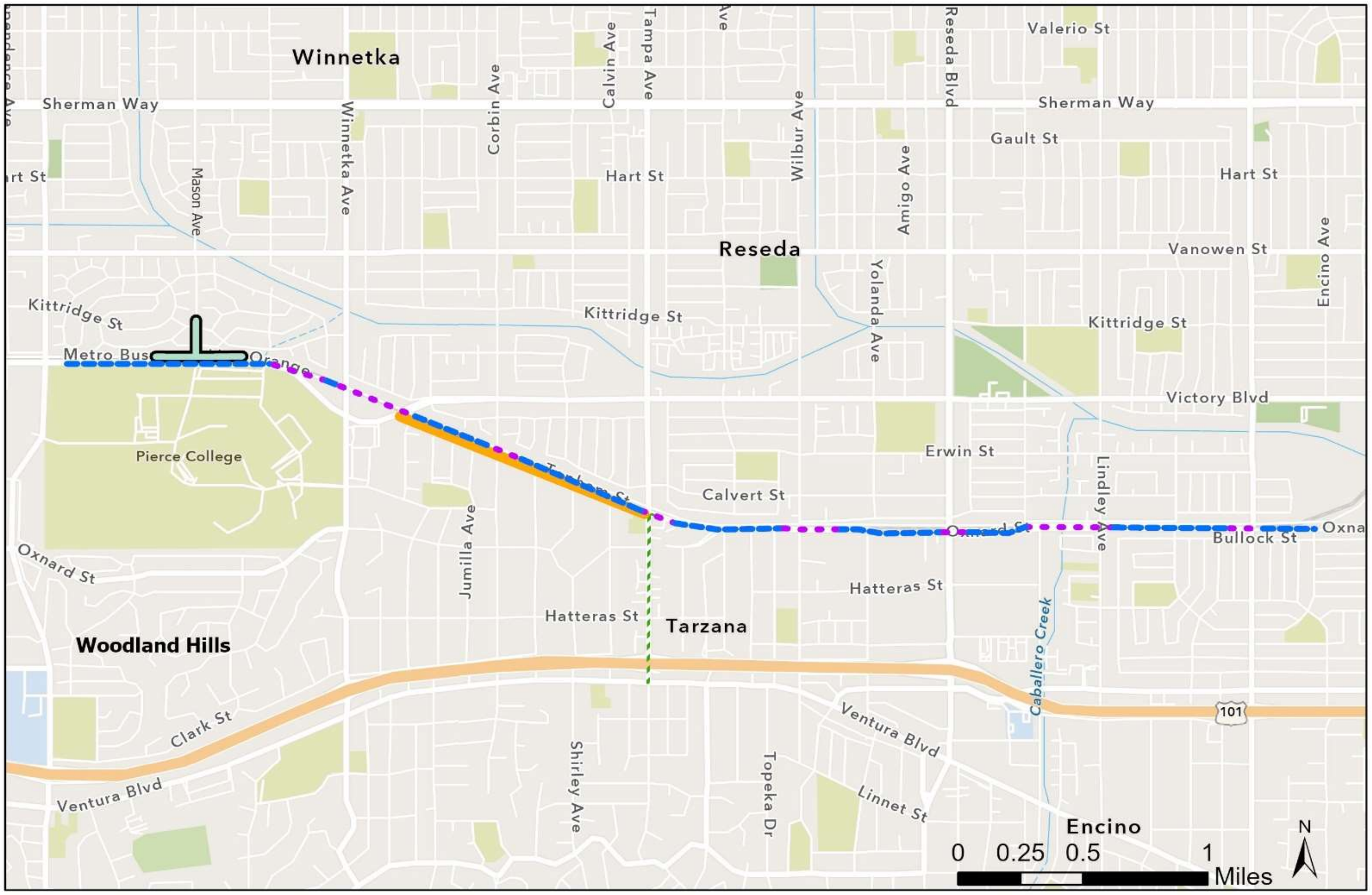


Legend

- Proposed Topham Trunk Line Project
- Proposed 12" Victory Blvd & Mason Ave Mainline Open Cut
- Proposed 12" Topham St Mainline Open Cut
- Proposed 16" Tampa Ave Mainline Open Cut

Figure 2
Project Overview Map

County of Los Angeles, California State Parks, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA



Legend

Construction Method

- Proposed Topham Tunk Line Jacking
- Proposed Topham Tunk Line Open Cut
- Proposed 12" Victory Blvd & Mason Ave Mainline Open Cut
- Proposed 12" Topham St Mainline Open Cut
- Proposed 16" Tampa Ave Mainline Open Cut

Figure 3
Project Construction Methods Overview

County of Los Angeles, California State Parks, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA

In addition to the above, several appurtenant facilities necessary to support the operation of the proposed trunk line and mainline would be installed. These include isolation valves, a flow meter, and a flow recorder. The isolation valves and flow meter would be located underground within the public road ROW. The flow recorder would be installed in an aboveground cabinet (72 inches tall, 48 inches wide, and 24 inches deep) located on the western end of the project alignment on Victory Boulevard (just east of De Soto Avenue), within the public road ROW. After the TTLR is operational, the existing Topham Trunk Line would be isolated from the drinking water system and abandoned in place.

Project Construction – Construction Schedule

Construction for the proposed project is estimated to begin in Fall 2023 and would take approximately 7 years to complete (**Figure 4**).

Figure 4
Project Construction Schedule

As shown above in Figure 4, the 12-inch diameter distribution mainline would be installed first from approximately third quarter 2023 to third quarter 2024, followed by the 16-inch diameter distribution mainline, which would be installed from approximately third quarter 2024 to second quarter 2025. The TTLR would be installed a few months after the 16-inch diameter distribution mainline is completed from approximately third quarter 2025 to third quarter 2030.

Construction activities for the TTLR would occur between 7:00 a.m. and 6:00 p.m., Monday through Friday. For the 12-inch and 16-inch diameter distribution mainlines, construction activities would occur between 9:00 a.m. and 3:30 p.m., Monday through Friday, but some nighttime construction may be required.

Project Construction – Trunk Line and Mainline Open-Trench Construction

The 12-inch and 16-inch diameter distribution mainlines as well as the majority of the TTLR would be installed through an open-trench method of construction whereby a trench is excavated in the roadway, pipeline segments are placed in the trench, the trench is backfilled, and the road is repaved.

In order to achieve the open-trench construction in an effective, efficient, and safe manner, work zones would be established in the roadway within which open-trench construction activities could proceed unimpeded. Preliminarily, the work zones for the 12-inch and 16-inch diameter distribution mainlines would total approximately 2,400 feet in length, and the work zones for the TTLR would total approximately 3,000 feet in length. These work zones would include the active construction work area (400 feet for the 12-inch and 16-inch diameter distribution mainlines and 1,000 feet for the TTLR), and traffic control tapering on each end of the work area, at 1,000 feet in length at each end.

The work zones would be the minimum width required to accommodate barriers or cones separating traffic from construction activities, safety setbacks adjacent to the trench, shoring required to stabilize the trench walls (for the TTLR installation), the trench itself, and adequate area to safely and effectively operate equipment and trucks, as well as the flexibility to avoid existing substructures in the road. With these measures, the work zones would be approximately 25 to 30 feet in width for the 12-inch and 16-inch diameter distribution mainlines, and 30 to 40 feet in width for the TTLR. Based on the width of the work zone, some street segments along the proposed project alignment may allow only for one traffic lane in each direction and no parking. For the TTLR construction, the following street segments may require full closure with local access only, due to the narrow curb to curb dimensions:

- Topham Street, between Victory Boulevard and Cahill Avenue
- Oxnard Street, between Cahill Avenue and Wilbur Avenue
- Oxnard Street, between Lindley Avenue and Encino Avenue

These work zones would allow for the continuous installation of the TTLR pipeline in longer spans without the requirement to frequently disassemble and relocate barriers, equipment, and construction support facilities and modify traffic control elements, all of which would hamper the pipeline installation process but not substantially improve the flow of traffic in the vicinity of the construction. In addition to the actual work zones, lane transition zones would be required extending outward from the work zone along Mason Avenue, Victory Boulevard, Topham Street, Oxnard Street, and Tampa Avenue to channel approaching traffic into the travel lanes adjacent to the work zone.

The open-trench construction process for the TTLR would involve several steps. The initial step of the installation would be establishing the construction work zone. This would be accomplished by first installing traffic controls, including restriping of lanes, signage, and traffic signal modifications, as necessary, to merge traffic and direct it safely around the work zone. K-rails and other traffic barriers or markers would then be installed around the actual work zone to demarcate the zone and provide a safe working area. Placing the K-rail barriers would require the use of a forklift or other type of construction equipment. Mobilization would include delivering construction equipment and materials to the work zone and establishing field offices and other personnel and construction support facilities necessary for trunk line installation to proceed.

Once the work zone has been established, subsurface utility exploration would be conducted to verify the vertical and horizontal location of underground utilities that must be avoided, protected, or relocated during pipeline installation. This would involve core drilling a small-diameter hole in the pavement and removing soil with a vacuum truck to expose the utilities. Once the precise alignment of the trunk line has been established based on this exploration, the pavement would be cut along both edges of a given length of the trench using a pavement saw, and the pavement over the trench would be stripped using an excavator and a front loader. The pavement would be loaded on trucks and hauled from the site and either reclaimed for use as paving material or road base material, or it would be taken to a landfill as inert debris that can be recycled as road base for internal landfill use.

Because of the depth of excavation for the trunk line, shoring to support the walls of the trench may be required to provide a stable and safe working environment. Cantilever or braced shoring methods would be utilized, but are dependent on soil investigation results. No impact piling-driving would be involved. Installing the piles would be accomplished using a drill rig and a hydraulic crane with various attachments, depending on the method of installation. These steps, from traffic control to installing the shoring piles, would be completed before any of the actual pipeline installation tasks would begin and would take approximately two months.

After the shoring piles are in place, work would begin on installing individual pipe segments. For the 36-inch diameter trunk line, the trench would be excavated approximately 5 to 6 feet wide and 8 to 15 feet deep. These depths are necessary to accommodate the 36-inch diameter trunk line, bedding material under the pipe, and the minimum of five feet of cover required over the trunk line.

The steel shoring plates would be lowered between the H-beams as the depth of the trench excavation increases. Approximately 250 to 300 LF of trench could be excavated and shored in a month for the TTLR. The excavated material would be loaded onto trucks parked adjacent to the trench and hauled from the work zone. While some of the excavated material may be utilized at other construction sites within the region, it is assumed for environmental analysis purposes that all material would be hauled to a local landfill.

In addition to the pipe segments, various appurtenances, such as valves, meters, and maintenance holes, would also be installed as required. The general process for installation of these appurtenances would be similar to the pipe segments and would occur within the designated work zones.

After completion of the work within a given work zone, equipment, materials, and facilities would be removed from the zone, the pavement would be restored and restriped, and the traffic barriers would be removed. Depending on the length of the work zone and actual conditions, active construction within an individual work zone may range for approximately 3 to 4 months. The entire process would then be repeated for the next construction work zone, which may or may not be in an adjacent section of the roadway.

The open-trench construction process for the 12-inch and 16-inch diameter distribution mainlines more simple than the TTLR. All traffic control materials would be setup prior to the start of every work shift and would be removed after work is completed for the day. The Underground Service Alert system will be utilized to map underground utilities along the alignment. The pavement cutting and excavation process would involve excavating will be similar as that of the TTLR except for the trench dimensions. For the 12-inch diameter distribution mainline, the trench would be excavated approximately 30 inches wide and 4 to 5 feet deep. For the 16-inch diameter distribution mainline, the trench would be excavated approximately 3 feet wide and 5 feet deep. For these depths, no shoring would be needed. These depths necessary to accommodate the 12-inch and 16-inch diameter distribution mainlines, bedding material under the lines, and the minimum of 3 feet of cover required over the mainlines. At the end of every work shift, any open trench would be covered with steel plates for the safety of the public. For the 12-inch diameter distribution mainline, approximately 20 to 40 LF of trench could be installed in a day. For the 16-inch diameter distribution mainline, approximately 20 to 25 LF of trench could be installed in a day.

Various pieces of construction equipment would be used to accomplish the open-trench installation of the TTLR as well as the 12-inch and 16-inch diameter distribution mainlines. For the TTLR, the construction equipment would include the following: drill rig, front loader, hydraulic cranes, pavement saw, sweeper, forklift, excavator, backhoe, blower, skid steer, wheel loader, carry deck, utility trucks (water truck, gang truck, slurry truck, flat bed pipe truck, four pick-up trucks, two axle dump trucks, and three axle dump trucks), and trailers (dump trailer, low bed trailer, weld truck with trailer). For the 12-inch and 16-inch diameter distribution mainlines, the construction equipment would include the following: backhoe, crane (or carry deck if overhead power is present or the work zone is within a narrow street), utility trucks (two axle dump truck, three axle dump truck, gang truck, flatbed for pipe), skid steer, sweeper truck, and carrier for backhoe (or trailer attached to a dump truck). However, these pieces of equipment serve specialized purposes during the pipeline installation and would generally only be operated for brief periods when required. For example, the saw would be used to cut the edges of the trench at the beginning of the construction process, the excavator would be used during trench excavation, and a crane would be used when installing the H-beam piles and the trunk line or mainline pipe segments. Therefore, individual pieces of equipment would not operate continuously during the day and generally would not operate simultaneously.

Trucks would haul debris and excavated material from the site and deliver construction materials, such as pipe segments and backfill material, to the site. The peak of haul truck trips would occur during the excavation of the trench, which may require an average of three dump trucks trips in a single day, assuming a 10-cubic yard truck capacity for the TTLR and a 20-cubic yard truck capacity for the 12-inch and 16-inch diameter distribution mainlines. The peak of delivery trucks would occur during the backfilling of the trench with the soil-cement slurry. Assuming a 10-cubic yard concrete truck capacity for the TTLR, this may require an average of one to two concrete trucks per day to backfill the trench within 5 feet of the surface after the installation of the trunk line. Also, assuming a 20-cubic yard dump truck capacity for the 12-inch and 16-inch diameter distribution mainlines, this may require an average of three to four dump trucks per day to backfill the trench within 3 feet of the surface after the installation of these distribution mainlines. These excavation and backfilling operations may occur simultaneously in different sections of the trench, which may result in a peak of approximately five truck trips per day within a given work zone.

Within a given work zone, the open-trench construction would require approximately 20 daily construction personnel for the trunk line and 8 daily construction personnel for the 12-inch and 16-inch diameter distribution mainlines installation. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

Project Construction – Trunk Line Microtunneling (Jacking)

While the majority of the TTLR would be installed using the above described open-trench method of construction, in certain areas, a microtunneling (also referred to as jacking) method would be employed to install the trunk line. The microtunneling method would use a cutting head that loosens the soil, then the soil is transported out. Microtunneling would be utilized where large substructures exist that cannot be easily relocated for the TTLR. These structures include major sewer, storm, natural gas, or water lines or other structures. Microtunneling involves installing the trunk line beneath these substructures at a depth sufficient to avoid direct conflicts as well as indirect impacts related to settlement of soil material above the tunnel. As the tunnel is bored, steel pipe casing is continually pushed forward into the tunnel by a hydraulic jacking system.

The total length of microtunneling is preliminarily estimated at approximately 6,161 LF of the total 23,300-LF TTLR (Figure 3). Microtunneling would occur at the following locations along the TTLR alignment: Victory Boulevard (just south of Oso Avenue) to the existing LADWP easement located at Metro's Pierce College Station parking lot and immediately north of the baseball fields at Winnetka Avenue and Victory Boulevard; Topham Street (at Corbin Avenue and Tampa Avenue, respectively); and, Oxnard Street (between Topeka Drive and Yolanda Avenue, at Reseda Boulevard, between Etiwanda Avenue and Lindley Avenue, and between Balcom Avenue and White Oak Avenue, respectively).

The microtunneling method requires excavating shafts at either end of the span. Similar to open-trench construction, the microtunneling would require a work zone to accommodate various pieces of equipment involved in the jacking process, delivery and haul trucks, and other construction support functions. Based on the width of these work zones, some street segments along the proposed project alignment may allow only for one traffic lane in each direction and no parking. The work zones for the End Tunnel Pit on Oxnard Street east of Lindley Avenue, the Jacking Pit on Oxnard Street west of Topeka Drive, or the pits on Topham Street, may require complete road closures and signage for detours would be posted accordingly. In addition, a portion of the work zone that occurs within the existing LADWP easement on Metro's Pierce College Station parking lot may require the northern portion of the parking lot to be closed for approximately one year for completion of the microtunneling work. The work zones surrounding each shaft would total approximately 3,000 feet in length. This would include the two launching and receiving work areas for the pits (approximately 12 feet wide, 35 feet long, and 30 feet deep), approximately 1,000 feet of spacing between the pits, and the traffic control tapering that extends about 1,000 feet beyond both sides of the work areas. They would overlap in location with the adjacent open-trench work zone but both work zones would not be active at the same time.

Cantilever or braced shoring methods would be utilized, but are dependent on soil investigation results. No impact pile-driving would be involved. After the piles have been installed, the shafts would be excavated, and the excavated material would be loaded onto trucks parked adjacent to the shaft and hauled from the construction work zone to a local landfill. The establishment of the shafts and installation of microtunneling equipment may take several weeks.

Several types of microtunnel boring machines may be utilized for pipeline installations. However, for the purposes of environmental analysis, it has been assumed that a closed-face slurry shield microtunneling boring machine (MTBM) would be employed. This type of MTBM permits microtunneling where groundwater may be encountered and limits groundwater intrusion into the launching and receiving shafts, minimizing the need for dewatering.

The microtunneling process would involve the installation of a steel casing pipe between the launching and receiving shafts. The MTBM process does not require construction personnel to enter the tunnel, as the machines are controlled from outside the tunnel. The MTBM would be lowered into the launching shaft and pushed forward by the hydraulic jacking frame as the cutter head of the MTBM removes soil at the leading edge of the tunnel. The slurry shield MTBM provides a closed environment within which soil particles are transferred into the interior of the cutter head, mixed with water that is pumped from the surface to the MTBM, and pumped through discharge lines to the surface as a slurry mixture. This process allows the MTBM to be advanced toward the receiving shaft by the hydraulic jack, with pipe casing segments, which are nominally 35 feet in length, continually lowered into the launching shaft and pushed forward behind the MTBM. Each new casing segment would be welded to the previous segment to extend the casing. The slurry mixture pumped to the surface would be processed in a separation plant to remove the spoils and recycle the water through the MTBM. The spoils would be transferred to a dump truck to be hauled off site.

The work zones surrounding each shaft would total approximately 4,000 feet in length. This would include the two launching and receiving work areas for the pits, approximately 2,000 feet of spacing between the pits, and the traffic control tapering that extends about 1,000 feet beyond both sides of the work areas. The work zones for the End Tunnel Pit on Oxnard Street east of Lindley Avenue may require complete road closure due to the narrow curb to curb width.

The average pace of installation for microtunneling would be approximately 40 feet per day, which would not include pit excavation or pipe installation. The actual time to complete a microtunneling installation for a given span would depend on factors such as soil conditions as well as the length of the span, with the total length of individual spans ranging from about 350 feet to 1,550 feet for microtunneling. However, the entire microtunneling operation at a given shaft location would be expected to be approximately 6 months.

Various pieces of construction equipment would be used to accomplish the microtunneling installation, including an excavator, front loader, hydraulic crane, utility truck, tunnel ventilation systems, slurry separator plant, tunnel boring machine, power generators, electrical systems, and high pressure water pump. Trucks would haul excavated material from the shaft and the spoils from the boring operation as well as deliver construction materials. The peak of haul truck trips would occur during the excavation of the launching and receiving shafts, which may require up to about two to three trucks per day, which may result in a peak of approximately three truck trips per day within a given work zone.

For microtunneling operations, the peak of delivery trucks would occur during the backfilling of the shafts with the soil-cement slurry. Assuming a 10-cubic yard truck capacity, this may require up to about three concrete trucks per day to backfill both shafts. Microtunneling would require approximately 28 construction personnel. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

Connections

As mentioned above, the existing Topham Trunk Line must remain in service during project construction. Therefore, the proposed project, including the 12-inch and 16-inch diameter distribution mainlines, would first be placed in service and supplied via a connection to the new De Soto Trunk Line Replacement at De Soto Avenue and Victory Boulevard at the west end. The existing Topham Trunk Line would remain in service and supplied by the existing Encino Inlet Line at Oxnard Street and Encino Avenue at the east end. This would allow connections from the 12-inch and 16-inch diameter distribution mainlines to the distribution system to be done with minimal impact to normal operations in the 1123SZ. Once these distribution connections have been made, the TTLR connection to the Encino Inlet Line at Oxnard Street and Encino Avenue would be made. The shutdown of the existing Topham Trunk Line would take place during the winter months when water demand is low to avoid potential supply issues. The existing Topham Trunk Line would be isolated from the drinking water system and abandoned in place once these final connections have been made.

Project Operations

The TTLR would interconnect the 1134SZ at the east end and the 1123SZ at the west end, allowing flow between the two zones, providing operational flexibility and system resiliency. The TTLR would be located entirely underground and would not be visible. Activities associated with long-term operations and maintenance would be minimal, limited to scheduled maintenance or emergency repair. No additional permanent LADWP workforce would be required to operate the TTLR.

Best Management Practices

The following best management practices (BMPs) would be employed during construction of the proposed project, to help minimize or eliminate potential impacts to the environment. BMPs are distinguished from mitigation measures because they are based on existing regulatory requirements and/or are standard practices and procedures of LADWP and/or its contractors not unique to the proposed project.

Air Quality

- **BMP-AQ-1:** The proposed project would comply with South Coast Air Quality Management District (SCAQMD) Rule 401 (Visible Emissions) and Rule 402 (Nuisance) to prevent the occurrence of public nuisances and visible dust plumes traveling off-site, and would implement Rule 403 dust control measures and Rule 1166 measures to control the emission of Volatile Organic Compounds (VOCs) from excavating, grading, handling and treating VOC-contaminated soil as required by the SCAQMD, including but not limited to the following:
    - Water shall be applied to exposed surfaces at least two times per day to prevent generation of dust plumes.
    - The construction contractor shall utilize at least one of the following measures at each vehicle egress from the project site to a paved public road:
        - Pave the surface extending at least 100 feet and at least 20 feet wide;
        - Utilize a wheel shaker/wheel spreading device consisting of raised dividers at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages; or
        - Install a wheel washing system to remove bulk material from tires and vehicle undercarriages.
    - All trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
    - Construction activity on exposed or unpaved dirt surfaces shall be suspended when wind speed exceeds 25 miles per hour (mph).
    - A community liaison shall be identified concerning on-site construction activity including resolution of issues related to dust generation.
    - Non-toxic soil stabilizers shall be applied according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more).
    - Streets shall be swept at the end of the day if visible soil is carried onto adjacent public paved roads. If feasible, water sweepers with reclaimed water shall be used.

Biological Resources

Because project construction activities would be continuous during the 7-year construction period, nesting bird season (which generally occurs February 15 through September 15, and as early as January for raptors) could not be avoided. Therefore, the following BMPs shall be employed to avoid and minimize impacts to nesting birds protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGC):

- **BMP-BIO-1:** A pre-construction nesting bird survey shall be conducted by a qualified biologist within 3 days prior to the start of construction activities during the nesting season to determine whether active nests are present within or directly adjacent to the construction zone. All nests found shall be recorded.

- **BMP-BIO-2:** In the event an active nest is detected, a qualified biologist shall monitor the nest to determine if a nest avoidance buffer zone is necessary to restrict construction activities in proximity to the nest to protect the nest from failing. Any buffer zone, within which construction activities may not occur, shall be established in coordination with the qualified biologist, who shall take into account existing baseline conditions (e.g., topography, buffering buildings or other structures, etc.). In addition, observed avian response to ambient conditions (e.g., existing traffic noise and human activity) shall factor into the requirement for and size of a nest avoidance buffer.

- **BMP-BIO-3**: The qualified biologist shall monitor all active nests, including those with and without an established buffer, at least once per week to determine whether birds are being disturbed. If signs of disturbance or stress are observed, the qualified biologist shall implement adaptive measures to reduce disturbance. These measures could include establishing or increasing buffer distances, or placing visual screens or sound dampening structures between the nest and construction activity until fledging is confirmed. The qualified biologist shall monitor each active nest until they determine that nestlings have fledged and dispersed, or the nest is no longer active.

- **BMP-BIO-4:** Should an active nest of any federal or state-listed bird species be detected during pre-construction surveys or subsequent construction monitoring, construction activity in the immediate area shall not commence or shall cease if already underway, and the applicable federal and/or state agency (e.g., United States Fish and Wildlife Service [USFWS], California Department of Fish and Wildlife [CDFW], etc.) shall be notified. Work in other areas of the project site may continue until the active nests has been evaluated.

Cultural Resources

- **BMP-CUL-1:** All field supervisors and all construction workers shall participate in training on cultural resources awareness prior to the initiation of project construction on project sites that involve ground-disturbing activities. The training shall include a description of the types of cultural resources (including tribal cultural resources and human remains) that could inadvertently be encountered during ground-disturbing activities, the sensitivity of the resources, the legal basis for protection of the resources, and the penalties for unauthorized collection of or knowingly damaging the resources. The training shall address the proper procedures in the event of an inadvertent discovery of a cultural resource, including the immediate halting of work in the area of the discovery, notification of appropriate individuals of the discovery, the establishment of appropriate protective buffer zones around the discovery, and the continued avoidance of the protected area until the resource has been evaluated by qualified individuals and an appropriate treatment plan has been developed and implemented. These procedures shall be documented in a cultural resources monitoring plan (CRMP) that shall establish, in the event of inadvertent discovery of cultural resources, monitoring procedures (including potential Native American monitors), notification procedures, key staff, and preliminary treatment measures for potential discoveries. The CRMP shall be written to ensure compliance with appropriate state and federal laws. The training presentation and CRMP shall be available to additional supervisory or construction personnel who may join after project construction has begun.

Paleontological Resources

- **BMP-GEO-1:** In the event previously unknown paleontological resources are encountered, the construction manager would halt construction activities in the immediate area in accordance with CEQA Guidelines Section 15064.5(f). LADWP would retain a qualified paleontologist to make an immediate evaluation of the significance and appropriate treatment of the resource. Construction activities may continue on other parts of the construction site while evaluation and any necessary treatment of paleontological resources take place.

Stormwater and Erosion Control

- **BMP-WQ-1:** A Storm Water Pollution Prevention Plan (SWPPP), which will include erosion and sedimentation BMPs, shall be developed and implemented for construction activities. The SWPPP may include, but would not be limited to, the following:
    - Minimizing the extent of disturbed areas and duration of exposure;
    - Stabilizing and protecting disturbed areas;
    - Keeping runoff velocities low; and
    - Retaining sediment within the construction area.
- **BMP-WQ-2:** Construction erosion and sediment control BMPs may include, but are not limited, to the following:
    - Temporary desilting basins;
    - Silt fences;
    - Gravel bag barriers;
    - Temporary soil stabilization with mattresses and mulching;
    - Temporary drainage inlet protection; and
    - Diversion dikes and interceptor swales.

Transportation

- **BMP-TRA-1**: Residences and businesses near the pipeline alignment would be notified prior to the start of construction (e.g., via flyers) of lane closures and parking restrictions in their vicinity. The notices would include a telephone number for comments or questions related to construction activities.

- **BMP-TRA-2** LADWP would coordinate with all applicable agencies regarding construction schedules and worksite traffic control and detour plans, including but not limited to the City of Los Angeles Department of Transportation, the City of Los Angeles Department of Public Works, Bureau of Engineering, the City of Los Angeles Fire Department, and the City of Los Angeles Police Department.

Utilities and Service Systems

- **BMP-UTL-1:** The proposed project construction would incorporate source reduction techniques and recycling measures and maintain a recycling program to divert waste in accordance with the Citywide Construction and Demolition Debris Recycling Ordinance.

Greenhouse Gas Emissions Topical Information

GHG emissions refer to a group of emissions that are generally believed to affect global climate conditions. The greenhouse effect compares the Earth and the atmosphere surrounding it to a greenhouse with glass panes. The glass panes in a greenhouse let heat from sunlight in and reduce the amount of heat that escapes. GHGs, such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), keep the average surface temperature of the Earth close to 60-degree Fahrenheit (°F). Without the natural greenhouse effect, the Earth's surface would be about 61°F cooler.[1] In addition to CO_2, CH_4, and N_2O, GHGs include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), black carbon (black carbon is the most strongly light-absorbing component of particulate matter emitted from burning fuels such as coal, diesel, and biomass), and water vapor.

CO_2 is the most abundant pollutant that contributes to climate change through fossil fuel combustion. The other GHGs are less abundant but have higher global warming potential than CO_2. To account for this higher potential, emissions of other GHGs are frequently expressed in the equivalent of CO_2, denoted as CO_2e. CO_2e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential (GWP) of a GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. **Table 1** shows various GWP.

TABLE 1: GLOBAL WARMING POTENTIAL FOR VARIOUS GREENHOUSE GASES

Pollutant	Lifetime (Years)	Global Warming Potential (20-Year)	Global Warming Potential (100-Year)
Carbon Dioxide (CO_2)	--	1	1
Methane (CH_4)	12	21	25
Nitrous Oxide (N_2O)	114	310	298
Nitrogen Trifluoride	740	Unknown	17,200
Sulfur Hexafluoride (SF_6)	3,200	23,900	22,800
Perfluorocarbons (PFCs)	2,600-50,000	6,500-9,200	7,390-12,200
Hydrofluorocarbons (HFCs)	1-270	140-11,700	124-14,800

SOURCE: CARB, *First Update to the Climate Change Scoping Plan*, 2014.

[1] California Environmental Protection Agency Climate Action Team, *Climate Action Report to Governor Schwarzenegger and the California Legislator*, March 2006.

Regulatory Framework

In response to growing scientific and political concern with global climate change, a series of federal and state laws have been adopted to reduce GHG emissions. The following provides a brief summary of GHG regulations and policies. This is a not an exhaustive list of all regulations and policies.

Federal

***Massachusetts vs. Environmental Protection Agency*, 127 S. Ct. 1438 (2007)**. A Supreme Court ruling that CO_2 and other GHGs are pollutants under the Clean Air Act.

Energy Independence and Security Act. This act set a Renewable Fuel Standard of 36 billion gallons of biofuel usage by 2022, increases Corporate Average Fuel Economy Standards of setting 35 miles per gallon of cars and light trucks by 2020 and sets new standards for lighting and residential and commercial appliance equipment.

National Fuel Efficiency Policy and Fuel Economy Standards. This 2009 policy was designed to increase fuel economy by more than five percent by 2016 starting with model year 2012 cars and trucks.

Heavy-Duty Vehicle Program. This 2011 program established the first fuel efficiency requirements for medium- and heavy-duty vehicles beginning with model year 2014.

State

Energy Efficiency Standards for Residential and Non-residential Buildings (Title 24 of the California Code of Regulations). Title 24 standards contain energy and water efficiency requirements (and indoor air quality requirements) for newly constructed buildings, additions to existing buildings, and alterations to existing buildings.

California Green Building Code. Also referred to as CalGreen, lays out minimum requirements for newly constructed buildings in California, which will reduce GHG emissions through improved efficiency and process improvements.

Senate Bill 1078 (SB 1078), Senate Bill 107 (SB 107), and Executive Order (E.O.) S-14-08 (Renewables Portfolio Standard). Signed on September 12, 2002, SB 1078 required California to generate 20 percent of its electricity from renewable energy by 2017. SB 107, signed on September 26, 2006, changed the due date for this goal from 2017 to 2010, which was achieved by the state. On November 17, 2008, Executive Order (E.O.) S-14-08 established a Renewables Portfolio Standard target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020.

Executive Order (E.O.) S-3-05. E.O. S-3-05 set the following GHG emission reduction targets: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels.

Assembly Bill 32. The California Global Warming Solutions Act of 2006, also known as Assembly Bill 32, focuses on reducing GHG emissions in California and requires the California Air Resources Board (CARB) to adopt rules and regulations that would achieve GHG emissions equivalent to Statewide levels in 1990 by 2020. The 2020 target reductions were estimated to be 174 million metric tons of CO_2e. In November 2022, CARB adopted the final 2022 Scoping Plan for Achieving Carbon

Neutrality (2020 Scoping Plan) by 2045 in accordance with the Governor's E.O. B-55-18 (2018). The 2022 Scoping Plan identifies that statewide GHG emissions must be reduced to 85 percent below 1990 levels to achieve the ambitious objective of carbon neutrality. The 2022 Scoping Plan incorporates, coordinates, and leverages many existing and ongoing efforts and identifies new policies and actions to accomplish the State's climate goals, and recognizes the need for developing new technologies in the future.

Senate Bill 375 (SB 375). Provides a means for achieving Assembly Bill 32 goals through the reduction in emissions by cars and light trucks. SB 375 requires Regional Transportation Plans (RTPs) prepared by Metropolitan Planning Organizations (MPOs) to include Sustainable Communities Strategies (SCSs).

Senate Bill 743 (SB 743). Encourages land use and transportation planning decisions and investments that reduce vehicle miles traveled (VMT), which contribute to GHG emissions, as required by Assembly Bill 32.

Executive Order (E.O.) B-30-15. This policy set a goal to reduce GHG emissions 40 percent below their 1990 levels by 2030. The E.O. establishes GHG emissions reduction targets to reduce emissions to 80 percent below 1990 levels by 2050 and sets an interim target of emissions reductions for 2030 as being necessary to guide regulatory policy and investments in California and put California on the most cost-effective path for long-term emissions reductions.

Senate Bill 32 (SB 32). This bill required a commitment to reducing statewide GHG emissions by 2020 to 1990 levels and by 2030 to 40 percent less than 1990 levels.

Regional

Southern California Association of Governments (SCAG) Regional Transportation Plan/ Sustainable Communities Strategy (RTP/SCS). SCAG is the MPO for the six-county region that includes Los Angeles, Orange, Riverside, Ventura, San Bernardino and Imperial counties. The RTP/SCS includes commitments to reduce emissions from transportation sources to comply with SB 375. Goals and policies included in the RTP/SCS to reduce air pollution consist of adding density in proximity to transit stations, mixed-use development and encouraging active transportation (i.e., non-motorized transportation such as bicycling). The most recent iteration of the SCAG RTP/SCS is the Connect SoCal 2020–2045 RTP/SCS.

Local

L.A.'s Green New Deal (Sustainable City pLAn 2019). In April 2019, Mayor Eric Garcetti released L.A.'s Green New Deal (Sustainable City pLAn 2019). Rather than an adopted plan, the Green New Deal is a mayoral initiative that consists of a program of actions designed to create sustainability-based performance targets through 2050 that advance economic, environmental, and equity objectives. L.A.'s Green New Deal (Sustainable City pLAn 2019) is the first four-year update to the City's first Sustainable City pLAn that was released in 2015. It augments, expands, and elaborates in even more detail L.A.'s vision for a sustainable future and it addresses climate change with accelerated targets and new aggressive goals. While not a plan adopted solely to reduce GHG emissions, climate mitigation is one of eight explicit benefits within L.A.'s Green New Deal that help define its strategies and goals.

GreenLA Climate Action Plan. The City of Los Angeles has issued guidance promoting sustainable development to reduce GHG emissions citywide in the form of a Climate Action Plan. The objective of GreenLA is to reduce GHG emissions 35 percent below 1990 levels by 2030.

ClimateLA. In order to provide detailed information on action items discussed in GreenLA, the City published an implementation document titled ClimateLA. ClimateLA presents the existing GHG inventory for the City, describes enforceable GHG reduction requirements, provides mechanisms to monitor and evaluate progress, and includes mechanisms that allow the plan to be revised in order to meet targets. By 2030, the plan aims to reduce GHG emissions by 35 percent from 1990 levels which were estimated to be approximately 54.1 million metric tons.

Existing Buildings Energy and Water Efficiency Ordinance. This ordinance is designed to facilitate the comparison of buildings' energy and water consumption, and reduce building operating costs, leading to reduced GHG emissions.

2017 LADWP Power Strategic Long-Term Resource Plan (SLTRP). The SLTRP is a 20-year roadmap that guides the LADWP power system in its efforts to supply reliable electricity in an environmentally responsible and cost-effective manner. One of the main focuses of the SLTRP is to reduce GHG emissions, while maintaining cost competitive rates and reliable electric service. The SLTRP examines multiple strategies to reduce GHG emissions, including early coal replacement, accelerated RPS, energy efficiency, local solar, energy storage, and transportation electrification. The 2017 SLTRP provides a path towards this goal with a combination of GHG reduction strategies, including early coal replacement two years ahead of schedule by 2025, accelerating RPS to 50 percent by 2025, 55 percent by 2030, and 65 percent by 2036, doubling of energy efficiency from 2017 through 2027, repowering coastal in-basin generating units with new, highly efficient potential clean energy projects by 2029 to provide grid reliability and critical ramping capability, accelerating electric transportation to absorb GHG emissions from the transportation sector, and investing in the Power System Reliability Program to maintain a robust and reliable Power System. LADWP recently published the Draft 2022 SLTRP, which is expected to be formally approved later this year.

Existing Setting

Emissions of GHGs to the atmosphere are the result of both natural and human-influenced activities. Volcanic activity, forest fires, decomposition, industrial processes, landfills, consumption of fossil fuels for power generation, transportation, heating, and cooling are the primary sources of GHG emissions. Without human activity, the Earth would maintain an approximate, but varied, balance between the emission of GHGs into the atmosphere and the storage of GHG in oceans and terrestrial ecosystems. Increased combustion of fossil fuels (e.g., gasoline, diesel, coal, etc.) has contributed to a rapid increase in atmospheric levels of GHGs over the last 150 years.

Statewide GHG Emissions Inventory

Table 2 shows statewide GHG emissions from 2010–2020 that are tracked by the CARB. The transportation sector represents California's largest source of GHG emissions and contributed 39 percent of total annual emissions. As shown in the table, transportation-related emissions in 2019 were of similar magnitude to those in 2013, despite six years of growth. This trend reflects the efficacy of State regulatory programs and policies to address GHG emissions from on-road mobile sources. Statewide GHG emissions in 2020 were considerably lower than prior years due to the COVID-19 pandemic.

TABLE 2: CALIFORNIA GREENHOUSE GAS EMISSIONS INVENTORY

Sector	Annual CO_2e Emissions (Million Metric Tons)										
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Transportation	162.9	159.5	136.9	157.0	157.7	161.5	165.2	166.6	169.3	162.4	135.8
Industrial	87.8	85.8	80.7	83.0	85.2	83.2	81.6	81.7	81.9	80.4	73.3
Electric Power	90.3	89.2	98.9	93.4	89.8	86.0	70.4	64.2	65.0	60.2	59.5
Commercial/Residential	46.0	46.0	39.2	39.1	35.6	36.3	37.2	37.6	37.4	40.5	38.7
Agriculture	33.6	34.2	35.2	33.9	33.9	32.6	32.2	31.7	32.2	31.4	31.6
High GWP Emissions	13.5	14.5	15.5	16.8	17.7	18.6	19.4	20.1	20.5	20.7	21.3
Recycling and Waste	8.1	8.2	8.2	8.3	8.3	8.4	8.5	8.6	8.7	8.8	8.9
Total	**442.3**	**437.6**	**434.7**	**431.5**	**428.2**	**426.6**	**414.4**	**410.6**	**411**	**404.5**	**369.2**

SOURCE: CARB, *California Greenhouse Gas Emission Inventory – 2022 Edition.* Data available at: https://ww3.arb.ca.gov/cc/inventory/data/data.htm.

Of note, between October 23, 2015, and February 18, 2016, an exceptional natural gas leak event occurred at the Aliso Canyon natural gas storage facility that resulted in unexpected GHG emissions of considerable magnitude. The exceptional incident released approximately 109,000 metric tons of CH_4, which equated to approximately 1.96 million metric tons of carbon dioxide equivalents ($MMTCO_2e$) of unanticipated emissions in 2015 and an additional 0.52 $MMTCO_2e$ in 2016. According to CARB, these emissions will be mitigated in the future through projects funded by the Southern California Gas Company based on legal settlement and are presented alongside but tracked separately from routine inventory emissions.[2,3]

LADWP Power Resource Mix

In 2016, LADWP achieved California's SB 32 target to reduce GHG emissions to 40 percent below 1990 levels by 2030, which was 14 years ahead of the deadline.[4] By the end of 2018, LADWP systemwide emissions were reduced to 49 percent below 1990 levels, and the 2017 SLTRP forecasts that LADWP GHG emissions will be reduced to 79 percent below 1990 levels by 2037, nearly achieving the 2050 E.O. B-30-15 target. By the end of 2021, LADWP's power portfolio was 55 percent carbon free and systemwide GHG emissions were estimated to be 7.7 $MMTCO_2e$, which is approximately 57 percent below the 1990 emissions baseline of 17.9 $MMTCO_2e$.[5] At the close of 2021 the 331 MW Red Cloud Wind Project was completed, which is expected to boost the LADWP renewable energy portfolio by six percent up to 61 percent carbon free overall.

[2]CARB, California Greenhouse Gas Inventory for 2000-2015 – Trends of Emissions and Other Indicators, June 2017.
[3]CARB, Determination of Total Methane Emissions from the Aliso Canyon Natural Gas Leak Incident, October 2016.
[4]LADWP, *Briefing Book 2019-20*, https://www.ladwpnews.com/2019-20-briefing-book/, March 2020.
[5]LADWP, *Briefing Book 2021-22*, available at https://www.ladwpnews.com/2021-22-briefing-book/, November 2022.

Significance Thresholds

This Assessment was undertaken to determine whether construction or operation of the proposed project would have the potential to result in significant environmental impacts related to GHG emissions in the context of the Appendix G Environmental Checklist criteria of the CEQA Statute and Guidelines. Implementation of the proposed project may result in a significant environmental impact related to GHG emissions if the proposed project would:

1. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; and/or
2. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions.

Section 15064.4 of the CEQA Guidelines states that a lead agency should make a good-faith effort to describe, calculate, or estimate the amount of GHG emissions resulting from a project. The lead agency has the discretion to elect whether to quantify GHG emissions resulting from a project or rely on a qualitative analysis or performance-based standards. If a quantitative approach is chosen, the CEQA Guidelines promulgate that the lead agency should consider the following factors when assessing the significance of impacts from GHG emissions on the environment:

- The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting;
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and,
- The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

The CEQA Guidelines encourage lead agencies to develop and publish thresholds of significance that the agency uses to standardize the determination of the significance of potential environmental effects of proposed projects. When adopting or using particular thresholds, the amended Guidelines allows lead agencies to consider thresholds of significance adopted or recommended by other public agencies, or recommended by experts, provided that use of the thresholds are supported by substantial evidence, and/or to develop their own significance threshold.

Neither the City nor the South Coast Air Quality Management District (SCAQMD) has officially adopted a quantitative threshold screening value for determining the significance of GHG emissions that will be generated by projects under CEQA. However, the SCAQMD published a *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold* in October 2008, which contained several recommendations developed by SCAQMD staff for quantitatively assessing GHG emissions subject to CEQA.[6] Over the course of two and a half years between 2008 and 2010, the SCAQMD convened a GHG CEQA Significance Threshold Stakeholder Working Group that met 15 times beginning in April of 2008 to examine alternatives for establishing quantitative GHG thresholds. Ultimately, the SCAQMD staff proposed a tiered approach to analyzing the potential significance of GHG emissions from CEQA projects that was developed through collaboration with the Stakeholder Working Group:

[6]SCAQMD, Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold, October 2008.

1. **Tier 1** – Evaluate whether or not the project qualifies for any applicable exemption under CEQA.
2. **Tier 2** – Determine whether the project is consistent with a GHG reduction plan (that may be part of a local general plan, for example). The concept embodied in this tier is equivalent to the existing concept of consistency in CEQA Guidelines §§15064(h)(3), 15125(d), or 15152(a). The GHG reduction plan must, at a minimum, comply with AB 32 GHG reduction goals; include emissions estimates agreed upon by either CARB or the SCAQMD, have been analyzed under CEQA, and have a certified Final CEQA document.
3. **Tier 3** – Numerical Attempt to identify small projects that would not likely contribute to significant cumulative GHG impacts. SCAQMD recommended a bifurcated screening level approach to address industrial projects and residential/commercial projects (which are largely indirect sources). SCAQMD staff officially adopted a 10,000 $MTCO_2e$/year threshold for industrial projects for which the district is the lead agency in December 2008.[7] For non-industrial projects, the SCAQMD staff recommended either a singular bright line threshold of 3,000 $MTCO_2e$, or separate thresholds for residential projects (3,500 $MTCO_2e$), commercial projects (1,400 $MTCO_2e$), and mixed use projects (3,000 $MTCO_2e$). These values were derived based on capturing approximately 90 percent of GHG emissions within the SCAQMD jurisdiction above the threshold so that mitigation measures to reduce emissions could be identified and enforced.
4. **Tier 4** – Performance Standards such as percent emission reduction targets or sector-based standards.
5. **Tier 5** – Pursue mitigation through CEQA Offsets (i.e., off-site GHG reduction credits).

The mitigation measures evaluated by SCAQMD staff were applicable to long-term, operational emissions. As the proposed project would generate GHG emissions predominantly during temporary construction activities and changes to long-term regional GHG emissions would be negligible, the GHG emissions analysis was prepared to address the most conservative staff-recommended threshold of 1,400 $MTCO_2e$ per year. Although this threshold was never officially adopted, it was the preferred screening approach recommended by scientific experts and was developed consistently with the California Air Pollution Control Officers' Association (CAPCOA) promulgated approach in their White Paper on *CEQA & Climate Change*.[8] Therefore, the use of this expert-recommended screening threshold is backed by substantial evidence.

Methodology

To satisfy the requirements of the CEQA Statutes and Guidelines, GHG emissions that would be generated during construction of the TTLR project were quantified using the best available modeling tools that represent the industry standard. The SCAQMD recommends the use of the California Emissions Estimator Model (CalEEMod, Version 2020.4.0) as a tool for quantifying GHG emissions that will be generated by constructing and operating development projects under CEQA. CalEEMod contains an interface for entering project information related to land use type, construction schedule, construction equipment and personnel inventories, operational elements, and mitigation measures. Sources of GHG emissions involved in implementation of the proposed project would predominantly occur during construction activities, as no new permanent sources of emissions would be introduced to the project area and maintenance of the trunk line facilities may practicably be reduced with the

[7] SCAQMD, Minutes for the GHG CEQA Significance Working Group Meeting #15, September 2010.
[8] CAPCOA, CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act, January 2008.

installation of new components. Therefore, the quantitative GHG emissions analysis focused only on sources that would be involved in construction of the TTLR project.

Construction of the proposed project is anticipated to begin third quarter of 2023 and last for approximately 7 years. Throughout the construction period, the daily activities would fluctuate, and installation of the major TTLR components would occur at varying rates. The GHG emissions assessment was framed in a programmatic manner, such that daily personnel, on-road vehicle, and off-road equipment activity inventories were compiled for a single day of each phase of construction, and then those emissions were multiplied by the total estimated number of days that each component would take to complete. As detailed in the Project Description, the main components of the TTLR project are:

- 12-inch and 16-inch Diameter Distribution Mainline Open-Trench Installation along Victory Boulevard from De Soto Avenue to Topham Street, and on Topham Street from Victory Boulevard to Tampa Avenue (approximately 10,030 LF comprised of approximately 6,600 LF of 12-inch piping and approximately 3,430 LF of 16-inch piping)
- Trunk Line Open-Trench Construction along Victory Boulevard, Topham Street, and Oxnard Street (approximately 17,139 LF)
- Trunk Line Microtunneling along Victory Boulevard, Topham Street, and Oxnard Street (approximately 6,161 LF)

Generally, construction of each TTLR component would involve subsurface exploration to determine existing utility locations, stripping of roadway pavement, excavation of the open trench or microtunnel shafts or regulating station vault pits, backfilling of the excavated areas, and repaving of the roadway segments. Sources of GHG emissions involved in construction of the proposed project would include exhaust from on-road vehicle operation and off-road equipment use. Through collaboration with the project team, inventories of personnel, vehicles, and off-road equipment needed to complete each phase of construction for each TTLR component were compiled and input to CalEEMod to characterize daily GHG emissions that would occur during each activity. Detailed input data for the daily activity inventories can be found in the CalEEMod output files in the **Appendix**.

Estimated durations for TTLR component construction were developed based on the overall preliminary implementation schedule and the segment lengths for each type of component. In addition to the standard open trench installation method that would be employed for a majority of the corridor (approximately 17,139 LF), construction of the proposed project would require a microtunneling technique along roadway segments and under intersections where substantial subsurface utility structures are present, comprising approximately 6,161 LF. Microtunneling activities would involve the excavation of launching (approximately 20 feet by 50 feet) and receiving (approximately 12 feet wide by 35 feet long by 30 feet) deep shafts at either end of the work zone to accommodate the tunnel boring machine, at depths of 30 feet.

It was assumed that construction of the trunk line and distribution mainline would be completed within the first four years of construction. Detailed vehicle and equipment lists for each type of construction activity, as well as assumptions related to the activity durations, can be found in the **Appendix**.

Impact Assessment

a) Would the proposed project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment? (Less-than-Significant Impact)

In accordance with the CEQA Guidelines and Statutes, GHG emissions that would be generated by implementation of the proposed project were quantified as part of the impacts assessment. The TTLR project would generate GHG emissions exclusively from construction activities, because, in relation to existing operations, operation of the proposed project following the completion of construction would not introduce any new permanent sources of GHG emissions to the project area. The installation of new infrastructure components could ultimately reduce the necessary frequency of maintenance and service visits to proposed project components in the long run. **Table 3** presents an overview of the forecasted programmatic implementation schedule by major TTLR project component and indicates during which years construction of each segment or facility would occur, as well as average annual activities. Refer to the **Appendix** for the daily personnel, on-road vehicle, and equipment inventories for each activity listed below. The construction schedule in **Table 3** was used to develop a programmatic inventory of proposed project GHG emissions.

TABLE 3: PROPOSED PROJECT COMPONENT CONSTRUCTION SCHEDULE

Schedule Parameter	Distribution Mainlines	TTLR Open-Trench	TTLR Microtunneling
Program Years Active	Q3 2023 – Q2 2025	Q3 2025 – Q3 2030	Q3 202 5– Q3 2030
Total Road Stripping Days	200	300	150
Average Road Stripping Days/Year	*115*	*60*	*30*
Total Trench/Shaft Shoring Days	200	500	300
Average Trench/Shaft Shoring Days/Year	*115*	*100*	*60*
Total Trench/Shaft Excavation Days	200	500	300
Average Excavation Days/Year	*115*	*100*	*60*
Total Microtunneling + Pipeline Installation Days	400	1,000	450
Average Pipeline Installation Days/Year	*229*	*200*	*90*
Total Backfilling Days	200	500	300
Average Backfilling Days/Year	*115*	*100*	*60*
Total Roadway Repaving Days	200	300	100
Average Roadway Repaving Days/Year	*115*	*60*	*20*

SOURCE: TAHA, 2023.

Table 4 presents the estimated GHG emissions that would be generated by construction of the proposed project over the 7-year schedule and displays average annual emissions. Emissions modeling estimated that construction of the proposed project would produce approximately 5,296 $MTCO_2e$ in total over the 7-year implementation timeline, which equates to approximately 756.5 $MTCO_2e$ annually on average. The annual average GHG emissions would be substantially below the lowest SCAQMD recommended screening threshold, and emissions would not persist beyond the completion of construction activities. Therefore, implementation of the proposed project will result in a less-than-significant impact related to the magnitude of GHG emissions produced.

TABLE 4: PROPOSED PROJECT CONSTRUCTION ACTIVITIES GREENHOUSE GAS EMISSIONS	
Component/Source	**Greenhouse Gas Emissions ($MTCO_2e$)**
DISTRIBUTION MAINLINES OPEN-TRENCH CONSTRUCTION (Q3 2023 – Q2 2025)	
Off-Road Equipment	563.0
Disposal Hauling Trucks	306.0
Material Delivery Trucks	45.6
Construction Crew Vehicles	145.6
Subtotal	***1,060.2***
TTLR OPEN-TRENCH CONSTRUCTION (Q3 2025 – Q3 2030)	
Off-Road Equipment	1,461.0
Disposal Hauling Trucks	403.0
Material Delivery Trucks	84.5
Construction Crew Vehicles	630.1
Subtotal	***2,578.7***
TTLR MICROTUNNEL CONSTRUCTION (Q3 2025 – Q3 2030)	
Off-Road Equipment	1,058.0
Disposal Hauling Trucks	80.0
Material Delivery Trucks	63.4
Construction Crew Vehicles	455.3
Subtotal	***1,656.8***
Total	**5,295.7**
Annual Average Rate ($MTCO_2e$/year)	***756.5***
Lowest Recommended SCAQMD Threshold ($MTCO_2e$/year)	1,400
SOURCE: TAHA, 2023.	

Mitigation Measures

No mitigation measures are required.

b) Would the proposed project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs? (Less-than-Significant Impact)

There is no potential for the TTLR project to conflict with GHG reduction plans. Implementation of the proposed project would not introduce any permanent, long-term sources of GHG emissions to the City of Los Angeles and would not interfere with the GHG emissions reduction plans such as the *2022 Climate Change Scoping Plan* and the SCAG *Connect SoCal 2020–2045 RTP/SCS*. Furthermore, by replacing the existing trunk line the TTLR project would potentially reduce the necessary frequency of maintenance and servicing trips to the trunk line. Providing a reliable and efficient water distribution system is crucial to achieving the goals of *L.A.'s Green New Deal*, and the proposed project would contribute to those efforts.

As previously discussed, the proposed project GHG emissions would be well below the SCAQMD recommended screening threshold for small CEQA projects. GHG emissions are regionally cumulative in nature, and it is highly unlikely construction of any individual project would generate GHG emissions of sufficient quantity to conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Standard construction procedures would be undertaken in accordance with SCAQMD and CARB regulations applicable to heavy duty construction equipment and diesel haul trucks. Adhering to requirements pertinent to construction equipment maintenance and inspections and emissions standards, as well as diesel fleet requirements, including idling time restrictions and maintenance, would ensure that construction of the proposed project would not conflict with GHG emissions reductions efforts.

Mitigation Measures

No mitigation measures are required.

References

California Air Pollution Control Officers Association, *California Emissions Estimator Model (CalEEMod Version 2020.4.0) User's Guide*, May 2021.

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South Coast Air Quality Management District, *South Coast AQMD Air Quality Significance Thresholds*, March 2023.

Southern California Association of Governments, *Connect SoCal: The 2020–2045 Regional Transportation Plan/Sustainable Communities Strategy of the Southern California Association of Governments*, Adopted September 2020.

Appendix

- CalEEMod Daily Output Files:
  - Distribution Mainline Shallow Open Trench Construction
  - Topham Trunk Line Open-Trench Construction
  - Topham Trunk Line Microtunnel Construction

- Calculation Worksheets:
  - Distribution Mainline Shallow Open Trench Construction
  - Topham Trunk Line Open-Trench Construction
  - Topham Trunk Line Microtunnel Construction

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Topham Trunk Line Replacement Project - 12"/16" Dist. Mainlines

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	0.60	1000sqft	0.01	600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2030
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	691.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction Only - Open Trench method for 12" dist. mainline & 16" dist. mainline

Land Use - Representative daily active work zone area.

Construction Phase - Single representative construction day.

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Trips and VMT - Max 12 construction vehicles/day.
Max 6 hauling disposal loads/day.
Max 3 material delivery trucks/day.
Max 3 asphalt trucks/day.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Demolition - Max 3 haul load disposals/day.

Grading - Max 3 haul disposal loads per day.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Area Coating -

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	2.00	1.00
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDays	5.00	1.00
tblGrading	MaterialExported	0.00	45.00
tblGrading	MaterialExported	0.00	45.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Backfill Trench (12/16 DML)
tblOffRoadEquipment	PhaseName		Trench Excavation (12/16 DML)
tblOffRoadEquipment	PhaseName		Trench Excavation (12/16 DML)

tblOffRoadEquipment	PhaseName		Backfill Trench (12/16 DML)
tblOffRoadEquipment	PhaseName		Trench Excavation (12/16 DML)
tblOffRoadEquipment	PhaseName		Install Pipeline (12/16 DML)
tblOffRoadEquipment	PhaseName		Backfill Trench (12/16 DML)
tblOffRoadEquipment	PhaseName		Paving (12/16 DML)
tblOffRoadEquipment	PhaseName		Backfill Trench (12/16 DML)
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	4.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblTripsAndVMT	HaulingTripNumber	5.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	13.00	24.00
tblTripsAndVMT	WorkerTripNumber	10.00	24.00
tblTripsAndVMT	WorkerTripNumber	10.00	24.00
tblTripsAndVMT	WorkerTripNumber	0.00	24.00
tblTripsAndVMT	WorkerTripNumber	10.00	24.00
tblTripsAndVMT	WorkerTripNumber	8.00	24.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.6890	6.1092	7.4160	0.0173	1.4782	0.2742	1.6245	0.2715	0.2599	0.4076	0.0000	1,743.5339	1,743.5339	0.3295	0.1285	1,781.3315
Maximum	**0.6890**	**6.1092**	**7.4160**	**0.0173**	**1.4782**	**0.2742**	**1.6245**	**0.2715**	**0.2599**	**0.4076**	**0.0000**	**1,743.5339**	**1,743.5339**	**0.3295**	**0.1285**	**1,781.3315**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.6890	6.1092	7.4160	0.0173	0.8256	0.2742	0.9718	0.1727	0.2599	0.3311	0.0000	1,743.5339	1,743.5339	0.3295	0.1285	1,781.3315
Maximum	**0.6890**	**6.1092**	**7.4160**	**0.0173**	**0.8256**	**0.2742**	**0.9718**	**0.1727**	**0.2599**	**0.3311**	**0.0000**	**1,743.5339**	**1,743.5339**	**0.3295**	**0.1285**	**1,781.3315**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**44.15**	**0.00**	**40.18**	**36.39**	**0.00**	**18.77**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.6000e-004	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		1.3000e-004	1.3000e-004	0.0000		1.4000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.6000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**1.3000e-004**	**1.3000e-004**	**0.0000**	**0.0000**	**1.4000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.6000e-004	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		1.3000e-004	1.3000e-004	0.0000		1.4000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.6000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**1.3000e-004**	**1.3000e-004**	**0.0000**	**0.0000**	**1.4000e-004**

Topham Trunk Line Replacement Project - 12"/16" Dist. Mainlines - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Utility Exploration & Road Stripping (12/16 DML)	Demolition	8/7/2023	8/7/2023	5	1	Subsurface exploration to identify utilities; Remove pavement from work zone.
2	Shoring (12/16 DML)	Site Preparation	8/8/2023	8/8/2023	5	1	Install shoring piles.
3	Trench Excavation (12/16 DML)	Grading	8/9/2023	8/9/2023	5	1	Excavate trench segment.
4	Install Pipeline (12/16 DML)	Building Construction	8/10/2023	8/10/2023	5	1	
5	Backfill Trench (12/16 DML)	Trenching	8/11/2023	8/11/2023	5	1	
6	Paving (12/16 DML)	Paving	8/14/2023	8/14/2023	5	1	Roadway Restoration

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.01

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Utility Exploration & Road Stripping (12/16 DML)	Bore/Drill Rigs	1	2.00	221	0.50
Utility Exploration & Road Stripping (12/16 DML)	Concrete/Industrial Saws	1	1.00	81	0.73
Utility Exploration & Road Stripping (12/16 DML)	Excavators	1	4.00	158	0.38
Utility Exploration & Road Stripping (12/16 DML)	Forklifts	1	4.00	89	0.20

Utility Exploration & Road Stripping (12/16 DML)	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Shoring (12/16 DML)	Bore/Drill Rigs	1	2.00	221	0.50
Shoring (12/16 DML)	Cranes	1	4.00	231	0.29
Shoring (12/16 DML)	Excavators	1	4.00	158	0.38
Shoring (12/16 DML)	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Trench Excavation (12/16 DML)	Cranes	1	2.00	231	0.29
Trench Excavation (12/16 DML)	Excavators	1	4.00	158	0.38
Trench Excavation (12/16 DML)	Forklifts	1	2.00	89	0.20
Trench Excavation (12/16 DML)	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Install Pipeline (12/16 DML)	Cranes	1	6.00	231	0.29
Install Pipeline (12/16 DML)	Generator Sets	1	6.00	84	0.74
Install Pipeline (12/16 DML)	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Backfill Trench (12/16 DML)	Cement and Mortar Mixers	1	4.00	9	0.56
Backfill Trench (12/16 DML)	Excavators	1	4.00	158	0.38
Backfill Trench (12/16 DML)	Other Material Handling Equipment	1	6.00	168	0.40
Backfill Trench (12/16 DML)	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Paving (12/16 DML)	Pavers	1	6.00	130	0.42
Paving (12/16 DML)	Paving Equipment	1	6.00	132	0.36
Paving (12/16 DML)	Rollers	1	6.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Utility Exploration & Road Stripping (12/16	5	24.00	0.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Shoring (12/16 DML)	4	24.00	6.00	6.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trench Excavation (12/16 DML)	4	24.00	0.00	12.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Pipeline (12/16 DML)	3	24.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill Trench (12/16 DML)	4	24.00	4.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Paving (12/16 DML)		3	24.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Utility Exploration & Road Stripping (12/16 DML) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0700	0.0000	1.0700	0.1620	0.0000	0.1620			0.0000			0.0000
Off-Road	0.3168	2.8549	4.2823	8.0500e-003		0.1380	0.1380		0.1282	0.1282		777.7905	777.7905	0.2312		783.5716
Total	**0.3168**	**2.8549**	**4.2823**	**8.0500e-003**	**1.0700**	**0.1380**	**1.2080**	**0.1620**	**0.1282**	**0.2902**		**777.7905**	**777.7905**	**0.2312**		**783.5716**

3.2 Utility Exploration & Road Stripping (12/16 DML) - 2023

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.0988**	**1.1491**	**1.0797**	**6.9300e-003**	**0.4083**	**8.2100e-003**	**0.4165**	**0.1095**	**7.8100e-003**	**0.1173**		**742.0349**	**742.0349**	**0.0344**	**0.0877**	**769.0141**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Fugitive Dust					0.4173	0.0000	0.4173	0.0632	0.0000	0.0632			0.0000			0.0000
Off-Road	0.3168	2.8549	4.2823	8.0500e-003		0.1380	0.1380		0.1282	0.1282	0.0000	777.7905	777.7905	0.2312		783.5716
Total	**0.3168**	**2.8549**	**4.2823**	**8.0500e-003**	**0.4173**	**0.1380**	**0.5553**	**0.0632**	**0.1282**	**0.1914**	**0.0000**	**777.7905**	**777.7905**	**0.2312**		**783.5716**

3.2 Utility Exploration & Road Stripping (12/16 DML) - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.0988**	**1.1491**	**1.0797**	**6.9300e-003**	**0.4083**	**8.2100e-003**	**0.4165**	**0.1095**	**7.8100e-003**	**0.1173**		**742.0349**	**742.0349**	**0.0344**	**0.0877**	**769.0141**

3.3 Shoring (12/16 DML) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0900e-003	0.0000	5.0900e-003	7.7000e-004	0.0000	7.7000e-004			0.0000			0.0000
Off-Road	0.3617	3.5759	3.6121	8.6100e-003		0.1530	0.1530		0.1408	0.1408		833.7074	833.7074	0.2696		840.4483
Total	**0.3617**	**3.5759**	**3.6121**	**8.6100e-003**	**5.0900e-003**	**0.1530**	**0.1581**	**7.7000e-004**	**0.1408**	**0.1416**		**833.7074**	**833.7074**	**0.2696**		**840.4483**

3.3 Shoring (12/16 DML) - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0122	0.8175	0.2118	3.5100e-003	0.1050	4.9500e-003	0.1100	0.0288	4.7400e-003	0.0335		386.0025	386.0025	0.0212	0.0613	404.7995
Vendor	6.6700e-003	0.2411	0.0920	1.1200e-003	0.0384	1.1600e-003	0.0396	0.0111	1.1100e-003	0.0122		120.3722	120.3722	4.0100e-003	0.0173	125.6347
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.1014**	**1.1177**	**1.1011**	**6.8800e-003**	**0.4117**	**7.7200e-003**	**0.4195**	**0.1110**	**7.3400e-003**	**0.1183**		**733.7395**	**733.7395**	**0.0314**	**0.0845**	**759.7156**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.9800e-003	0.0000	1.9800e-003	3.0000e-004	0.0000	3.0000e-004			0.0000			0.0000
Off-Road	0.3617	3.5759	3.6121	8.6100e-003		0.1530	0.1530		0.1408	0.1408	0.0000	833.7074	833.7074	0.2696		840.4483
Total	**0.3617**	**3.5759**	**3.6121**	**8.6100e-003**	**1.9800e-003**	**0.1530**	**0.1550**	**3.0000e-004**	**0.1408**	**0.1411**	**0.0000**	**833.7074**	**833.7074**	**0.2696**		**840.4483**

3.3 Shoring (12/16 DML) - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0122	0.8175	0.2118	3.5100e-003	0.1050	4.9500e-003	0.1100	0.0288	4.7400e-003	0.0335		386.0025	386.0025	0.0212	0.0613	404.7995
Vendor	6.6700e-003	0.2411	0.0920	1.1200e-003	0.0384	1.1600e-003	0.0396	0.0111	1.1100e-003	0.0122		120.3722	120.3722	4.0100e-003	0.0173	125.6347
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.1014**	**1.1177**	**1.1011**	**6.8800e-003**	**0.4117**	**7.7200e-003**	**0.4195**	**0.1110**	**7.3400e-003**	**0.1183**		**733.7395**	**733.7395**	**0.0314**	**0.0845**	**759.7156**

3.4 Trench Excavation (12/16 DML) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0900e-003	0.0000	5.0900e-003	7.7000e-004	0.0000	7.7000e-004			0.0000			0.0000
Off-Road	0.2835	2.7360	3.4893	5.9700e-003		0.1305	0.1305		0.1200	0.1200		577.5536	577.5536	0.1868		582.2234
Total	**0.2835**	**2.7360**	**3.4893**	**5.9700e-003**	**5.0900e-003**	**0.1305**	**0.1356**	**7.7000e-004**	**0.1200**	**0.1208**		**577.5536**	**577.5536**	**0.1868**		**582.2234**

3.4 Trench Excavation (12/16 DML) - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0244	1.6349	0.4237	7.0300e-003	0.2101	9.9000e-003	0.2200	0.0576	9.4700e-003	0.0671		772.0050	772.0050	0.0424	0.1226	809.5991
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.1069**	**1.6941**	**1.2209**	**9.2800e-003**	**0.4783**	**0.0115**	**0.4898**	**0.1287**	**0.0110**	**0.1397**		**999.3699**	**999.3699**	**0.0486**	**0.1285**	**1,038.8804**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.9800e-003	0.0000	1.9800e-003	3.0000e-004	0.0000	3.0000e-004			0.0000			0.0000
Off-Road	0.2835	2.7360	3.4893	5.9700e-003		0.1305	0.1305		0.1200	0.1200	0.0000	577.5536	577.5536	0.1868		582.2234
Total	**0.2835**	**2.7360**	**3.4893**	**5.9700e-003**	**1.9800e-003**	**0.1305**	**0.1325**	**3.0000e-004**	**0.1200**	**0.1203**	**0.0000**	**577.5536**	**577.5536**	**0.1868**		**582.2234**

3.4 Trench Excavation (12/16 DML) - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0244	1.6349	0.4237	7.0300e-003	0.2101	9.9000e-003	0.2200	0.0576	9.4700e-003	0.0671		772.0050	772.0050	0.0424	0.1226	809.5991
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.1069**	**1.6941**	**1.2209**	**9.2800e-003**	**0.4783**	**0.0115**	**0.4898**	**0.1287**	**0.0110**	**0.1397**		**999.3699**	**999.3699**	**0.0486**	**0.1285**	**1,038.8804**

3.5 Install Pipeline (12/16 DML) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6065	6.0501	5.8013	0.0116		0.2726	0.2726		0.2585	0.2585		1,112.5727	1,112.5727	0.2293		1,118.3042
Total	**0.6065**	**6.0501**	**5.8013**	**0.0116**		**0.2726**	**0.2726**		**0.2585**	**0.2585**		**1,112.5727**	**1,112.5727**	**0.2293**		**1,118.3042**

3.5 Install Pipeline (12/16 DML) - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.0825**	**0.0592**	**0.7972**	**2.2500e-003**	**0.2683**	**1.6100e-003**	**0.2699**	**0.0711**	**1.4900e-003**	**0.0726**		**227.3649**	**227.3649**	**6.1400e-003**	**5.9200e-003**	**229.2814**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6065	6.0501	5.8013	0.0116		0.2726	0.2726		0.2585	0.2585	0.0000	1,112.5727	1,112.5727	0.2293		1,118.3042
Total	**0.6065**	**6.0501**	**5.8013**	**0.0116**		**0.2726**	**0.2726**		**0.2585**	**0.2585**	**0.0000**	**1,112.5727**	**1,112.5727**	**0.2293**		**1,118.3042**

3.5 Install Pipeline (12/16 DML) - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.0825**	**0.0592**	**0.7972**	**2.2500e-003**	**0.2683**	**1.6100e-003**	**0.2699**	**0.0711**	**1.4900e-003**	**0.0726**		**227.3649**	**227.3649**	**6.1400e-003**	**5.9200e-003**	**229.2814**

3.6 Backfill Trench (12/16 DML) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4300	3.6826	6.2750	9.6100e-003		0.1872	0.1872		0.1728	0.1728		921.2509	921.2509	0.2924		928.5610
Total	**0.4300**	**3.6826**	**6.2750**	**9.6100e-003**		**0.1872**	**0.1872**		**0.1728**	**0.1728**		**921.2509**	**921.2509**	**0.2924**		**928.5610**

3.6 Backfill Trench (12/16 DML) - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	4.4500e-003	0.1608	0.0614	7.5000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.4000e-004	8.1200e-003		80.2481	80.2481	2.6700e-003	0.0116	83.7564
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.1032**	**1.3098**	**1.1411**	**7.6800e-003**	**0.4339**	**8.9900e-003**	**0.4429**	**0.1169**	**8.5500e-003**	**0.1255**		**822.2830**	**822.2830**	**0.0371**	**0.0992**	**852.7705**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4300	3.6826	6.2750	9.6100e-003		0.1872	0.1872		0.1728	0.1728	0.0000	921.2509	921.2509	0.2924		928.5610
Total	**0.4300**	**3.6826**	**6.2750**	**9.6100e-003**		**0.1872**	**0.1872**		**0.1728**	**0.1728**	**0.0000**	**921.2509**	**921.2509**	**0.2924**		**928.5610**

3.6 Backfill Trench (12/16 DML) - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	4.4500e-003	0.1608	0.0614	7.5000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.4000e-004	8.1200e-003		80.2481	80.2481	2.6700e-003	0.0116	83.7564
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.1032**	**1.3098**	**1.1411**	**7.6800e-003**	**0.4339**	**8.9900e-003**	**0.4429**	**0.1169**	**8.5500e-003**	**0.1255**		**822.2830**	**822.2830**	**0.0371**	**0.0992**	**852.7705**

3.7 Paving (12/16 DML) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3873	3.8219	5.4691	8.5500e-003		0.1913	0.1913		0.1760	0.1760		827.8441	827.8441	0.2677		834.5376
Paving	0.0262					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4135**	**3.8219**	**5.4691**	**8.5500e-003**		**0.1913**	**0.1913**		**0.1760**	**0.1760**		**827.8441**	**827.8441**	**0.2677**		**834.5376**

3.7 Paving (12/16 DML) - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.6700e-003	0.2411	0.0920	1.1200e-003	0.0384	1.1600e-003	0.0396	0.0111	1.1100e-003	0.0122		120.3722	120.3722	4.0100e-003	0.0173	125.6347
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.0892**	**0.3003**	**0.8893**	**3.3700e-003**	**0.3067**	**2.7700e-003**	**0.3095**	**0.0822**	**2.6000e-003**	**0.0848**		**347.7370**	**347.7370**	**0.0102**	**0.0232**	**354.9160**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3873	3.8219	5.4691	8.5500e-003		0.1913	0.1913		0.1760	0.1760	0.0000	827.8441	827.8441	0.2677		834.5376
Paving	0.0262					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4135**	**3.8219**	**5.4691**	**8.5500e-003**		**0.1913**	**0.1913**		**0.1760**	**0.1760**	**0.0000**	**827.8441**	**827.8441**	**0.2677**		**834.5376**

3.7 Paving (12/16 DML) - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.6700e-003	0.2411	0.0920	1.1200e-003	0.0384	1.1600e-003	0.0396	0.0111	1.1100e-003	0.0122		120.3722	120.3722	4.0100e-003	0.0173	125.6347
Worker	0.0825	0.0592	0.7972	2.2500e-003	0.2683	1.6100e-003	0.2699	0.0711	1.4900e-003	0.0726		227.3649	227.3649	6.1400e-003	5.9200e-003	229.2814
Total	**0.0892**	**0.3003**	**0.8893**	**3.3700e-003**	**0.3067**	**2.7700e-003**	**0.3095**	**0.0822**	**2.6000e-003**	**0.0848**		**347.7370**	**347.7370**	**0.0102**	**0.0232**	**354.9160**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.529534	0.067658	0.193471	0.126518	0.024260	0.006985	0.011675	0.007885	0.000939	0.000569	0.026493	0.000724	0.003288

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.6000e-004	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		1.3000e-004	1.3000e-004	0.0000		1.4000e-004
Unmitigated	2.6000e-004	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		1.3000e-004	1.3000e-004	0.0000		1.4000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	5.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.1000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		1.3000e-004	1.3000e-004	0.0000		1.4000e-004
Total	**2.7000e-004**	**0.0000**	**6.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.3000e-004**	**1.3000e-004**	**0.0000**		**1.4000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	5.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.1000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		1.3000e-004	1.3000e-004	0.0000		1.4000e-004
Total	**2.7000e-004**	**0.0000**	**6.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.3000e-004**	**1.3000e-004**	**0.0000**		**1.4000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Topham Trunk Line Replacement Project - Open Trench

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	1.20	1000sqft	0.03	1,200.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2030
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	691.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction Only - Open Trench method for majority of TTLR

Land Use - Representative of daily active work area.

Construction Phase - Representative single-day activities.

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Trips and VMT - Max 6 daily haul+material delivery trucks.

Grading -

Vehicle Emission Factors - X

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Vehicle Emission Factors -

Vehicle Emission Factors -

Area Coating -

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	2.00	1.00
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDays	5.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	4.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripNumber	5.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	13.00	50.00
tblTripsAndVMT	WorkerTripNumber	10.00	50.00

tblTripsAndVMT	WorkerTripNumber	10.00	50.00
tblTripsAndVMT	WorkerTripNumber	1.00	50.00
tblTripsAndVMT	WorkerTripNumber	10.00	50.00
tblTripsAndVMT	WorkerTripNumber	8.00	50.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	0.7773	6.2952	8.9519	0.0207	1.8389	0.2525	1.9578	0.3678	0.2390	0.4785	0.0000	2,080.0924	2,080.0924	0.3763	0.1295	2,119.6266
Maximum	**0.7773**	**6.2952**	**8.9519**	**0.0207**	**1.8389**	**0.2525**	**1.9578**	**0.3678**	**0.2390**	**0.4785**	**0.0000**	**2,080.0924**	**2,080.0924**	**0.3763**	**0.1295**	**2,119.6266**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	0.7773	6.2952	8.9519	0.0207	1.1862	0.2525	1.3051	0.2690	0.2390	0.3946	0.0000	2,080.0924	2,080.0924	0.3763	0.1295	2,119.6266
Maximum	**0.7773**	**6.2952**	**8.9519**	**0.0207**	**1.1862**	**0.2525**	**1.3051**	**0.2690**	**0.2390**	**0.3946**	**0.0000**	**2,080.0924**	**2,080.0924**	**0.3763**	**0.1295**	**2,119.6266**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**35.49**	**0.00**	**33.34**	**26.87**	**0.00**	**17.53**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**0.0000**	**2.8000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**0.0000**	**2.8000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Utility Exploration & Road Stripping (TTLR)	Demolition	8/4/2025	8/4/2025	5	1	Subsurface exploration to identify utilities; Remove pavement from work zone.
2	Shoring (TTLR)	Site Preparation	8/5/2025	8/5/2025	5	1	Install shoring piles.
3	Trench Excavation (TTLR)	Grading	8/6/2025	8/6/2025	5	1	Excavate trench segment.
4	Install Pipeline	Building Construction	8/7/2025	8/7/2025	5	1	Install pipeline segments.
5	Backfill Trench	Trenching	8/8/2025	8/8/2025	5	1	Backfill trench with fill/concrete.
6	Paving	Paving	8/11/2025	8/11/2025	5	1	Roadway Restoration.

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.03

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Utility Exploration & Road Stripping (TTLR)	Bore/Drill Rigs	1	2.00	221	0.50
Utility Exploration & Road Stripping (TTLR)	Concrete/Industrial Saws	1	1.00	81	0.73
Utility Exploration & Road Stripping (TTLR)	Excavators	1	4.00	158	0.38
Utility Exploration & Road Stripping (TTLR)	Forklifts	1	4.00	89	0.20

Utility Exploration & Road Stripping (TTLR)	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Shoring (TTLR)	Bore/Drill Rigs	1	2.00	221	0.50
Shoring (TTLR)	Cranes	1	4.00	231	0.29
Shoring (TTLR)	Excavators	1	4.00	158	0.38
Shoring (TTLR)	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Trench Excavation (TTLR)	Cranes	1	2.00	231	0.29
Trench Excavation (TTLR)	Excavators	1	6.00	158	0.38
Trench Excavation (TTLR)	Forklifts	1	2.00	89	0.20
Trench Excavation (TTLR)	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Install Pipeline	Cranes	1	7.00	231	0.29
Install Pipeline	Generator Sets	1	7.00	84	0.74
Install Pipeline	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Backfill Trench	Cement and Mortar Mixers	1	6.00	9	0.56
Backfill Trench	Excavators	1	6.00	158	0.38
Backfill Trench	Other Material Handling Equipment	1	6.00	168	0.40
Backfill Trench	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Utility Exploration & Road Stripping (TTLR)	5	50.00	0.00	12.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Shoring (TTLR)	4	50.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trench Excavation (TTLR)	4	50.00	0.00	12.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Pipeline	3	50.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill Trench	4	50.00	4.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Paving		3	50.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Utility Exploration & Road Stripping (TTLR) - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0700	0.0000	1.0700	0.1620	0.0000	0.1620			0.0000			0.0000
Off-Road	0.2823	2.4377	4.2761	8.0600e-003		0.1058	0.1058		0.0983	0.0983		778.6080	778.6080	0.2311		784.3860
Total	**0.2823**	**2.4377**	**4.2761**	**8.0600e-003**	**1.0700**	**0.1058**	**1.1758**	**0.1620**	**0.0983**	**0.2603**		**778.6080**	**778.6080**	**0.2311**		**784.3860**

3.2 Utility Exploration & Road Stripping (TTLR) - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0239	1.6289	0.4367	6.7800e-003	0.2101	0.0100	0.2201	0.0576	9.5600e-003	0.0672		747.5370	747.5370	0.0433	0.1188	784.0235
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1747**	**1.7277**	**1.8745**	**0.0112**	**0.7689**	**0.0131**	**0.7820**	**0.2058**	**0.0124**	**0.2182**		**1,192.2063**	**1,192.2063**	**0.0538**	**0.1295**	**1,232.1425**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4173	0.0000	0.4173	0.0632	0.0000	0.0632			0.0000			0.0000
Off-Road	0.2823	2.4377	4.2761	8.0600e-003		0.1058	0.1058		0.0983	0.0983	0.0000	778.6080	778.6080	0.2311		784.3860
Total	**0.2823**	**2.4377**	**4.2761**	**8.0600e-003**	**0.4173**	**0.1058**	**0.5231**	**0.0632**	**0.0983**	**0.1615**	**0.0000**	**778.6080**	**778.6080**	**0.2311**		**784.3860**

3.2 Utility Exploration & Road Stripping (TTLR) - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0239	1.6289	0.4367	6.7800e-003	0.2101	0.0100	0.2201	0.0576	9.5600e-003	0.0672		747.5370	747.5370	0.0433	0.1188	784.0235
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1747**	**1.7277**	**1.8745**	**0.0112**	**0.7689**	**0.0131**	**0.7820**	**0.2058**	**0.0124**	**0.2182**		**1,192.2063**	**1,192.2063**	**0.0538**	**0.1295**	**1,232.1425**

3.3 Shoring (TTLR) - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3253	2.9949	3.5644	8.6200e-003		0.1261	0.1261		0.1160	0.1160		834.4086	834.4086	0.2699		841.1552
Total	**0.3253**	**2.9949**	**3.5644**	**8.6200e-003**	**0.0000**	**0.1261**	**0.1261**	**0.0000**	**0.1160**	**0.1160**		**834.4086**	**834.4086**	**0.2699**		**841.1552**

3.3 Shoring (TTLR) - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1549**	**0.2590**	**1.4968**	**5.1200e-003**	**0.5845**	**3.8400e-003**	**0.5884**	**0.1556**	**3.5700e-003**	**0.1592**		**522.2943**	**522.2943**	**0.0132**	**0.0219**	**529.1461**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3253	2.9949	3.5644	8.6200e-003		0.1261	0.1261		0.1160	0.1160	0.0000	834.4086	834.4086	0.2699		841.1552
Total	**0.3253**	**2.9949**	**3.5644**	**8.6200e-003**	**0.0000**	**0.1261**	**0.1261**	**0.0000**	**0.1160**	**0.1160**	**0.0000**	**834.4086**	**834.4086**	**0.2699**		**841.1552**

3.3 Shoring (TTLR) - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1549**	**0.2590**	**1.4968**	**5.1200e-003**	**0.5845**	**3.8400e-003**	**0.5884**	**0.1556**	**3.5700e-003**	**0.1592**		**522.2943**	**522.2943**	**0.0132**	**0.0219**	**529.1461**

3.4 Trench Excavation (TTLR) - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3244	2.9142	4.8343	8.0400e-003		0.1301	0.1301		0.1197	0.1197		778.5096	778.5096	0.2518		784.8042
Total	**0.3244**	**2.9142**	**4.8343**	**8.0400e-003**	**0.0000**	**0.1301**	**0.1301**	**0.0000**	**0.1197**	**0.1197**		**778.5096**	**778.5096**	**0.2518**		**784.8042**

3.4 Trench Excavation (TTLR) - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0239	1.6289	0.4367	6.7800e-003	0.2101	0.0100	0.2201	0.0576	9.5600e-003	0.0672		747.5370	747.5370	0.0433	0.1188	784.0235
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1747**	**1.7277**	**1.8745**	**0.0112**	**0.7689**	**0.0131**	**0.7820**	**0.2058**	**0.0124**	**0.2182**		**1,192.2063**	**1,192.2063**	**0.0538**	**0.1295**	**1,232.1425**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3244	2.9142	4.8343	8.0400e-003		0.1301	0.1301		0.1197	0.1197	0.0000	778.5096	778.5096	0.2518		784.8042
Total	**0.3244**	**2.9142**	**4.8343**	**8.0400e-003**	**0.0000**	**0.1301**	**0.1301**	**0.0000**	**0.1197**	**0.1197**	**0.0000**	**778.5096**	**778.5096**	**0.2518**		**784.8042**

3.4 Trench Excavation (TTLR) - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0239	1.6289	0.4367	6.7800e-003	0.2101	0.0100	0.2201	0.0576	9.5600e-003	0.0672		747.5370	747.5370	0.0433	0.1188	784.0235
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1747**	**1.7277**	**1.8745**	**0.0112**	**0.7689**	**0.0131**	**0.7820**	**0.2058**	**0.0124**	**0.2182**		**1,192.2063**	**1,192.2063**	**0.0538**	**0.1295**	**1,232.1425**

3.5 Install Pipeline - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6224	6.0362	6.6724	0.0135		0.2486	0.2486		0.2354	0.2354		1,298.4271	1,298.4271	0.2638		1,305.0213
Total	**0.6224**	**6.0362**	**6.6724**	**0.0135**		**0.2486**	**0.2486**		**0.2354**	**0.2354**		**1,298.4271**	**1,298.4271**	**0.2638**		**1,305.0213**

3.5 Install Pipeline - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1549**	**0.2590**	**1.4968**	**5.1200e-003**	**0.5845**	**3.8400e-003**	**0.5884**	**0.1556**	**3.5700e-003**	**0.1592**		**522.2943**	**522.2943**	**0.0132**	**0.0219**	**529.1461**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6224	6.0362	6.6724	0.0135		0.2486	0.2486		0.2354	0.2354	0.0000	1,298.4271	1,298.4271	0.2638		1,305.0213
Total	**0.6224**	**6.0362**	**6.6724**	**0.0135**		**0.2486**	**0.2486**		**0.2354**	**0.2354**	**0.0000**	**1,298.4271**	**1,298.4271**	**0.2638**		**1,305.0213**

3.5 Install Pipeline - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1549**	**0.2590**	**1.4968**	**5.1200e-003**	**0.5845**	**3.8400e-003**	**0.5884**	**0.1556**	**3.5700e-003**	**0.1592**		**522.2943**	**522.2943**	**0.0132**	**0.0219**	**529.1461**

3.6 Backfill Trench - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4367	3.4345	7.1640	0.0111		0.1606	0.1606		0.1486	0.1486		1,059.4401	1,059.4401	0.3343		1,067.7982
Total	**0.4367**	**3.4345**	**7.1640**	**0.0111**		**0.1606**	**0.1606**		**0.1486**	**0.1486**		**1,059.4401**	**1,059.4401**	**0.3343**		**1,067.7982**

3.6 Backfill Trench - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0160	1.0860	0.2911	4.5200e-003	0.1400	6.6600e-003	0.1467	0.0384	6.3800e-003	0.0448		498.3580	498.3580	0.0289	0.0792	522.6823
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1709**	**1.3450**	**1.7879**	**9.6400e-003**	**0.7245**	**0.0105**	**0.7351**	**0.1940**	**9.9500e-003**	**0.2039**		**1,020.6523**	**1,020.6523**	**0.0420**	**0.1011**	**1,051.8284**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4367	3.4345	7.1640	0.0111		0.1606	0.1606		0.1486	0.1486	0.0000	1,059.4401	1,059.4401	0.3343		1,067.7982
Total	**0.4367**	**3.4345**	**7.1640**	**0.0111**		**0.1606**	**0.1606**		**0.1486**	**0.1486**	**0.0000**	**1,059.4401**	**1,059.4401**	**0.3343**		**1,067.7982**

3.6 Backfill Trench - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0160	1.0860	0.2911	4.5200e-003	0.1400	6.6600e-003	0.1467	0.0384	6.3800e-003	0.0448		498.3580	498.3580	0.0289	0.0792	522.6823
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1709**	**1.3450**	**1.7879**	**9.6400e-003**	**0.7245**	**0.0105**	**0.7351**	**0.1940**	**9.9500e-003**	**0.2039**		**1,020.6523**	**1,020.6523**	**0.0420**	**0.1011**	**1,051.8284**

3.7 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4576	4.2908	7.2890	0.0114		0.2093	0.2093		0.1925	0.1925		1,103.3726	1,103.3726	0.3569		1,112.2939
Paving	0.0786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5362**	**4.2908**	**7.2890**	**0.0114**		**0.2093**	**0.2093**		**0.1925**	**0.1925**		**1,103.3726**	**1,103.3726**	**0.3569**		**1,112.2939**

3.7 Paving - 2025

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1549**	**0.2590**	**1.4968**	**5.1200e-003**	**0.5845**	**3.8400e-003**	**0.5884**	**0.1556**	**3.5700e-003**	**0.1592**		**522.2943**	**522.2943**	**0.0132**	**0.0219**	**529.1461**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	0.4576	4.2908	7.2890	0.0114		0.2093	0.2093		0.1925	0.1925	0.0000	1,103.3726	1,103.3726	0.3569		1,112.2939
Paving	0.0786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5362**	**4.2908**	**7.2890**	**0.0114**		**0.2093**	**0.2093**		**0.1925**	**0.1925**	**0.0000**	**1,103.3726**	**1,103.3726**	**0.3569**		**1,112.2939**

3.7 Paving - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1700e-003	0.1603	0.0590	7.2000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		77.6250	77.6250	2.7000e-003	0.0112	81.0270
Worker	0.1507	0.0987	1.4378	4.4000e-003	0.5589	3.0600e-003	0.5620	0.1482	2.8200e-003	0.1510		444.6693	444.6693	0.0105	0.0107	448.1191
Total	**0.1549**	**0.2590**	**1.4968**	**5.1200e-003**	**0.5845**	**3.8400e-003**	**0.5884**	**0.1556**	**3.5700e-003**	**0.1592**		**522.2943**	**522.2943**	**0.0132**	**0.0219**	**529.1461**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.529534	0.067658	0.193471	0.126518	0.024260	0.006985	0.011675	0.007885	0.000939	0.000569	0.026493	0.000724	0.003288

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Unmitigated	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	9.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**		**2.8000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	9.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**		**2.8000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Topham Trunk Line Replacement Project - Microtunnel

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	1.20	1000sqft	0.03	1,200.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2031
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	691.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction only - microtunneling (jacking) activities.

Land Use - Representative daily active work area: 15 ft wide x 40 ft long x 2 shafts = 1,200 sf

Construction Phase - Schedule provided by applicant.

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - k

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Off-road Equipment - LADWP Equipment Activity Inventory

Trips and VMT - Max three haul loads per work zone

Demolition -

Grading - Up to 3 haul loads per day (15 CY/load)

Area Coating -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	2.00	1.00
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	PhaseEndDate	8/15/2025	8/4/2025
tblConstructionPhase	PhaseEndDate	8/18/2025	8/5/2025
tblConstructionPhase	PhaseEndDate	8/20/2025	8/6/2025
tblConstructionPhase	PhaseEndDate	1/7/2026	8/7/2025
tblConstructionPhase	PhaseEndDate	8/20/2025	8/8/2025
tblConstructionPhase	PhaseEndDate	1/14/2026	8/11/2025
tblConstructionPhase	PhaseStartDate	8/16/2025	8/5/2025
tblConstructionPhase	PhaseStartDate	8/19/2025	8/6/2025
tblConstructionPhase	PhaseStartDate	8/21/2025	8/7/2025
tblConstructionPhase	PhaseStartDate	8/21/2025	8/8/2025
tblConstructionPhase	PhaseStartDate	1/8/2026	8/11/2025
tblGrading	MaterialExported	0.00	45.00
tblGrading	MaterialExported	0.00	45.00
tblOffRoadEquipment	HorsePower	9.00	81.00
tblOffRoadEquipment	HorsePower	84.00	150.00
tblOffRoadEquipment	LoadFactor	0.56	0.73
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	2.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblTripsAndVMT	HaulingTripNumber	7.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	13.00	70.00
tblTripsAndVMT	WorkerTripNumber	13.00	70.00
tblTripsAndVMT	WorkerTripNumber	13.00	70.00
tblTripsAndVMT	WorkerTripNumber	1.00	70.00
tblTripsAndVMT	WorkerTripNumber	10.00	70.00
tblTripsAndVMT	WorkerTripNumber	10.00	70.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	1.1984	8.6557	14.0134	0.0358	2.4282	0.3438	2.5549	0.4696	0.3306	0.5882	0.0000	3,469.1552	3,469.1552	0.4600	0.0912	3,490.1206
Maximum	**1.1984**	**8.6557**	**14.0134**	**0.0358**	**2.4282**	**0.3438**	**2.5549**	**0.4696**	**0.3306**	**0.5882**	**0.0000**	**3,469.1552**	**3,469.1552**	**0.4600**	**0.0912**	**3,490.1206**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	1.1984	8.6557	14.0134	0.0358	1.4884	0.3438	1.6151	0.3273	0.3306	0.5492	0.0000	3,469.1552	3,469.1552	0.4600	0.0912	3,490.1206
Maximum	**1.1984**	**8.6557**	**14.0134**	**0.0358**	**1.4884**	**0.3438**	**1.6151**	**0.3273**	**0.3306**	**0.5492**	**0.0000**	**3,469.1552**	**3,469.1552**	**0.4600**	**0.0912**	**3,490.1206**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**38.71**	**0.00**	**36.79**	**30.30**	**0.00**	**6.63**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**0.0000**	**2.8000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**0.0000**	**2.8000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Subsurface Exploration & Pavement Removal	Demolition	8/4/2025	8/4/2025	5	1	
2	Install Sheet Pile Shoring	Site Preparation	8/5/2025	8/5/2025	5	1	
3	Shaft Excavation	Grading	8/6/2025	8/6/2025	5	1	
4	Install Casing & Trunk Line	Building Construction	8/7/2025	8/7/2025	5	1	
5	Backfill Shafts	Trenching	8/8/2025	8/8/2025	5	1	
6	Repave Roadway	Paving	8/11/2025	8/11/2025	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.03

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Subsurface Exploration & Pavement Removal	Bore/Drill Rigs	1	2.00	221	0.50
Subsurface Exploration & Pavement Removal	Concrete/Industrial Saws	1	2.00	81	0.73
Subsurface Exploration & Pavement Removal	Excavators	1	4.00	158	0.38
Subsurface Exploration & Pavement Removal	Forklifts	1	4.00	89	0.20

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Subsurface Exploration & Pavement Removal	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Install Sheet Pile Shoring	Bore/Drill Rigs	1	2.00	221	0.50
Install Sheet Pile Shoring	Cranes	1	4.00	231	0.29
Install Sheet Pile Shoring	Excavators	1	4.00	158	0.38
Install Sheet Pile Shoring	Forklifts	1	2.00	89	0.20
Install Sheet Pile Shoring	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Shaft Excavation	Bore/Drill Rigs	1	2.00	221	0.50
Shaft Excavation	Cranes	1	2.00	231	0.29
Shaft Excavation	Excavators	1	6.00	158	0.38
Shaft Excavation	Forklifts	1	2.00	89	0.20
Shaft Excavation	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Install Casing & Trunk Line	Bore/Drill Rigs	1	7.00	221	0.50
Install Casing & Trunk Line	Cranes	1	4.00	231	0.29
Install Casing & Trunk Line	Forklifts	1	7.00	89	0.20
Install Casing & Trunk Line	Generator Sets	1	7.00	150	0.74
Install Casing & Trunk Line	Pumps	1	7.00	84	0.74
Backfill Shafts	Cement and Mortar Mixers	1	6.00	81	0.73
Backfill Shafts	Excavators	1	6.00	158	0.38
Backfill Shafts	Other Material Handling Equipment	1	6.00	168	0.40
Backfill Shafts	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Repave Roadway	Cement and Mortar Mixers	1	6.00	9	0.56
Repave Roadway	Pavers	1	7.00	130	0.42
Repave Roadway	Rollers	1	7.00	80	0.38
Repave Roadway	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Subsurface Exploration & Paveme	5	70.00	0.00	6.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Sheet Pile Shoring	5	70.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Shaft Excavation	5	70.00	0.00	6.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Casing & Trunk Line	5	70.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill Shafts	4	70.00	6.00	6.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Repave Roadway	4	70.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Subsurface Exploration & Pavement Removal - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.5407	0.0000	1.5407	0.2333	0.0000	0.2333			0.0000			0.0000
Off-Road	0.3192	2.7213	4.7317	8.8400e-003		0.1174	0.1174		0.1099	0.1099		852.6913	852.6913	0.2344		858.5506
Total	**0.3192**	**2.7213**	**4.7317**	**8.8400e-003**	**1.5407**	**0.1174**	**1.6582**	**0.2333**	**0.1099**	**0.3432**		**852.6913**	**852.6913**	**0.2344**		**858.5506**

3.2 Subsurface Exploration & Pavement Removal - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.8145	0.2184	3.3900e-003	0.1050	5.0000e-003	0.1100	0.0288	4.7800e-003	0.0336		373.7685	373.7685	0.0217	0.0594	392.0117
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2230**	**0.9527**	**2.2312**	**9.5500e-003**	**0.8875**	**9.2900e-003**	**0.8968**	**0.2363**	**8.7300e-003**	**0.2450**		**996.3055**	**996.3055**	**0.0363**	**0.0744**	**1,019.3784**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.6009	0.0000	0.6009	0.0910	0.0000	0.0910			0.0000			0.0000
Off-Road	0.3192	2.7213	4.7317	8.8400e-003		0.1174	0.1174		0.1099	0.1099	0.0000	852.6913	852.6913	0.2344		858.5506
Total	**0.3192**	**2.7213**	**4.7317**	**8.8400e-003**	**0.6009**	**0.1174**	**0.7183**	**0.0910**	**0.1099**	**0.2009**	**0.0000**	**852.6913**	**852.6913**	**0.2344**		**858.5506**

3.2 Subsurface Exploration & Pavement Removal - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.8145	0.2184	3.3900e-003	0.1050	5.0000e-003	0.1100	0.0288	4.7800e-003	0.0336		373.7685	373.7685	0.0217	0.0594	392.0117
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2230**	**0.9527**	**2.2312**	**9.5500e-003**	**0.8875**	**9.2900e-003**	**0.8968**	**0.2363**	**8.7300e-003**	**0.2450**		**996.3055**	**996.3055**	**0.0363**	**0.0744**	**1,019.3784**

3.3 Install Sheet Pile Shoring - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0900e-003	0.0000	5.0900e-003	7.7000e-004	0.0000	7.7000e-004			0.0000			0.0000
Off-Road	0.3470	3.1996	3.8478	9.0000e-003		0.1371	0.1371		0.1261	0.1261		871.4163	871.4163	0.2818		878.4621
Total	**0.3470**	**3.1996**	**3.8478**	**9.0000e-003**	**5.0900e-003**	**0.1371**	**0.1422**	**7.7000e-004**	**0.1261**	**0.1269**		**871.4163**	**871.4163**	**0.2818**		**878.4621**

3.3 Install Sheet Pile Shoring - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2173**	**0.3787**	**2.1014**	**7.2400e-003**	**0.8209**	**5.4700e-003**	**0.8263**	**0.2186**	**5.0700e-003**	**0.2236**		**738.9745**	**738.9745**	**0.0187**	**0.0318**	**748.9072**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.9800e-003	0.0000	1.9800e-003	3.0000e-004	0.0000	3.0000e-004			0.0000			0.0000
Off-Road	0.3470	3.1996	3.8478	9.0000e-003		0.1371	0.1371		0.1261	0.1261	0.0000	871.4163	871.4163	0.2818		878.4621
Total	**0.3470**	**3.1996**	**3.8478**	**9.0000e-003**	**1.9800e-003**	**0.1371**	**0.1390**	**3.0000e-004**	**0.1261**	**0.1264**	**0.0000**	**871.4163**	**871.4163**	**0.2818**		**878.4621**

3.3 Install Sheet Pile Shoring - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2173**	**0.3787**	**2.1014**	**7.2400e-003**	**0.8209**	**5.4700e-003**	**0.8263**	**0.2186**	**5.0700e-003**	**0.2236**		**738.9745**	**738.9745**	**0.0187**	**0.0318**	**748.9072**

3.4 Shaft Excavation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.0900e-003	0.0000	5.0900e-003	7.7000e-004	0.0000	7.7000e-004			0.0000			0.0000
Off-Road	0.3767	3.3805	5.3434	0.0104		0.1454	0.1454		0.1338	0.1338		1,007.8221	1,007.8221	0.3260		1,015.9709
Total	**0.3767**	**3.3805**	**5.3434**	**0.0104**	**5.0900e-003**	**0.1454**	**0.1505**	**7.7000e-004**	**0.1338**	**0.1346**		**1,007.8221**	**1,007.8221**	**0.3260**		**1,015.9709**

3.4 Shaft Excavation - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.8145	0.2184	3.3900e-003	0.1050	5.0000e-003	0.1100	0.0288	4.7800e-003	0.0336		373.7685	373.7685	0.0217	0.0594	392.0117
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2230**	**0.9527**	**2.2312**	**9.5500e-003**	**0.8875**	**9.2900e-003**	**0.8968**	**0.2363**	**8.7300e-003**	**0.2450**		**996.3055**	**996.3055**	**0.0363**	**0.0744**	**1,019.3784**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.9800e-003	0.0000	1.9800e-003	3.0000e-004	0.0000	3.0000e-004			0.0000			0.0000
Off-Road	0.3767	3.3805	5.3434	0.0104		0.1454	0.1454		0.1338	0.1338	0.0000	1,007.8221	1,007.8221	0.3260		1,015.9709
Total	**0.3767**	**3.3805**	**5.3434**	**0.0104**	**1.9800e-003**	**0.1454**	**0.1474**	**3.0000e-004**	**0.1338**	**0.1341**	**0.0000**	**1,007.8221**	**1,007.8221**	**0.3260**		**1,015.9709**

3.4 Shaft Excavation - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.8145	0.2184	3.3900e-003	0.1050	5.0000e-003	0.1100	0.0288	4.7800e-003	0.0336		373.7685	373.7685	0.0217	0.0594	392.0117
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2230**	**0.9527**	**2.2312**	**9.5500e-003**	**0.8875**	**9.2900e-003**	**0.8968**	**0.2363**	**8.7300e-003**	**0.2450**		**996.3055**	**996.3055**	**0.0363**	**0.0744**	**1,019.3784**

3.5 Install Casing & Trunk Line - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9811	8.2771	11.9121	0.0286		0.3383	0.3383		0.3256	0.3256		2,730.1808	2,730.1808	0.4413		2,741.2134
Total	**0.9811**	**8.2771**	**11.9121**	**0.0286**		**0.3383**	**0.3383**		**0.3256**	**0.3256**		**2,730.1808**	**2,730.1808**	**0.4413**		**2,741.2134**

3.5 Install Casing & Trunk Line - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2173**	**0.3787**	**2.1014**	**7.2400e-003**	**0.8209**	**5.4700e-003**	**0.8263**	**0.2186**	**5.0700e-003**	**0.2236**		**738.9745**	**738.9745**	**0.0187**	**0.0318**	**748.9072**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9811	8.2771	11.9121	0.0286		0.3383	0.3383		0.3256	0.3256	0.0000	2,730.1808	2,730.1808	0.4413		2,741.2134
Total	**0.9811**	**8.2771**	**11.9121**	**0.0286**		**0.3383**	**0.3383**		**0.3256**	**0.3256**	**0.0000**	**2,730.1808**	**2,730.1808**	**0.4413**		**2,741.2134**

3.5 Install Casing & Trunk Line - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day								lb/day		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2173**	**0.3787**	**2.1014**	**7.2400e-003**	**0.8209**	**5.4700e-003**	**0.8263**	**0.2186**	**5.0700e-003**	**0.2236**		**738.9745**	**738.9745**	**0.0187**	**0.0318**	**748.9072**

3.6 Backfill Shafts - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day								lb/day		
Off-Road	0.3926	3.1583	6.9327	0.0106		0.1498	0.1498		0.1378	0.1378		1,021.5529	1,021.5529	0.3304		1,029.8126
Total	**0.3926**	**3.1583**	**6.9327**	**0.0106**		**0.1498**	**0.1498**		**0.1378**	**0.1378**		**1,021.5529**	**1,021.5529**	**0.3304**		**1,029.8126**

3.6 Backfill Shafts - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.8145	0.2184	3.3900e-003	0.1050	5.0000e-003	0.1100	0.0288	4.7800e-003	0.0336		373.7685	373.7685	0.0217	0.0594	392.0117
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2292**	**1.1932**	**2.3197**	**0.0106**	**0.9259**	**0.0105**	**0.9364**	**0.2474**	**9.8500e-003**	**0.2572**		**1,112.7430**	**1,112.7430**	**0.0403**	**0.0912**	**1,140.9189**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3926	3.1583	6.9327	0.0106		0.1498	0.1498		0.1378	0.1378	0.0000	1,021.5529	1,021.5529	0.3304		1,029.8126
Total	**0.3926**	**3.1583**	**6.9327**	**0.0106**		**0.1498**	**0.1498**		**0.1378**	**0.1378**	**0.0000**	**1,021.5529**	**1,021.5529**	**0.3304**		**1,029.8126**

3.6 Backfill Shafts - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.8145	0.2184	3.3900e-003	0.1050	5.0000e-003	0.1100	0.0288	4.7800e-003	0.0336		373.7685	373.7685	0.0217	0.0594	392.0117
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2292**	**1.1932**	**2.3197**	**0.0106**	**0.9259**	**0.0105**	**0.9364**	**0.2474**	**9.8500e-003**	**0.2572**		**1,112.7430**	**1,112.7430**	**0.0403**	**0.0912**	**1,140.9189**

3.7 Repave Roadway - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4316	4.0922	6.3319	9.6700e-003		0.1864	0.1864		0.1724	0.1724		922.6094	922.6094	0.2901		929.8612
Paving	0.0786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5102**	**4.0922**	**6.3319**	**9.6700e-003**		**0.1864**	**0.1864**		**0.1724**	**0.1724**		**922.6094**	**922.6094**	**0.2901**		**929.8612**

3.7 Repave Roadway - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2173**	**0.3787**	**2.1014**	**7.2400e-003**	**0.8209**	**5.4700e-003**	**0.8263**	**0.2186**	**5.0700e-003**	**0.2236**		**738.9745**	**738.9745**	**0.0187**	**0.0318**	**748.9072**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4316	4.0922	6.3319	9.6700e-003		0.1864	0.1864		0.1724	0.1724	0.0000	922.6094	922.6094	0.2901		929.8612
Paving	0.0786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5102**	**4.0922**	**6.3319**	**9.6700e-003**		**0.1864**	**0.1864**		**0.1724**	**0.1724**	**0.0000**	**922.6094**	**922.6094**	**0.2901**		**929.8612**

3.7 Repave Roadway - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2500e-003	0.2405	0.0885	1.0800e-003	0.0384	1.1800e-003	0.0396	0.0111	1.1200e-003	0.0122		116.4375	116.4375	4.0500e-003	0.0168	121.5405
Worker	0.2110	0.1382	2.0129	6.1600e-003	0.7824	4.2900e-003	0.7867	0.2075	3.9500e-003	0.2115		622.5370	622.5370	0.0146	0.0150	627.3667
Total	**0.2173**	**0.3787**	**2.1014**	**7.2400e-003**	**0.8209**	**5.4700e-003**	**0.8263**	**0.2186**	**5.0700e-003**	**0.2236**		**738.9745**	**738.9745**	**0.0187**	**0.0318**	**748.9072**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.527779	0.068094	0.194119	0.126693	0.024448	0.007090	0.011744	0.007802	0.000938	0.000564	0.026705	0.000730	0.003294

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Unmitigated	5.3000e-004	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	9.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**		**2.8000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	9.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.6000e-004	2.6000e-004	0.0000		2.8000e-004
Total	**5.3000e-004**	**0.0000**	**1.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.6000e-004**	**2.6000e-004**	**0.0000**		**2.8000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Topham Construction Greenhouse Gas Emissions

	total LF						
25 LF/day	10030						
12/16 DML Open Trench							
	Total CO2	**CH4**	**N2O**	**CO2e**	**Days**	**Total MTCO2e**
Subsurface Exploration & Pavement Removal						
Fugitive Dust	0.0			0.0		
Off-Road	777.8	0.2		783.6	200.0	71.0845
Total	777.8	0.2		783.6		0
Hauling	514.7	0.0	0.1	539.7	200.0	48.96379
Vendor	0.0	0.0	0.0	0.0	200.0	
Worker	227.4	0.0	0.0	229.3	200.0	20.80008
Total	742.0	0.0	0.1	769.0		0
	1,519.8	0.3	0.1	1,552.6		0
Shoring						
Fugitive Dust	0.0			0.0		
Off-Road	833.7	0.3		840.4	200.0	76.24428
Total	833.7	0.3		840.4		0
Hauling	386.0	0.0	0.1	404.8	200.0	36.72284
Vendor	120.4	0.0	0.0	125.6	200.0	11.3974
Worker	227.4	0.0	0.0	229.3	200.0	20.80008
Total	733.7	0.0	0.1	759.7		0
	1,567.4	0.3	0.1	1,600.2		0
Trench Excavation						
Fugitive Dust	0.0			0.0		
Off-Road	577.6	0.2		582.2	200.0	52.81848
Total	577.6	0.2		582.2		0
Hauling	772.0	0.0	0.1	809.6	200.0	73.44568
Vendor	0.0	0.0	0.0	0.0	200.0	
Worker	227.4	0.0	0.0	229.3	200.0	20.80008
Total	999.4	0.0	0.1	1,038.9		0
	1,576.9	0.2	0.1	1,621.1		0
Pipe Install						
Off-Road	1,112.6	0.2		1,118.3	400.0	202.9019
Total	1,112.6	0.2		1,118.3		0
Hauling	514.7	0.0	0.1	539.7	400.0	97.92757
Vendor	80.2	0.0	0.0	83.8	400.0	15.19652
Worker	227.4	0.0	0.0	229.3	400.0	41.60017
Total	822.3	0.0	0.1	852.8		0
	1,934.9	0.3	0.1	1,971.1		0

Topham Construction Greenhouse Gas Emissions

Backfill Trench						
Off-Road	921.3	0.3		928.6	200.0	84.23774
Total	921.3	0.3		928.6		0
Hauling	514.7	0.0	0.1	539.7	200.0	48.96379
Vendor	80.2	0.0	0.0	83.8	200.0	7.598262
Worker	227.4	0.0	0.0	229.3	200.0	20.80008
Total	822.3	0.0	0.1	852.8		0
	1,743.5	0.3	0.1	1,781.3		0
Paving						
Off-Road	827.8	0.3		834.5	200.0	75.70807
Paving	0.0			0.0		
Total	827.8	0.3		834.5		0
Hauling	0.0	0.0	0.0	0.0		
Vendor	120.4	0.0	0.0	125.6	200.0	11.3974
Worker	227.4	0.0	0.0	229.3	200.0	20.80008
Total	347.7	0.0	0.0	354.9		0
	1,175.6	0.3	0.0	1,189.5		
					E	563.0
					H	306.0
					V	45.6
					W	145.6
						1,060.2

Topham Construction Greenhouse Gas Emissions

total LF
17139

TTLR Open Trench	Total CO2	CH4	N2O	CO2e	Days	Total MTCO2e
Subsurface Exploration & Pavement Removal						
Fugitive Dust	0.0			0.0		
Off-Road	778.6	0.2		784.4	300.0	106.7376
Total	778.6	0.2		784.4		0
Hauling	747.5	0.0	0.1	784.0	300.0	106.6883
Vendor	0.0	0.0	0.0	0.0	300.0	
Worker	444.7	0.0	0.0	448.1	300.0	60.97909
Total	1,192.2	0.1	0.1	1,232.1		0
	1,970.8	0.3	0.1	2,016.5		0
Shoring						
Fugitive Dust	0.0			0.0		
Off-Road	834.4	0.3		841.2	500.0	190.771
Total	834.4	0.3		841.2		0
Hauling	0.0	0.0	0.0	0.0	500.0	
Vendor	77.6	0.0	0.0	81.0	500.0	18.37664
Worker	444.7	0.0	0.0	448.1	500.0	101.6318
Total	522.3	0.0	0.0	529.1		0
	1,356.7	0.3	0.0	1,370.3		0
Trench Excavation						
Fugitive Dust	0.0			0.0		
Off-Road	778.5	0.3		784.8	500.0	177.9908
Total	778.5	0.3		784.8		0
Hauling	747.5	0.0	0.1	784.0	500.0	177.8138
Vendor	0.0	0.0	0.0	0.0	500.0	
Worker	444.7	0.0	0.0	448.1	500.0	101.6318
Total	1,192.2	0.1	0.1	1,232.1		0
	1,970.7	0.3	0.1	2,016.9		0
Pipe Install						
Off-Road	1,298.4	0.3		1,305.0	1,000.0	591.9484
Total	1,298.4	0.3		1,305.0		0
Hauling	0.0	0.0	0.0	0.0	1,000.0	
Vendor	77.6	0.0	0.0	81.0	1,000.0	36.75327
Worker	444.7	0.0	0.0	448.1	1,000.0	203.2636
Total	522.3	0.0	0.0	529.1		0
	1,820.7	0.3	0.0	1,834.2		0

Topham Construction Greenhouse Gas Emissions

Backfill Trench						
Off-Road	1,059.4	0.3		1,067.8	500.0	242.1728
Total	1,059.4	0.3		1,067.8	500.0	242.1728
Hauling	498.4	0.0	0.1	522.7	500.0	118.5425
Vendor	77.6	0.0	0.0	81.0	500.0	18.37664
Worker	444.7	0.0	0.0	448.1	500.0	101.6318
Total	1,020.7	0.0	0.1	1,051.8		0
	2,080.1	0.4	0.1	2,119.6		0
Paving						
Off-Road	1,103.4	0.4		1,112.3	300.0	151.3586
Paving	0.0			0.0		
Total	1,103.4	0.4		1,112.3		0
Hauling	0.0	0.0	0.0	0.0		
Vendor	77.6	0.0	0.0	81.0	300.0	11.02598
Worker	444.7	0.0	0.0	448.1	300.0	60.97909
Total	522.3	0.0	0.0	529.1		0
	1,625.7	0.4	0.0	1,641.4		
					E	1,461.0
					H	403.0
					V	84.5
					W	630.1
						2,578.7

Topham Construction Greenhouse Gas Emissions

total LF
6,161

	Total CO2	CH4	N2O	CO2e	Days	Total MTCO2e
					1,600.0	
Microtunnel						
Subsurface Exploration & Pavement Removal						
Fugitive Dust	0.0			0.0		
Off-Road	852.7	0.2		858.6	150.0	58.41487
Total	852.7	0.2		858.6	150.0	58.41487
Hauling	373.8	0.0	0.1	392.0	150.0	26.67206
Vendor	0.0	0.0	0.0	0.0	150.0	
Worker	622.5	0.0	0.0	627.4	150.0	42.68536
Total	996.3	0.0	0.1	1,019.4	150.0	69.35742
	1,849.0	0.3	0.1	1,877.9		0
Install Sheet Pile Shoring						
Fugitive Dust	0.0			0.0		
Off-Road	871.4	0.3		878.5	300.0	119.5393
Total	871.4	0.3		878.5	300.0	119.5393
Hauling	0.0	0.0	0.0	0.0	300.0	
Vendor	116.4	0.0	0.0	121.5	300.0	16.53897
Worker	622.5	0.0	0.0	627.4	300.0	85.37073
Total	739.0	0.0	0.0	748.9	300.0	101.9097
	1,610.4	0.3	0.0	1,627.4		0
Shaft Excavation						
Fugitive Dust	0.0			0.0		
Off-Road	1,007.8	0.3		1,016.0	300.0	138.2512
Total	1,007.8	0.3		1,016.0		0
Hauling	373.8	0.0	0.1	392.0	300.0	53.34412
Vendor	0.0	0.0	0.0	0.0	300.0	
Worker	622.5	0.0	0.0	627.4	300.0	85.37073
Total	996.3	0.0	0.1	1,019.4		0
	2,004.1	0.4	0.1	2,035.3		0
Install Casing & Pipeline						
Off-Road	2,730.2	0.4		2,741.2	450.0	559.5277
Total	2,730.2	0.4		2,741.2	450.0	559.5277
Hauling	0.0	0.0	0.0	0.0	450.0	
Vendor	116.4	0.0	0.0	121.5	450.0	24.80846
Worker	622.5	0.0	0.0	627.4	450.0	128.0561
Total	739.0	0.0	0.0	748.9		
	3,469.2	0.5	0.0	3,490.1		0

<u>Topham Construction Greenhouse Gas Emissions</u>

<u>Backfill</u>						
Off-Road	1,021.6	0.3		1,029.8	300.0	140.1347
Total	1,021.6	0.3		1,029.8	300.0	140.1347
Hauling	373.8	0.0	0.1	392.0		0
Vendor	116.4	0.0	0.0	121.5	300.0	16.53897
Worker	622.5	0.0	0.0	627.4	300.0	85.37073
Total	1,112.7	0.0	0.1	1,140.9		
	2,134.3	0.4	0.1	2,170.7		0
<u>Repave</u>						
Off-Road	922.6	0.3		929.9	100.0	42.17784
Paving	0.0			0.0	100	
Total	922.6	0.3		929.9		0
Hauling	0.0	0.0	0.0	0.0	100.0	
Vendor	116.4	0.0	0.0	121.5	100.0	5.512991
Worker	622.5	0.0	0.0	627.4	100.0	28.45691
Total	739.0	0.0	0.0	748.9		
	1,661.6	0.3	0.0	1,678.8		
					E	1,058.0
					H	80.0
					V	63.4
					W	455.3
						1,656.6

APPENDIX F

Noise and Vibration Assessment

taha
environmental planners

Technical Memorandum

TO: Hallie Fitzpatrick
AECOM

FROM: Terry A. Hayes Associates Inc.

DATE: May 23, 2023

RE: Los Angeles Department of Water and Power (LADWP) Topham Trunk Line Replacement Project – Noise and Vibration Assessment

Introduction

Terry A. Hayes Associates Inc. (TAHA) has completed a Noise and Vibration Assessment for the Topham Trunk Line Replacement Project (TTLR project or proposed project) in accordance with the provisions of the California Environmental Quality Act (CEQA) Statutes and Guidelines. This Assessment is organized as follows:

- Introduction
- Project Description
- Noise and Vibration Topical Information
- Existing Setting
- Regulatory Framework
- Significance Thresholds
- Methodology
- Impact Assessment
- References

Project Description

Project Location and Setting

The Los Angeles Department of Water and Power (LADWP) proposes to install approximately 23,300 linear feet (LF) of a 36-inch diameter underground pipe along Victory Boulevard, Topham Street, and Oxnard Street, in the west San Fernando Valley area of the City of Los Angeles. The installation of the new 36-inch diameter trunk line (referred to herein as the Topham Trunk Line Replacement [TTLR] Project, the project, or proposed project) would replace the aging and deteriorating existing 24-inch Topham Trunk Line to provide greater operational flexibility for water flow and delivery and to improve system redundancy and resiliency. The proposed project would also include approximately 6,599 LF of a new 12-inch diameter underground distribution mainline that would connect the proposed TTLR Project to the existing distribution system on Mason Avenue, Victory Boulevard, and Topham Street. In addition, the proposed project would include approximately 3,429 LF of new 16-inch diameter underground distribution mainline that would replace the existing 8-inch diameter distribution mainline on Tampa Avenue, south of Topham Street. The TTLR and the distribution mainlines would be installed mostly parallel to their respective existing lines; once

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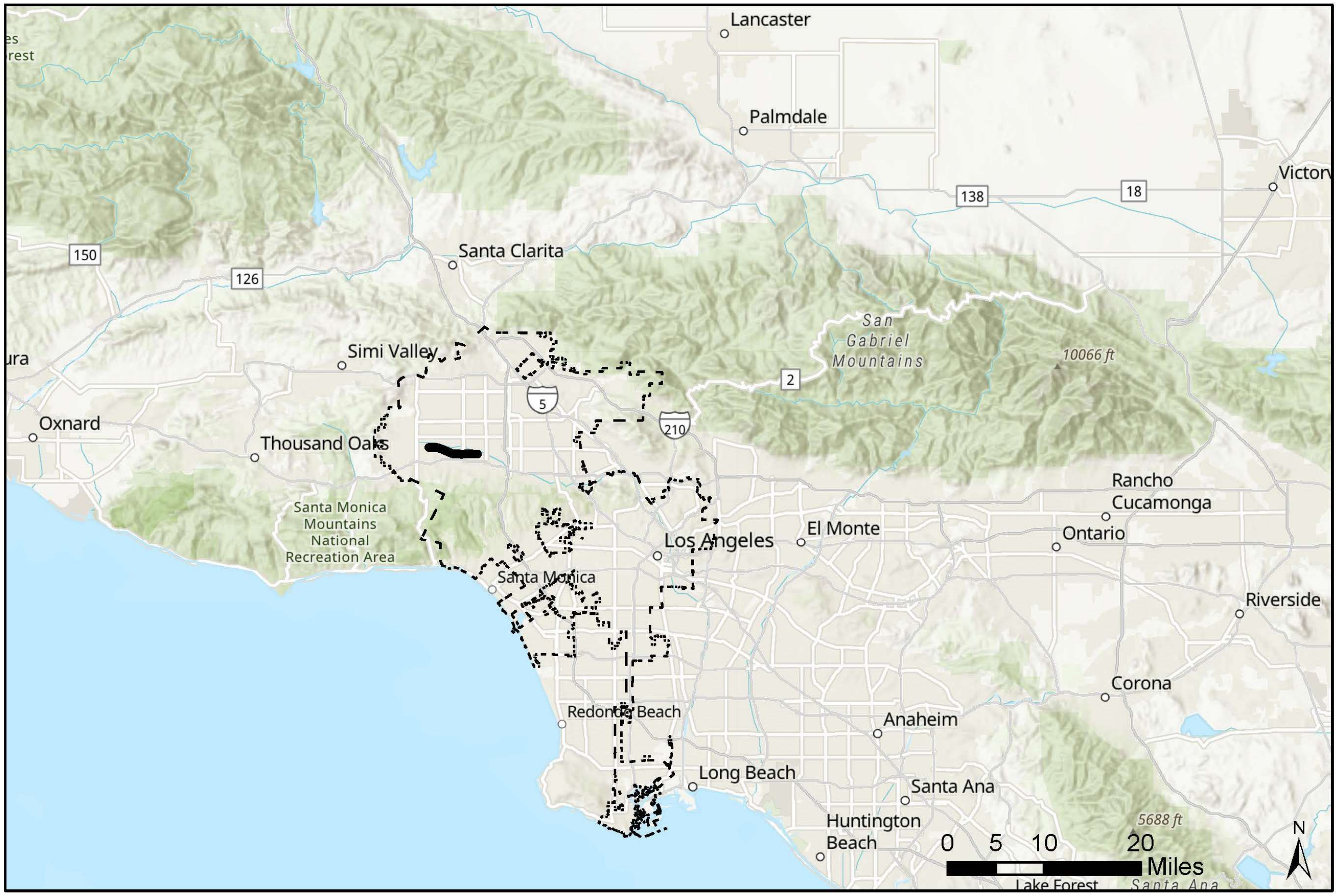
installation is completed, the existing lines would be abandoned in place and decommissioned accordingly.

The proposed project would be located in the western San Fernando Valley of the City of Los Angeles within the communities of Winnetka, Woodland Hills, Tarzana, Encino, and the Sepulveda Basin (**Figures 1** through **3**). Approximately 23,300 LF of the new 36-inch diameter trunk line would be installed along Victory Boulevard, Topham Street, and Oxnard Street, beginning just east of the intersection of De Soto Avenue and Victory Boulevard and ending at the intersection of Oxnard Street and Encino Avenue. A portion of the new 36-inch diameter trunk line would be installed within an existing LADWP easement located at the Los Angeles County Metropolitan Transportation Authority (Metro)'s Pierce College Station parking lot and north of the baseball fields at Winnetka Avenue and Victory Boulevard. In addition, approximately 6,599 LF of the new 12-inch diameter distribution would be installed along Mason Avenue (from Kittridge Street to Victory Boulevard), Victory Boulevard (at the intersection of Mason Avenue and Victory Boulevard), and Topham Street (from Victory Boulevard to Tampa Avenue). Approximately 3,429 LF of the new 16-inch diameter distribution mainline would be installed along Topham Street (from Tampa Avenue to Evenhaim Lane) and Tampa Avenue (from Topham Street to Ventura Boulevard). As described previously, the TTLR and the distribution mainlines would be installed mostly parallel to their respective existing lines; once installation is completed, the existing lines would be abandoned in place and decommissioned accordingly.

Land uses along Victory Boulevard, Topham Street, Oxnard Street, and Tampa Avenue are mixed and include residential, religious, commercial, public transit (Metro), one private school (Woodcrest Preschool), limited manufacturing, open space, and public facilities including Pierce College. The Los Angeles River runs east-west, approximately 0.25 to 0.5 mile north of the proposed project.



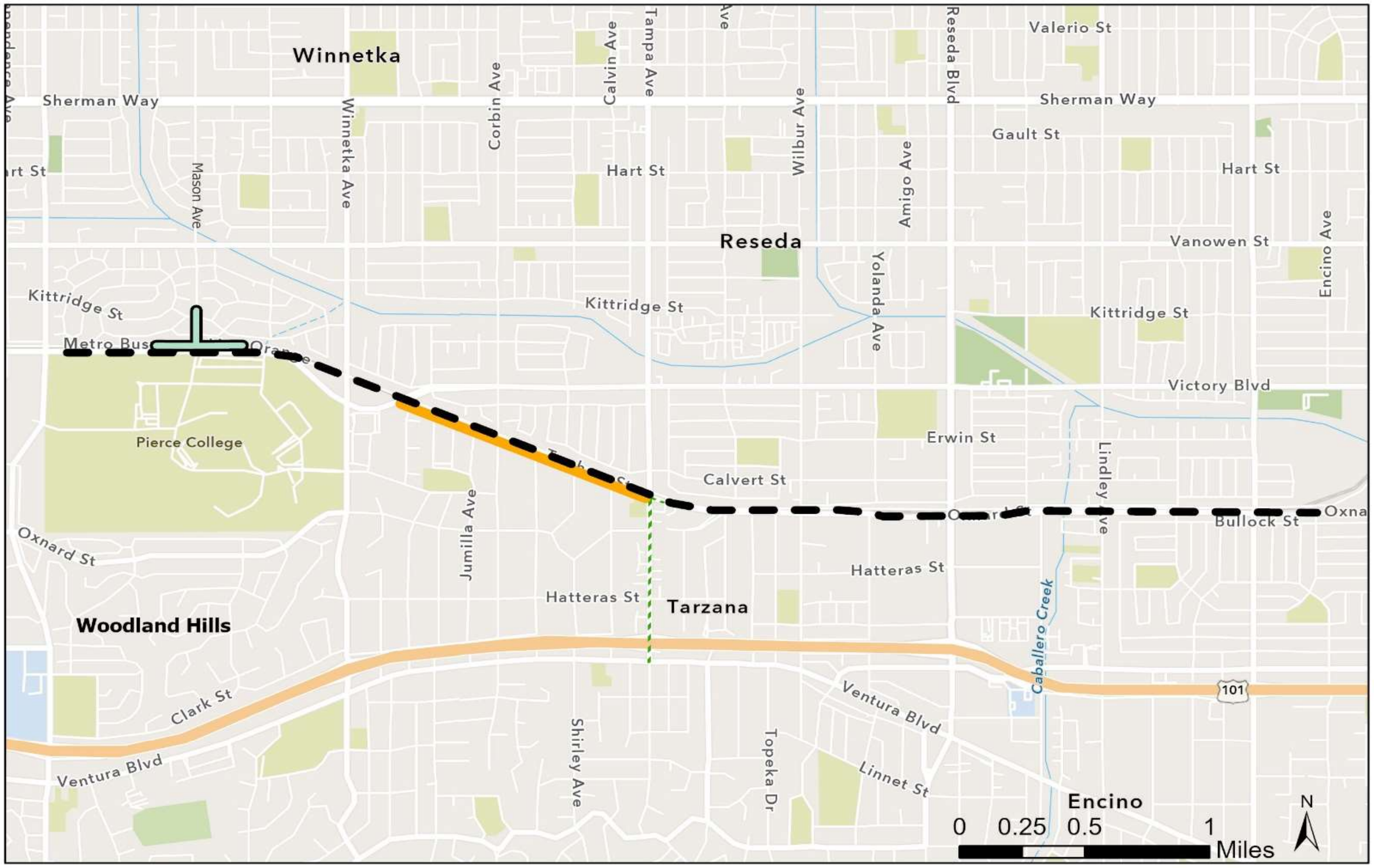
Legend

Proposed Topham Trunk Line Project

City of Los Angeles Boundary

Figure 1
Project Vicinity Map

County of Los Angeles, California State Parks, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, Esri, USGS

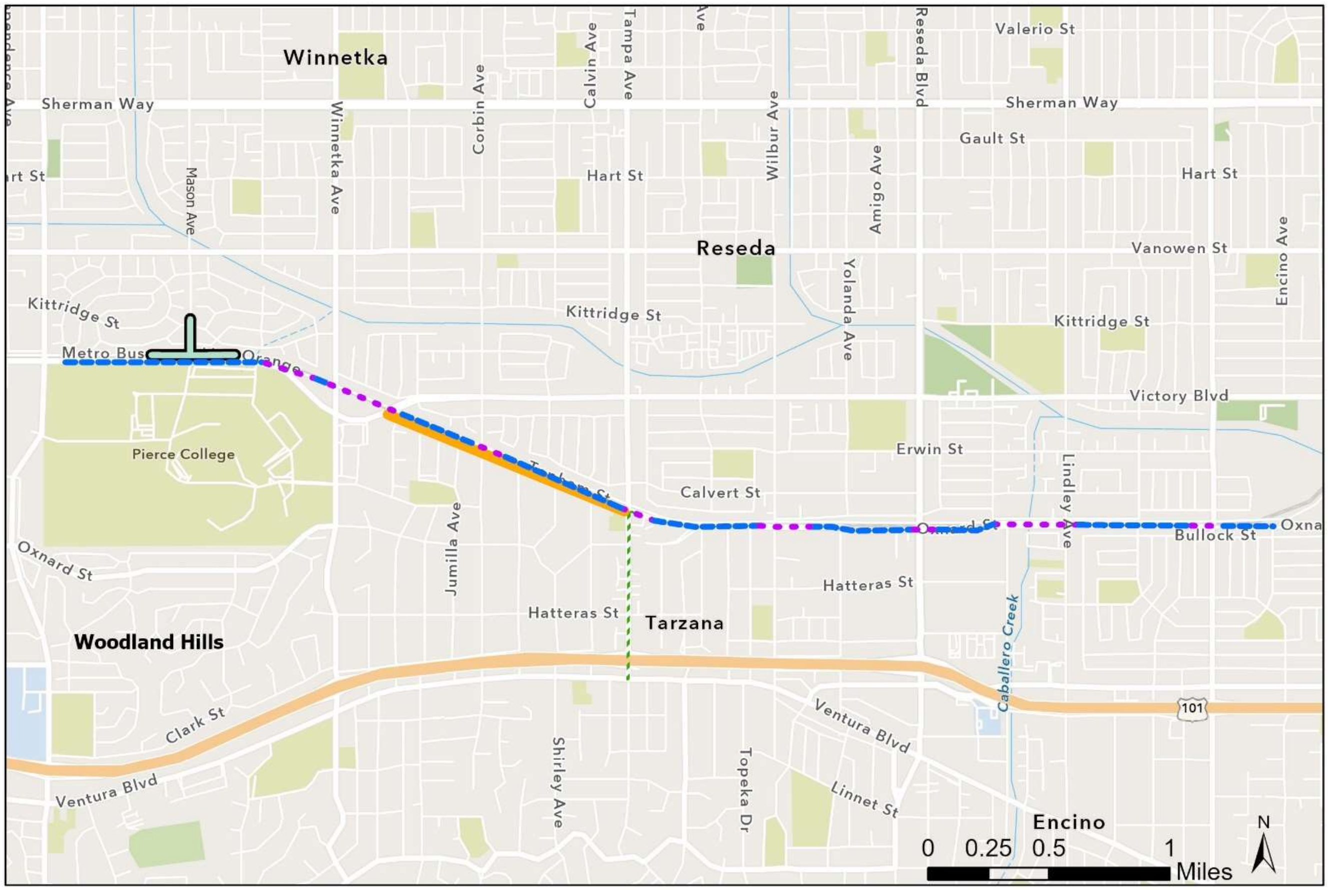


Legend

- Proposed Topham Trunk Line Project
- Proposed 12" Victory Blvd & Mason Ave Mainline Open Cut
- Proposed 12" Topham St Mainline Open Cut
- Proposed 16" Tampa Ave Mainline Open Cut

Figure 2
Project Overview Map

County of Los Angeles, California State Parks, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA



Legend

Construction Method

- Proposed Topham Tunk Line Jacking
- Proposed Topham Tunk Line Open Cut
- Proposed 12" Victory Blvd & Mason Ave Mainline Open Cut
- Proposed 12" Topham St Mainline Open Cut
- Proposed 16" Tampa Ave Mainline Open Cut

Figure 3
Project Construction Methods Overview

County of Los Angeles, California State Parks, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA

Proposed TTLR Components and Location

The primary component of the proposed project is a new 36-inch diameter underground trunk line, which would replace the existing Topham Trunk Line. As previously discussed, the replacement line would be routed mainly within Victory Boulevard, Topham Street, and Oxnard Street. On the east, the TTLR would connect directly to the existing Encino Inlet Line, identified as the 1134SZ at Encino Avenue. On the west, the TTLR would connect directly to the De Soto Trunk Line, identified as the 1123SZ at De Soto Avenue. Because the existing Topham Trunk Line must remain in service until the proposed project is completed, the TTLR would be installed in an alignment parallel to, rather than removing and replacing, the existing trunk line

The TTLR would consist of WSP, which is considered a continuous pipeline because the joints between pipe segments are welded together. Seismic loads created by ground displacement from a seismic event are accommodated by the capability of the walls of the WSP to stretch and bend.

Because the TTLR would interconnect directly to the 1123SZ and 1134SZ to provide system redundancy and operational flexibility, the proposed project would also include the installation of approximately 6,599 LF of new 12-inch diameter underground distribution mainline and approximately 3,429 LF of new 16-inch diameter underground distribution mainline. The 12-inch diameter distribution mainline and 16-inch diameter distribution mainline would be connected to existing distribution mainlines throughout the alignment to provide direct service to the 1123SZ. Both distribution mainlines would consist of earthquake resistant ductile iron pipe (ERDIP) to provide resilience during seismic events. Segments of ERDIP are joined with a gasket rather than being fused together, which provides flexibility at the joints to accommodate seismic loads by allowing the pipeline not only to bend laterally but also expand and contract lengthwise.

In addition to the above, several appurtenant facilities necessary to support the operation of the proposed trunk line and mainline would be installed. These include isolation valves, a flow meter, and flow recorder. The isolation valves and flow meter would be located underground within the public road ROW. The flow recorder would be installed in an aboveground cabinet (72 inches tall, 48 inches wide, and 24 inches deep) located on the western end of the project alignment on Victory Boulevard (just east of De Soto Avenue), within the public road ROW. After the TTLR is operational, the existing Topham Trunk Line would be isolated from the drinking water system and abandoned in place.

Project Construction – Construction Schedule

Construction for the proposed project is estimated to begin in Fall 2023 and would take approximately 7 years to complete (**Figure 4**).

Figure 4
Project Construction Schedule

As shown above in Figure 4, the 12-inch diameter distribution mainline would be installed first from approximately third quarter 2023 to third quarter 2024, followed by the 16-inch diameter distribution mainline, which would be installed from approximately third quarter 2024 to second quarter 2025. The TTLR would be installed a few months after the 16-inch diameter distribution mainline is completed from approximately third quarter 2025 to third quarter 2030.

Construction activities for the TTLR would occur between 7:00 a.m. and 6:00 p.m., Monday through Friday. For the 12-inch and 16-inch diameter distribution mainlines, construction activities would occur between 9:00 a.m. and 3:30 p.m., Monday through Friday, but some nighttime construction may be required.

Project Construction – Trunk Line and Mainline Open-Trench Construction

The 12-inch and 16-inch diameter distribution mainlines as well as the majority of the TTLR would be installed through an open-trench method of construction whereby a trench is excavated in the roadway, pipeline segments are placed in the trench, the trench is backfilled, and the road is repaved.

In order to achieve the open-trench construction in an effective, efficient, and safe manner, work zones would be established in the roadway within which open-trench construction activities could proceed unimpeded. Preliminarily, the work zones for the 12-inch and 16-inch diameter distribution mainlines would total approximately 2,400 feet in length, and the work zones for the TTLR would total approximately 3,000 feet in length. These work zones would include the active construction work area (400 feet for the 12-inch and 16-inch diameter distribution mainlines and 1,000 feet for the TTLR), and traffic control tapering on each end of the work area, at 1,000 feet in length at each end.

The work zones would be the minimum width required to accommodate barriers or cones separating traffic from construction activities, safety setbacks adjacent to the trench, shoring required to stabilize the trench walls (for the TTLR installation), the trench itself, and adequate area to safely and effectively operate equipment and trucks, as well as the flexibility to avoid existing substructures in the road. With these measures, the work zones would be approximately 25 to 30 feet in width for the 12-inch and 16-inch diameter distribution mainlines, and 30 to 40 feet in width for the TTLR. Based on the width of the work zone, some street segments along the proposed project alignment may allow only for one traffic lane in each direction and no parking. For the TTLR construction, the following street segments may require full closure with local access only, due to the narrow curb to curb dimensions:

- Topham Street, between Victory Boulevard and Cahill Avenue
- Oxnard Street, between Cahill Avenue and Wilbur Avenue
- Oxnard Street, between Lindley Avenue and Encino Avenue

These work zones would allow for the continuous installation of the TTLR pipeline in longer spans without the requirement to frequently disassemble and relocate barriers, equipment, and construction support facilities and modify traffic control elements, all of which would hamper the pipeline installation process but not substantially improve the flow of traffic in the vicinity of the construction. In addition to the actual work zones, lane transition zones would be required extending outward from the work zone along Mason Avenue, Victory Boulevard, Topham Street, Oxnard Street, and Tampa Avenue to channel approaching traffic into the travel lanes adjacent to the work zone.

The open-trench construction process for the TTLR would involve several steps. The initial step of the installation would be establishing the construction work zone. This would be accomplished by first installing traffic controls, including restriping of lanes, signage, and traffic signal modifications, as necessary, to merge traffic and direct it safely around the work zone. K-rails and other traffic barriers or markers would then be installed around the actual work zone to demarcate the zone and provide a safe working area. Placing the K-rail barriers would require the use of a forklift or other type of construction equipment. Mobilization would include delivering construction equipment and materials to the work zone and establishing field offices and other personnel and construction support facilities necessary for trunk line installation to proceed.

Once the work zone has been established, subsurface utility exploration would be conducted to verify the vertical and horizontal location of underground utilities that must be avoided, protected, or relocated during pipeline installation. This would involve core drilling a small-diameter hole in the pavement and removing soil with a vacuum truck to expose the utilities. Once the precise alignment of the trunk line has been established based on this exploration, the pavement would be cut along both edges of a given length of the trench using a pavement saw, and the pavement over the trench would be stripped using an excavator and a front loader. The pavement would be loaded on trucks and hauled from the site and either reclaimed for use as paving material or road base material, or it would be taken to a landfill as inert debris that can be recycled as road base for internal landfill use.

Because of the depth of excavation for the trunk line, shoring to support the walls of the trench may be required to provide a stable and safe working environment. Cantilever or braced shoring methods would be utilized, but are dependent on soil investigation results. No impact pile-driving would be involved. Installing the piles would be accomplished using a drill rig and a hydraulic crane with various attachments, depending on the method of installation. These steps, from traffic control to installing the shoring piles, would be completed before any of the actual pipeline installation tasks would begin and would take approximately two months.

After the shoring piles are in place, work would begin on installing individual pipe segments. For the 36-inch trunk line, the trench would be excavated approximately 5 to 6 feet wide and 8 to 15 feet deep. These depths are necessary to accommodate the 36-inch diameter trunk line, bedding material under the pipe, and the minimum of five feet of cover required over the trunk line.

The steel shoring plates would be lowered between the H-beams as the depth of the trench excavation increases. Approximately 250 to 300 LF of trench could be excavated and shored in a month for the TTLR. The excavated material would be loaded onto trucks parked adjacent to the trench and hauled from the work zone. While some of the excavated material may be utilized at other construction sites within the region, it is assumed for environmental analysis purposes that all material would be hauled to a local landfill.

In addition to the pipe segments, various appurtenances, such as valves, meters, and maintenance holes, would also be installed as required. The general process for installation of these appurtenances would be similar to the pipe segments and would occur within the designated work zones.

After completion of the work within a given work zone, equipment, materials, and facilities would be removed from the zone, the pavement would be restored and restriped, and the traffic barriers would be removed. Depending on the length of the work zone and actual conditions, active construction within an individual work zone may range for approximately 3 to 4 months. The entire process would then be repeated for the next construction work zone, which may or may not be in an adjacent section of the roadway.

The open-trench construction process for the 12-inch and 16-inch diameter distribution mainlines more simple than the TTLR. All traffic control materials would be setup prior to the start of every work shift and would be removed after work is completed for the day. The Underground Service Alert system will be utilized to map underground utilities along the alignment. The pavement cutting and excavation process would involve excavating will be similar as that of the TTLR except for the trench dimensions. For the 12-inch diameter distribution mainline, the trench would be excavated approximately 30 inches wide and 4 to 5 feet deep. For the 16-inch distribution mainline, the trench would be excavated approximately 3 feet wide and 5 feet deep. For these depths, no shoring would be needed. These depths necessary to accommodate the 12-inch and 16-inch diameter distribution mainlines, bedding material under the lines, and the minimum of 3 feet of cover required over the mainlines. At the end of every work shift, any open trench would be covered with steel plates for the safety of the public. For the 12-inch diameter distribution mainline, approximately 20 to 40 LF of trench could be installed in a day. For the 16-inch diameter distribution mainline, approximately 20 to 25 LF of trench could be installed in a day.

Various pieces of construction equipment would be used to accomplish the open-trench installation of the TTLR as well as the 12-inch and 16-inch diameter distribution mainlines. For the TTLR, the construction equipment would include the following: drill rig, front loader, hydraulic cranes, pavement saw, sweeper, forklift, excavator, backhoe, blower, skid steer, wheel loader, carry deck, utility trucks (water truck, gang truck, slurry truck, flat bed pipe truck, four pick-up trucks, two axle dump trucks, and three axle dump trucks), and trailers (dump trailer, low bed trailer, weld truck with trailer). For the 12-inch and 16-inch diameter distribution mainlines, the construction equipment would include the following: backhoe, crane (or carry deck if overhead power is present or the work zone is within a narrow street), utility trucks (two axle dump truck, three axle dump truck, gang truck, flatbed for pipe), skid steer, sweeper truck, and carrier for backhoe (or trailer attached to a dump truck). However, these pieces of equipment serve specialized purposes during the pipeline installation and would generally only be operated for brief periods when required. For example, the saw would be used to cut the edges of the trench at the beginning of the construction process, the excavator would be used during trench excavation, and a crane would be used when installing the H-beam piles and the trunk line or mainline pipe segments. Therefore, individual pieces of equipment would not operate continuously during the day and generally would not operate simultaneously.

Trucks would haul debris and excavated material from the site and deliver construction materials, such as pipe segments and backfill material, to the site. The peak of haul truck trips would occur during the excavation of the trench, which may require an average of three dump trucks trips in a single day, assuming a 10-cubic yard truck capacity for the TTLR and a 20-cubic yard truck capacity for the 12-inch and 16-inch diameter distribution mainlines. The peak of delivery trucks would occur during the backfilling of the trench with the soil-cement slurry. Assuming a 10-cubic yard concrete truck capacity for the TTLR, this may require an average of one to two concrete trucks per day to backfill the trench within 5 feet of the surface after the installation of the trunk line. Also, assuming a 20-cubic yard dump truck capacity for the 12-inch and 16-inch diameter distribution mainlines, this may require an average of three to four dump trucks per day to backfill the trench within 3 feet of the surface after the installation of these distribution mainlines. These excavation and backfilling operations may occur simultaneously in different sections of the trench, which may result in a peak of approximately five truck trips per day within a given work zone.

Within a given work zone, the open-trench construction would require approximately 20 daily construction personnel for the trunk line and 8 daily construction personnel for the 12-inch and 16-inch diameter distribution mainlines installation. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

Project Construction – Trunk Line Microtunneling (Jacking)

While the majority of the TTLR would be installed using the above described open-trench method of construction, in certain areas, a microtunneling (also referred to as jacking) method would be employed to install the trunk line. The microtunneling method would use a cutting head that loosens the soil, then the soil is transported out. Microtunneling would be utilized where large substructures exist that cannot be easily relocated for the TTLR. These structures include major sewer, storm, natural gas, or water lines or other structures. Microtunneling involves installing the trunk line beneath these substructures at a depth sufficient to avoid direct conflicts as well as indirect impacts related to settlement of soil material above the tunnel. As the tunnel is bored, steel pipe casing is continually pushed forward into the tunnel by a hydraulic jacking system.

The total length of microtunneling is preliminarily estimated at approximately 6,161 LF of the total 23,300-LF TTLR (Figure 3). Microtunneling would occur at the following locations along the TTLR alignment: Victory Boulevard (just south of Oso Avenue) to the existing LADWP easement located at Metro's Pierce College Station parking lot and immediately north of the baseball fields at Winnetka Avenue and Victory Boulevard; Topham Street (at Corbin Avenue and Tampa Avenue, respectively); and, Oxnard Street (between Topeka Drive and Yolanda Avenue, at Reseda Boulevard, between Etiwanda Avenue and Lindley Avenue, and between Balcom Avenue and White Oak Avenue, respectively).

The microtunneling method requires excavating shafts at either end of the span. Similar to open-trench construction, the microtunneling would require a work zone to accommodate various pieces of equipment involved in the jacking process, delivery and haul trucks, and other construction support functions. Based on the width of these work zones, some street segments along the proposed project alignment may allow only for one traffic lane in each direction and no parking. The work zones for the End Tunnel Pit on Oxnard Street east of Lindley Avenue, the Jacking Pit on Oxnard Street west of Topeka Drive, or the pits on Topham Street, may require complete road closures and signage for detours would be posted accordingly. In addition, a portion of the work zone that occurs within the existing LADWP easement on Metro's Pierce College Station parking lot may require the northern portion of the parking lot to be closed for approximately one year for completion of the microtunneling work. The work zones surrounding each shaft would total approximately 3,000 feet in length. This would include the two launching and receiving work areas for the pits (approximately 12 feet wide, 35 feet long, and 30 feet deep), approximately 1,000 feet of spacing between the pits, and the traffic control tapering that extends about 1,000 feet beyond both sides of the work areas. They would overlap in location with the adjacent open-trench work zone but both work zones would not be active at the same time.

Cantilever or braced shoring methods would be utilized, but are dependent on soil investigation results. No impact pile-driving would be involved. After the piles have been installed, the shafts would be excavated, and the excavated material would be loaded onto trucks parked adjacent to the shaft and hauled from the construction work zone to a local landfill. The establishment of the shafts and installation of microtunneling equipment may take several weeks.

Several types of microtunnel boring machines may be utilized for pipeline installations. However, for the purposes of environmental analysis, it has been assumed that a closed-face slurry shield microtunneling boring machine (MTBM) would be employed. This type of MTBM permits microtunneling where groundwater may be encountered and limits groundwater intrusion into the launching and receiving shafts, minimizing the need for dewatering.

The microtunneling process would involve the installation of a steel casing pipe between the launching and receiving shafts. The MTBM process does not require construction personnel to enter the tunnel, as the machines are controlled from outside the tunnel. The MTBM would be lowered into the launching shaft and pushed forward by the hydraulic jacking frame as the cutter head of the MTBM removes soil at the leading edge of the tunnel. The slurry shield MTBM provides a closed environment within which soil particles are transferred into the interior of the cutter head, mixed with water that is pumped from the surface to the MTBM, and pumped through discharge lines to the surface as a slurry mixture. This process allows the MTBM to be advanced toward the receiving shaft by the hydraulic jack, with pipe casing segments, which are nominally 35 feet in length, continually lowered into the launching shaft and pushed forward behind the MTBM. Each new casing segment would be welded to the previous segment to extend the casing. The slurry mixture pumped to the surface would be processed in a separation plant to remove the spoils and recycle the water through the MTBM. The spoils would be transferred to a dump truck to be hauled off site.

The work zones surrounding each shaft would total approximately 4,000 feet in length. This would include the two launching and receiving work areas for the pits, approximately 2,000 feet of spacing between the pits, and the traffic control tapering that extends about 1,000 feet beyond both sides of the work areas. The work zones for the End Tunnel Pit on Oxnard St east of Lindley Ave may require complete road closure due to the narrow curb to curb width.

The average pace of installation for microtunneling would be approximately 40 feet per day, which would not include pit excavation or pipe installation. The actual time to complete a microtunneling installation for a given span would depend on factors such as soil conditions as well as the length of the span, with the total length of individual spans ranging from about 350 feet to 1,550 feet for microtunneling. However, the entire microtunneling operation at a given shaft location would be expected to be approximately 6 months.

Various pieces of construction equipment would be used to accomplish the microtunneling installation, including an excavator, front loader, hydraulic crane, utility truck, tunnel ventilation systems, slurry separator plant, tunnel boring machine, power generators, electrical systems, and high pressure water pump. Trucks would haul excavated material from the shaft and the spoils from the boring operation as well as deliver construction materials. The peak of haul truck trips would occur during the excavation of the launching and receiving shafts, which may require up to about two to three trucks per day, which may result in a peak of approximately three truck trips per day within a given work zone.

For microtunneling operations, the peak of delivery trucks would occur during the backfilling of the shafts with the soil-cement slurry. Assuming a 10-cubic yard truck capacity, this may require up to about three concrete trucks per day to backfill both shafts. Microtunneling would require approximately 28 construction personnel. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

Connections

As mentioned above, the existing Topham Trunk Line must remain in service during project construction. Therefore, the proposed project, including the 12-inch and 16-inch diameter distribution mainlines, would first be placed in service and supplied via a connection to the new De Soto Trunk Line Replacement at De Soto Avenue and Victory Boulevard at the west end. The existing Topham Trunk Line would remain in service and supplied by the existing Encino Inlet Line at Oxnard Street and Encino Avenue at the east end. This would allow connections from the 12-inch and 16-inch diameter distribution mainlines to the distribution system to be done with minimal impact to normal operations in the 1123SZ. Once these distribution connections have been made, the TTLR connection to the Encino Inlet Line at Oxnard Street and Encino Avenue would be made. The shutdown of the existing Topham Trunk Line would take place during the winter months when water demand is low to avoid potential supply issues. The existing Topham Trunk Line would be isolated from the drinking water system and abandoned in place once these final connections have been made.

Project Operations

The TTLR would interconnect the 1134SZ at the east end and the 1123SZ at the west end, allowing flow between the two zones, providing operational flexibility and system resiliency. The TTLR would be located entirely underground and would not be visible. Activities associated with long-term operations and maintenance would be minimal, limited to scheduled maintenance or emergency repair. No additional permanent LADWP workforce would be required to operate the TTLR.

Best Management Practices

The following best management practices (BMPs) would be employed during construction of the proposed project, to help minimize or eliminate potential impacts to the environment. BMPs are distinguished from mitigation measures because they are based on existing regulatory requirements and/or are standard practices and procedures of LADWP and/or its contractors not unique to the proposed project.

Air Quality

- **BMP-AQ-1:** The proposed project would comply with South Coast Air Quality Management District (SCAQMD) Rule 401 (Visible Emissions) and Rule 402 (Nuisance) to prevent the occurrence of public nuisances and visible dust plumes traveling off-site, and would implement Rule 403 dust control measures and Rule 1166 measures to control the emission of Volatile Organic Compounds (VOCs) from excavating, grading, handling and treating VOC-contaminated soil as required by the SCAQMD, including but not limited to the following:

- Water shall be applied to exposed surfaces at least two times per day to prevent generation of dust plumes.
- The construction contractor shall utilize at least one of the following measures at each vehicle egress from the project site to a paved public road:
  - Pave the surface extending at least 100 feet and at least 20 feet wide;
  - Utilize a wheel shaker/wheel spreading device consisting of raised dividers at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages; or
  - Install a wheel washing system to remove bulk material from tires and vehicle undercarriages.
- All trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
- Construction activity on exposed or unpaved dirt surfaces shall be suspended when wind speed exceeds 25 miles per hour (mph).
- A community liaison shall be identified concerning on-site construction activity including resolution of issues related to dust generation.
- Non-toxic soil stabilizers shall be applied according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more).
- Streets shall be swept at the end of the day if visible soil is carried onto adjacent public paved roads. If feasible, water sweepers with reclaimed water shall be used.

Biological Resources

Because project construction activities would be continuous during the 7-year construction period, nesting bird season (which generally occurs February 15 through September 15, and as early as January for raptors) could not be avoided. Therefore, the following BMPs shall be employed to avoid and minimize impacts to nesting birds protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGC):

- **BMP-BIO-1:** A pre-construction nesting bird survey shall be conducted by a qualified biologist within 3 days prior to the start of construction activities during the nesting season to determine whether active nests are present within or directly adjacent to the construction zone. All nests found shall be recorded.
- **BMP-BIO-2:** In the event an active nest is detected, a qualified biologist shall monitor the nest to determine if a nest avoidance buffer zone is necessary to restrict construction activities in proximity to the nest to protect the nest from failing. Any buffer zone, within which

construction activities may not occur, shall be established in coordination with the qualified biologist, who shall take into account existing baseline conditions (e.g., topography, buffering buildings or other structures, etc.). In addition, observed avian response to ambient conditions (e.g., existing traffic noise and human activity) shall factor into the requirement for and size of a nest avoidance buffer.

- **BMP-BIO-3**: The qualified biologist shall monitor all active nests, including those with and without an established buffer, at least once per week to determine whether birds are being disturbed. If signs of disturbance or stress are observed, the qualified biologist shall implement adaptive measures to reduce disturbance. These measures could include establishing or increasing buffer distances, or placing visual screens or sound dampening structures between the nest and construction activity until fledging is confirmed. The qualified biologist shall monitor each active nest until they determine that nestlings have fledged and dispersed, or the nest is no longer active.

- **BMP-BIO-4:** Should an active nest of any federal or state-listed bird species be detected during pre-construction surveys or subsequent construction monitoring, construction activity in the immediate area shall not commence or shall cease if already underway, and the applicable federal and/or state agency (e.g., United States Fish and Wildlife Service [USFWS], California Department of Fish and Wildlife [CDFW], etc.) shall be notified. Work in other areas of the project site may continue until the active nests has been evaluated.

Cultural Resources

- **BMP-CUL-1:** All field supervisors and all construction workers shall participate in training on cultural resources awareness prior to the initiation of project construction on project sites that involve ground-disturbing activities. The training shall include a description of the types of cultural resources (including tribal cultural resources and human remains) that could inadvertently be encountered during ground-disturbing activities, the sensitivity of the resources, the legal basis for protection of the resources, and the penalties for unauthorized collection of or knowingly damaging the resources. The training shall address the proper procedures in the event of an inadvertent discovery of a cultural resource, including the immediate halting of work in the area of the discovery, notification of appropriate individuals of the discovery, the establishment of appropriate protective buffer zones around the discovery, and the continued avoidance of the protected area until the resource has been evaluated by qualified individuals and an appropriate treatment plan has been developed and implemented. These procedures shall be documented in a cultural resources monitoring plan (CRMP) that shall establish, in the event of inadvertent discovery of cultural resources, monitoring procedures (including potential Native American monitors), notification procedures, key staff, and preliminary treatment measures for potential discoveries. The CRMP shall be written to ensure compliance with appropriate state and federal laws. The training presentation and CRMP shall be available to additional supervisory or construction personnel who may join after project construction has begun.

Paleontological Resources

- **BMP-GEO-1:** In the event previously unknown paleontological resources are encountered, the construction manager would halt construction activities in the immediate area in accordance with CEQA Guidelines Section 15064.5(f). LADWP would retain a qualified paleontologist to make an immediate evaluation of the significance and appropriate treatment of the resource. Construction activities may continue on other parts of the construction site while evaluation and any necessary treatment of paleontological resources take place.

Stormwater and Erosion Control

- **BMP-WQ-1:** A Storm Water Pollution Prevention Plan (SWPPP), which will include erosion and sedimentation BMPs, shall be developed and implemented for construction activities. The SWPPP may include, but would not be limited to, the following:
    - Minimizing the extent of disturbed areas and duration of exposure;
    - Stabilizing and protecting disturbed areas;
    - Keeping runoff velocities low; and
    - Retaining sediment within the construction area.
- **BMP-WQ-2:** Construction erosion and sediment control BMPs may include, but are not limited, to the following:
    - Temporary desilting basins;
    - Silt fences;
    - Gravel bag barriers;
    - Temporary soil stabilization with mattresses and mulching;
    - Temporary drainage inlet protection; and
    - Diversion dikes and interceptor swales.

Transportation

- **BMP-TRA-1**: Residences and businesses near the pipeline alignment would be notified prior to the start of construction (e.g., via flyers) of lane closures and parking restrictions in their vicinity. The notices would include a telephone number for comments or questions related to construction activities.
- **BMP-TRA-2** LADWP would coordinate with all applicable agencies regarding construction schedules and worksite traffic control and detour plans, including but not limited to the City of Los Angeles Department of Transportation, the City of Los Angeles Department of Public Works, Bureau of Engineering, the City of Los Angeles Fire Department, and the City of Los Angeles Police Department.

Utilities and Service Systems

- **BMP-UTL-1:** The proposed project construction would incorporate source reduction techniques and recycling measures and maintain a recycling program to divert waste in accordance with the Citywide Construction and Demolition Debris Recycling Ordinance.

Noise and Vibration Topical Information

The standard unit of measurement for noise is the decibel (dB). The human ear is not equally sensitive to sound at all frequencies. The A-weighted scale, abbreviated dBA, reflects the normal hearing sensitivity range of the human ear. On this scale, the range of human hearing extends from approximately 3 to 140 dBA. The noise analysis discusses sound levels in terms of Equivalent Noise Level (L_{eq}). L_{eq} is the average noise level on an energy basis for any specific time period. The L_{eq} for one hour is the energy average noise level during the hour. The average noise level is based on the energy content (acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise which has the same energy content as the fluctuating noise level. The equivalent noise level is expressed in units of dBA.

Noise levels decrease as the distance from the noise source to the receiver increases. Noise generated by a stationary noise source, or "point source," decreases by approximately 6 dBA over hard surfaces (e.g., reflective surfaces such as parking lots or smooth bodies of water) and 7.5 dBA over soft surfaces (e.g., absorptive surfaces such as soft dirt, grass, or scattered bushes and trees) for each doubling of the distance. For example, if a noise source produces a noise level of 89 dBA at a reference distance of 50 feet, then the noise level is 83 dBA at a distance of 100 feet from the noise source, 77 dBA at a distance of 200 feet over a hard surface.

Noise generated by a mobile source decreases by approximately 3 dBA over hard surfaces and 4.8 dBA over soft surfaces for each doubling of the distance. Generally, noise is most audible when the source is in a direct line-of-sight of the receiver. Solid barriers, such as walls, berms, or buildings that break the line-of-sight between the source and the receiver greatly reduce noise levels from the source since sound can only reach the receiver by bending over the top of the barrier. However, if a barrier is not sufficiently high or long to break the line-of-sight from the source to the receiver, its effectiveness is greatly reduced.

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as rock blasting, pile driving, and heavy earth-moving equipment. High levels of vibration may cause physical personal injury or damage to buildings. However, vibration levels rarely affect human health. Instead, most people consider vibration to be an annoyance that may affect concentration or disturb sleep. In addition, high levels of vibration may damage fragile buildings or interfere with equipment that is highly sensitive to vibration (e.g., electron microscopes).

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings and is usually measured in inches per second. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The VdB acts to compress the range of numbers required to describe vibration.[1]

Existing Setting

To characterize the existing noise environment around the project site, ambient noise was monitored using a SoundPro DL Sound Level Meter on Wednesday, April 13th, 2022, from 9:00 a.m. to 3:30 p.m. in 15-minute increments. This time of day represents a typical construction time without the added noise source of peak hour traffic. Monitored noise levels ranged from 49.1 to 73.3 dBA L_{eq}. Traffic was the primary source of noise at each site. The monitoring locations are shown in **Figure 5A** through **5C** and monitored noise levels are shown in **Table 1**.

TABLE 1: EXISTING AMBIENT NOISE LEVELS AT MONITORING LOCATIONS		
Noise Monitoring Site (Figures 4A – 4C)	**Noise Monitoring Location**	**Noise Level (dBA, L_{eq})**
1	Residences (20645 Hayne St.)	54.1
2	Mason Ave. and Olympic Dr.	56.0
3	Mason Ave. and Victory Blvd.	70.4
4	G (Orange) Line Busway and Victory Blvd.	71.8
5	Residences (6263 Oakdale Ave.)	52.2
6	G (Orange) Line Busway Bike Path	68.9
7	Residences (6200 Tunney Ave.)	49.2
8	Residences (18924 Bessemer S.)	49.1
9	Arco Gas Station (6039 Reseda Blvd.)	67.2
10	Residences (18053 W. Oxnard St.)	61.5
11	Residences (18731 Bullock St.)	54.0
12	Residences (6031 White Oak Ave.)	73.3
SOURCE: TAHA, 2022.		

The area surrounding the proposed project is characterized by low-rise single and multi-family residential structures, retail and service commercial uses, and institutional buildings including schools, medical facilities, and places of worship. Sensitive receptors are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land, and typically include residences, medical facilities, places of worship, guest lodging, schools, and parks. As shown in **Figure 5A** through **Figure 5D**, sensitive receptors are located within 500 feet of the proposed construction activities. In addition, non-residential sensitive receptors are identified in **Table 2**.

[1]FTA, *Transit Noise and Vibration Impact Assessment*, September 2018.

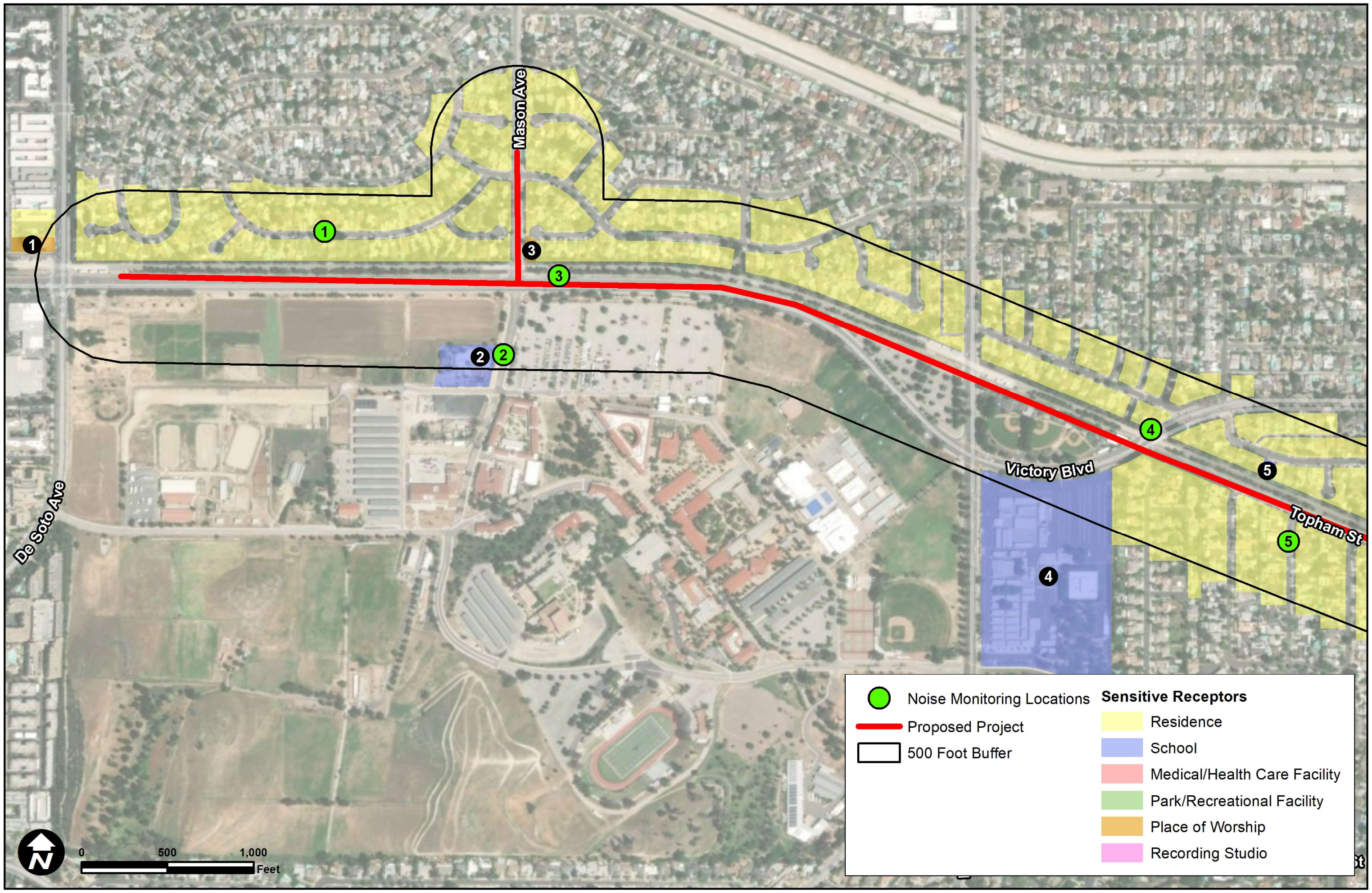
TABLE 2: NON-RESIDENTIAL SENSITIVE RECEPTORS	
Figure 4A – 4C ID. No.	Sensitive Receptors within 500 Feet of the Proposed Project Construction Activities
1	California Zoroastrian Center
2	LA Pierce College Child Development Center
3	Chabad at Pierce Religious Institution
5	Miss Elizabeth's Piano Studio
6	St. John's Lutheran Church
7	Woodcrest School Campus
8	Discovery School
9	Synagogue Beit Midrash Ohel Rachel
10	Bandrika Studios
11	Tarzana Treatment Center, Inc.
12	Columbia College Hollywood
13	Child's World School
14	Playa Music Lessons
15	Renewal Health Group Sanctuary
16	Azar Garden
17	Gem Educate Daycare/Preschool
18	Be Well Senior Living
SOURCE: TAHA, 2023.	

Regulatory Framework

Noise

Federal. The Noise Control Act of 1972 established programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In 1981, the United States Environmental Protection Agency (USEPA) determined that subjective issues such as noise would be better addressed at local levels of government, thereby allowing more individualized control for specific issues by designated federal, state, and local government agencies. Consequently, in 1982, responsibilities for regulating noise control policies were transferred to specific federal agencies, and state and local governments. However, noise control guidelines and regulations contained in the USEPA rulings in prior years remain in place.

State. The State of California has adopted noise standards in areas of regulation not preempted by the federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation. State regulations governing noise levels generated by individual motor vehicles and occupational noise control are not applicable to planning efforts, nor are these areas typically subject to CEQA analysis.



Source: TAHA, 2023.

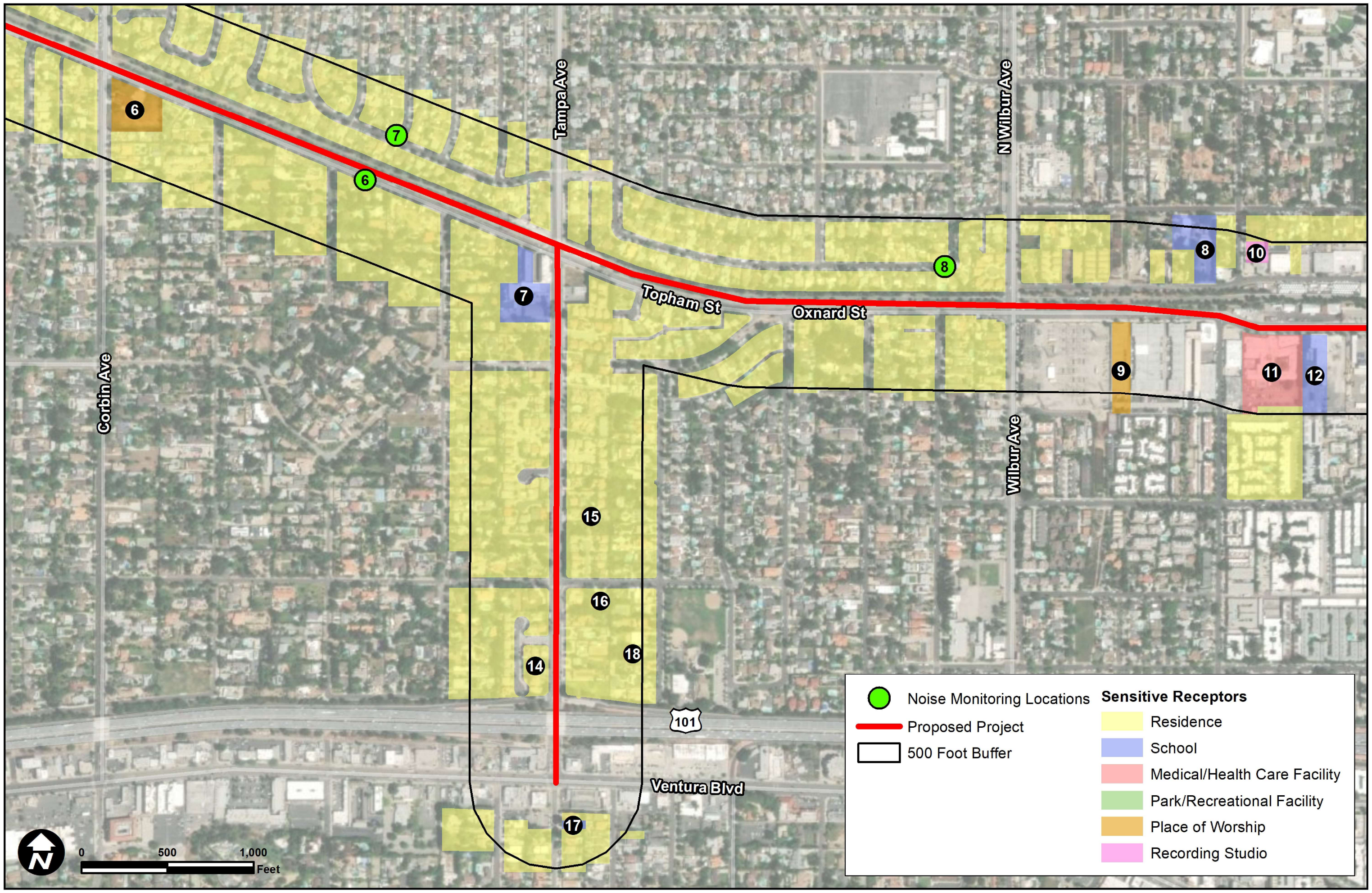
LADWP Topham Trunk Line Replacement Project
Noise and Vibration Impacts Assessment

TAHA 2021-099

AECOM

FIGURE 5A

NOISE MONITORING LOCATIONS
AND SENSITIVE RECEPTORS



Source: TAHA, 2023.

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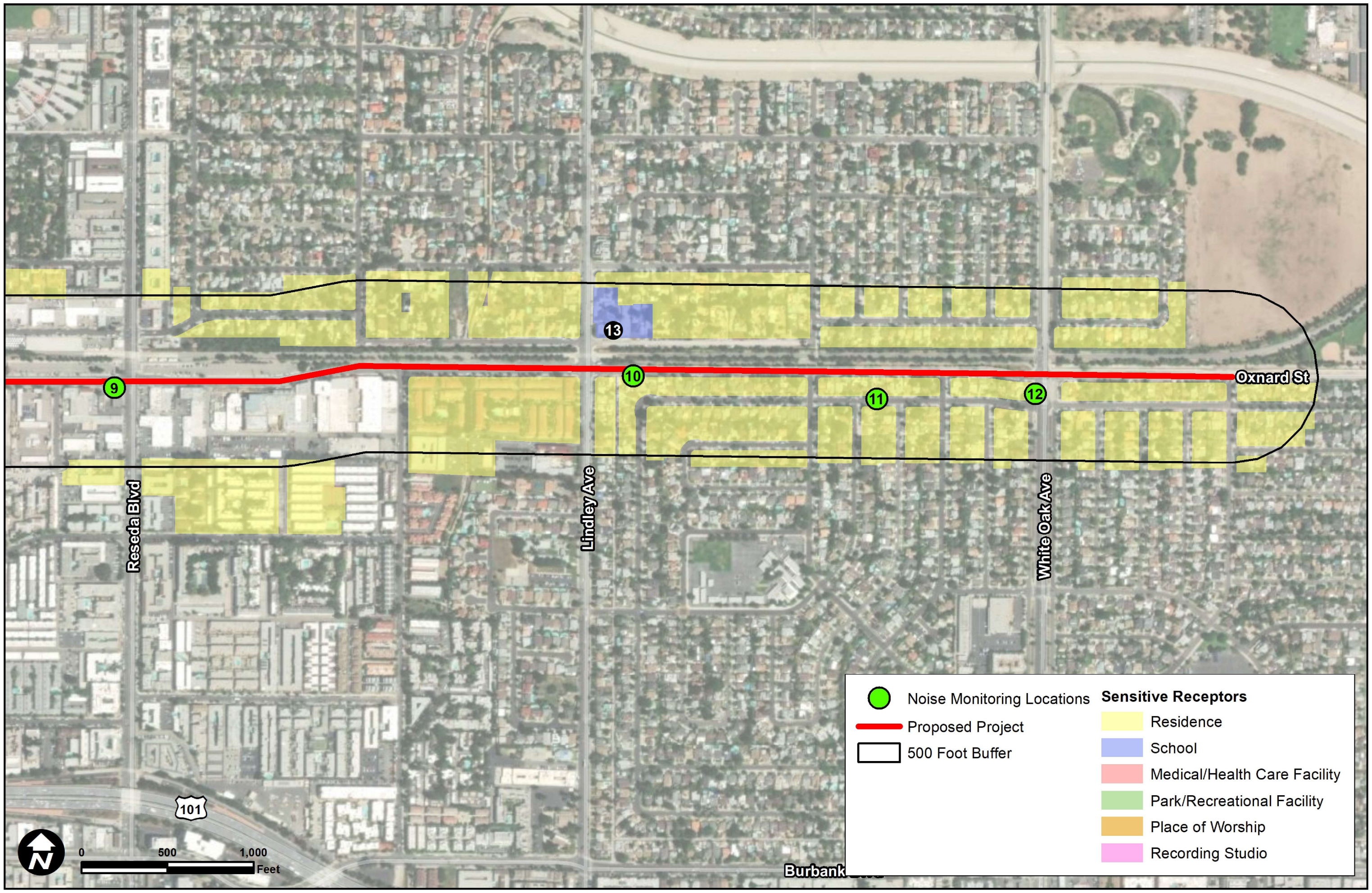
AECOM

FIGURE 5B

NOISE MONITORING LOCATIONS AND SENSITIVE RECEPTORS



Source: TAHA, 2023.

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Noise and Vibration Impacts Assessment

AECOM

FIGURE 5C

NOISE MONITORING LOCATIONS
AND SENSITIVE RECEPTORS

Local. As discussed above, the proposed project facilities would be located entirely underground and therefore would not create perceptible noise during operation. In addition, trunk line maintenance and repair activities, and the noise associated with these activities, would be reduced from current conditions after project implementation. Therefore, the following summary of local regulations focuses on those that pertain to noise that would be created by project construction activities.

The City of Los Angeles has established policies and regulations concerning the generation and control of noise that could adversely affect its citizens and noise-sensitive land uses. Regarding construction, Los Angeles Municipal Code (LAMC) Section 41.40 (Noise Due to Construction, Excavation Work – When Prohibited) states that no construction or repair work shall be performed between the hours of 9:00 p.m. and 7:00 a.m. on Monday through Friday since such activities would generate loud noises and disturb persons occupying sleeping quarters in any adjacent dwelling, hotel, apartment, or other place of residence. Further, no person, other than an individual homeowner engaged in the repair or construction of his/her single-family dwelling, shall perform any construction or repair work of any kind or perform such work within 500 feet of land so occupied before 8:00 a.m. or after 6:00 p.m. on any Saturday or federal holiday, nor at any time on any Sunday. Under certain conditions, the City may grant a waiver to allow limited construction activities to occur outside of the limits described above.

LAMC Section 112.05 (Maximum Noise Level of Powered Equipment or Powered Hand Tools) specifies the maximum noise level of powered equipment or powered hand tools. Any powered equipment or hand tool that produces a maximum noise level exceeding 75 dBA is prohibited. However, this noise limitation does not apply where compliance is technically infeasible. Technically infeasible means the above noise limitation cannot be met despite the use of mufflers, shields, sound barriers and/or any other noise-reduction device or techniques during the operation of equipment.

Vibration

The City has not established significance thresholds related to vibration. In the absence of City thresholds, Federal Transit Administration (FTA) guidance may be used to assess the potential for vibration-related damage and annoyance.[2] For damage, the impact criteria are established based on the structural foundation of the potentially impacted building. Site visits indicate that residential buildings near the project site are generally constructed with non-engineered timber and masonry, and larger buildings (such as hospitals) near the project site are constructed with reinforced-concrete, steel or timber. Vibration levels that exceed a peak particle velocity (PPV) of 0.2 inches per second could potentially damage non-engineered timber and masonry buildings and vibration levels that reach 0.5 inches per second could potentially damage reinforced-concrete, steel, or timber buildings. Historic uses are held to a vibration damage threshold of 0.12 inches per second, as they are more sensitive to vibration damage than newer structures. The most stringent annoyance criteria related to annoyance is 65 VdB for buildings subject to frequent vibration events (e.g., multiple equipment passbys). The frequent event annoyance criteria for residences and institutional land uses with primarily daytime use are 72 and 75 VdB, respectively.

Significance Thresholds

Noise

Because project operations would not create perceptible noise and noise-generating maintenance and repair activities would be reduced after project implementation, this assessment only considers

[2]FTA, *Transit Noise and Vibration Impact Assessment*, September 2018.

construction noise. The assessment was undertaken to determine whether construction activities for the proposed project would have the potential to result in significant environmental impacts related to noise or vibration in the context of the Appendix G Environmental Checklist criteria of the CEQA Guidelines. Implementation (i.e., construction) of the proposed project may result in a significant environmental impact related to noise and vibration if the proposed project would result in:

1. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
2. Generation of excessive ground-borne vibration or ground-borne noise levels; and/or
3. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

The proposed project would exceed the local standards and substantially increase temporary construction noise levels if construction activities would occur within 500 feet of a noise-sensitive use and outside the hours allowed in the LAMC. The allowable hours of construction in the LAMC include 7:00 a.m. to 9:00 p.m. Monday through Friday and 8:00 a.m. to 6:00 p.m. on Saturday. In addition, the LAMC states that equipment noise levels should not exceed 75 dBA L_{eq} unless technically infeasible.

Vibration

Because project operations would not create perceptible vibration and vibration-generating maintenance and repair activities would be reduced after project implementation, this assessment only considers construction vibration. The construction-related vibration analysis considers the potential for building damage and annoyance. Maximum vibration levels were assessed based on frequent vibration events happening more than 70 times in one day, which would be consistent with the movement of construction equipment. The proposed project would result in a significant construction vibration impact if:

1. Vibration levels would exceed 0.12 inches per second at historic structures.
2. Vibration levels would exceed 0.2 inches per second at non-historic structures constructed of non-engineered timber and masonry.
3. Vibration levels would exceed 0.5 inches per second at non-historic structures constructed of reinforced-concrete, steel, or timber.
4. Vibration levels would exceed 65 VdB at sensitive buildings, such as recording studios and medical facilities.

Methodology

Noise

The noise and vibration analyses consider construction sources. Noise levels associated with typical construction equipment were obtained from the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM).[3] This model predicts noise from construction based on a compilation of empirical data and the application of acoustical propagation formulas. Maximum equipment noise levels were adjusted based on anticipated percent of use. Combined construction

[3]FHWA, *Roadway Construction Noise Model*, Version 1.1, August 2008.

activity noise levels were estimated by combining anticipated equipment for each activity using RCNM. The projected noise level during the construction period at receptors was calculated by (1) making a distance adjustment to the construction source sound level and (2) logarithmically adding the adjusted construction noise source level to the ambient noise level.

According to California Department of Transportation (Caltrans) guidance, air temperature and humidity affect molecular absorption differently depending on the frequency spectrum and can vary significantly over long distances in a complex manner. Molecular absorption in air also reduces noise levels with distance. However, according to Caltrans, this phenomenon only accounts for about 1 dBA per 1,000 feet, which is an inaudible and negligible difference in noise levels. Noise levels for this analysis have been estimated using a decrease of 6 dBA over hard surfaces for each doubling of the distance. The methodology and formulas obtained from the Caltrans Technical Noise Supplement can be viewed below.

(1) Noise Distance Attenuation Formula: $dBA_2 = dBA_1 + C \times LOG_{10} (D_1/D_2)$

Where:

dBA_1 *= Noise level at the reference distance of 50 feet*

dBA_2 *= Noise level at the receptor*

C = Coefficient for hard ground or soft ground

Hard ground C = 20
Soft ground C = 25

D_1 *= Reference distance (50 feet)*

D_2 *= Distance from source to receptor (measured distance)*

(2) Logarithmic Noise Level Addition Formula: $Ns = 10*LOG_{10}((10^{(N1/10)})+(10^{(N2/10)}))$

Where:

Ns = Noise level Sum

N1 = Noise level one

N2 = Noise level two

Vibration

Vibration levels were estimated using example vibration levels and propagation formulas provided by FTA.4 The methodology and formulas obtained from the FTA Transit Noise and Vibration Assessment guidance can be viewed below. Vibration damage is assessed using formula (3) and vibration annoyance is assessed using formula (4).

(3) *Vibration Damage Attenuation Formula:* $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

Where:

PPV_{equip} *= Peak particles velocity in inches per second of the equipment adjusted for distance*

PPV_{ref} *= Reference vibration level in inches per second at 25 feet*

D = Distance from the equipment to the receptor in feet

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[4]FTA, *Transit Noise and Vibration Impact Assessment*, September 2018.

(4) *Vibration Annoyance Attenuation Formula:* $Lv_{equip} = Lv_{ref} - 30 \times LOG(D/25)$

Where:

Lv_{equip} = *Vibration level in vibration decibels of equipment adjusted for distance*

Lv_{ref} = *Reference vibration level in vibration decibels at 25 feet*

D = Distance from the equipment to the receptor in feet

Impact Assessment

a) *Would the proposed project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? (Less-than-Significant Impact with Mitigation Incorporated)*

Noise impacts from construction of the proposed project would fluctuate depending on the construction phase, equipment type and duration of use, distance between the noise source and receptor, and presence or absence of noise attenuation barriers. Construction activities typically require the use of numerous pieces of noise-generating equipment. Typical noise levels from various types of equipment that would be used during construction are listed in **Table 3**. Noise levels from individual pieces of equipment typically are between 63.2 and 82.6 dBA L_{eq} at 50 feet. The MTBM would not generate aboveground noise.

TABLE 3: NOISE LEVEL RANGES OF TYPICAL CONSTRUCTION EQUIPMENT

Construction Equipment	Noise Level at 50 feet (dBA)
Auger Drill Rig	77.4
Carry Deck	70.3
Concrete Mixer Truck	74.8
Concrete Saw	82.6
Crane	72.6
Excavator	76.7
Forklift	63.2
Front End Loader	75.1
Gang Truck	70.3
Generator	77.6
Haul Truck	72.5
Hydraulic Pump in Pipe Jacking Plant	66.3
Microtunneling boring machine (MTBM)	0.0
Paver	74.2
Roller Compactor	73.0
Skid Steer	75.1
Slurry Separator Plant	78.0
Vacuum Excavator (Vac-truck)	81.3
Vacuum Street Sweeper	71.6
Ventilation Fan	78.9
Vibratory or Press in Driver	78.9
Welder / Torch	70.0

SOURCE: AECOM, *Construction Noise and Vibration - North Harbour 2 Watermain and Northern Interceptor Shared Corridor*, 29 April 2016; Federal Highway Administration, *Roadway Construction Noise Model*, Version 1.1, 2008; *Noise Levels of Lift Trucks*, 25 May 2001, rigolett.home.xs4all.nl/ENGELS/equipment/liftfr.htm; Washington State Department of Transportation, *Airborne Noise Measurements (A-weighted and un-weighted) during Vibratory Pile Installation - Technical Memorandum*, 21 June 2010.

To characterize construction-period noise levels, the noise levels shown more accurately in **Table 4** considers the likelihood that multiple pieces of construction equipment would be operating simultaneously and the typical overall noise levels that would be expected. Some pieces of equipment would be used only for certain tasks (e.g., concrete saw to cut pavement, an excavator would only be used to excavate trenches and shafts), and they would not operate continuously during the day and generally would not operate simultaneously. Therefore, combined noise levels take into account only construction equipment that would likely be operated simultaneously.

TABLE 4: PHASED CONSTRUCTION NOISE LEVELS

Construction Phases and Equipment	Noise Level at 50 feet (dBA, L_{eq})
OPEN-TRENCH SITE PREPARATION	
Excavator/a/	76.7
Front End Loader/a/	75.1
Auger Drill Rig	77.4
Concrete Saw	82.6
Crane	72.6
Forklift	63.2
Skid Steer Loader	75.1
Haul Truck	72.5
Vacuum Excavator (Vac-truck)	81.3
Open-Trench Site Preparation Combined	**79.0**
OPEN-TRENCH EXCAVATION AND SHORING	
Crane/a/	72.6
Excavator/a/	76.7
Front End Loader/a/	75.1
Auger Drill Rig	77.4
Open-Trench Excavation and Shoring Combined	**79.9**
OPEN-TRENCH PIPE INSTALLATION	
Crane/a/	72.6
Generator/a/	77.6
Concrete Mixer Truck	74.8
Gang Truck	70.3
Carry Deck	70.3
Haul Truck	72.5
Vacuum Street Sweeper	71.6
Open-Trench Pipe Installation Combined	**78.8**
OPEN-TRENCH ROADWAY RESTORATION	
Paver/a/	74.2
Roller Compactor/a/	73.0
Forklift	63.2
Open-Trench Roadway Restoration Combined	**76.7**
TRUNK LINE MICROTUNNELING SITE PREPARATION	
Excavator/a/	76.7
Front End Loader/a/	75.1
Auger Drill Rig	77.4
Concrete Saw	82.6
Crane	72.6
Forklift	63.2

TABLE 4: PHASED CONSTRUCTION NOISE LEVELS	
Construction Phases and Equipment	**Noise Level at 50 feet (dBA, L_{eq})**
Haul Truck	72.5
Vacuum Excavator (Vac-truck)	81.3
Trunk Line Microtunneling Site Preparation Combined	**79.0**
TRUNK LINE MICROTUNNELING SHAFT EXCAVATION	
Crane/a/	72.6
Vibratory or Press in Driver/a/	78.9
Excavator	76.7
Front End Loader	75.1
Trunk Line Microtunneling Shaft Excavation Combined	**79.8**
TRUNK LINE MICROTUNNELING	
Generator/a/	77.6
Hydraulic Pump in Pipe Jacking Plant/a/	66.3
Slurry Separator Plant/a/	78.0
Ventilation Fan/a/	78.9
Crane	72.6
Microtunneling boring machine (MTBM)	0.0
Trunk Line Microtunneling Combined	**83.1**
TRUNK LINE MICROTUNNELING SHAFT BACKFILLING	
Concrete Mixer Truck/a/	74.8
Crane/a/	72.6
Trunk Line Microtunneling Backfilling Combined	**76.8**
TRUNK LINE MICROTUNNELING ROADWAY RESTORATION	
Paver/a/	74.2
Roller Compactor/a/	73.0
Forklift	63.2
Trunk Line Microtunneling Roadway Restoration Combined	**76.7**

/a/ Construction equipment that would be used simultaneously during construction phase and that would create the loudest noise level associated with the phase.
SOURCE: AECOM, *Construction Noise and Vibration - North Harbour 2 Watermain and Northern Interceptor Shared Corridor*, April 29, 2016; FHWA, *Roadway Construction Noise Model*, Version 1.1, 2008; *Noise Levels of Lift Trucks*, May 25, 2001; rigolett.home.xs4all.nl/ENGELS/equipment/liftfr.htm.; Washington State Department of Transportation, *Airborne Noise Measurements (A-weighted and un-weighted) during Vibratory Pile Installation - Technical Memorandum*, June 21, 2010.

Open Trench Construction Noise

The TTLR, the 12-inch diameter distribution mainline, and 16-inch diameter distribution mainline would be installed using an open-trench method of construction. During open-trench construction, a concrete saw would generate the loudest noise levels at approximately 82.6 dBA L_{eq}. However, the concrete saw would only be used for very brief periods of time and during the early stages of open-trench construction. Therefore, the reference noise level for open-trench construction would be more typically represented by the operations of an excavator and front loader simultaneously, which would result in a combined noise level of approximately 79.9 dBA L_{eq}.

Table 5 presents the estimated maximum construction noise levels related to open-trench construction for the TTLR,12-inch diameter distribution mainline, and 16-inch diameter distribution mainline. Construction activities would typically occur between 7:00 a.m. and 6:00 p.m., Monday through Friday. For the 12-inch and 16-inch diameter distribution mainlines, construction activities would typically occur between 9:00 a.m. and 3:30 p.m., Monday through Friday, but some nighttime construction may be required.

TABLE 5: OPEN TRENCH CONSTRUCTION NOISE LEVELS AT RECEPTORS				
Sensitive Receptor	**Distance (feet)**	**Existing Noise Level (dBA) /a/**	**Project Noise Level (dBA)**	**Exceed Threshold? (75 dBA, L_{eq})**
FIRST BUILDING ROW RECEPTORS				
Residences to the south between Victory Blvd. and Corbin Ave.	50	68.9	79.9	Yes
Residences to the south between Boyle Ave. and Calvin Ave.	50	68.9	79.9	Yes
Residences to the south between Lindley Ave. and White Oak Ave.	50	61.5	79.9	Yes
Residences to the south between White Oak Ave. and Encino Ave.	50	61.5	79.9	Yes
Columbia College Hollywood	50	67.2	79.9	Yes
St. John's Lutheran Church	50	68.9	79.9	Yes
Residences along Tampa Ave. to the west and east between Topham St. and U.S. 101 Hwy.	50	68.9	79.9	Yes
Residences along Mason Ave.	50	54.1	79.9	Yes
Tarzana Treatment Center, Inc.	60	67.2	78.3	Yes
Residences to the north between Sylvia Ave. and Topeka Dr.	70	49.1	72.0	No
Residences to the north between Boyle Ave. and Calvin Ave.	80	49.2	70.8	No
Residences to the north between Victory Blvd. and Corbin Ave.	100	54.1	68.9	No
Residences to the south between Sylvia Ave. and Topeka Dr.	100	68.9	73.9	No
Synagogue Beit Midrash Ohel Rachel	100	68.9	73.9	No
Woodcrest School	100	68.9	73.9	No
Residences to the north between De Soto Ave. and Oso Ave.	120	54.1	67.3	No
Miss Elizabeth’s Piano Studio	120	68.9	67.3	No
Playa Music Lessons	120	68.9	72.3	No
Residences to the north between Canby Ave. and Etiwanda Ave.	150	49.1	65.4	No
Residences to the north between Lindley Ave. and White Oak Ave.	150	54.0	65.4	No
Residences to the north between White Oak Ave. and Encino Ave.	150	54.0	65.4	No
Chabad at Pierce Religious Institution	150	56.0	65.4	No
Renewal Health Group Sanctuary	150	68.9	70.4	No
Residences along Tampa Ave to the south of Ventura Blvd.	160	61.5	69.8	No
Azar Garden	170	54.0	69.3	No
Residences to the north between Wilbur Ave. and Yolanda Ave.	180	52.2	68.8	No
Child's World School	180	61.5	63.8	No
Discovery School	320	52.2	63.8	No
LA Pierce College Child Development Center	360	56.0	62.8	No
SECOND BUILDING ROW RECEPTORS				
Residences to the south between Victory Blvd. and Corbin Ave.	150	52.2	65.9	No
Residences along Tampa Ave. to the east between Topham St. and U.S. 101 Hwy	170	54.0	64.8	No
Residences along Mason Ave.	180	54.1	64.3	No

TABLE 5: OPEN TRENCH CONSTRUCTION NOISE LEVELS AT RECEPTORS				
Sensitive Receptor	**Distance (feet)**	**Existing Noise Level (dBA) /a/**	**Project Noise Level (dBA)**	**Exceed Threshold? (75 dBA, L_{eq})**
Residences to the south between Boyle Ave. and Calvin Ave.	200	49.2	63.4	No
Residences to the south between Sylvia Ave. and Topeka Dr.	220	49.1	62.5	No
Residences to the south between Lindley Ave. and White Oak Ave.	220	54.0	62.5	No
Residences to the south between White Oak Ave. and Encino Ave.	220	54.0	62.5	No
Gem Educare Daycare/Preschool	250	61.5	61.4	No
Residences along Tampa Ave. to the west between Topham St. and U.S. 101 Hwy.	250	54.0	61.4	No
Residences along Tampa Ave. to the south of Ventura Blvd.	320	61.5	59.3	No
Be Well Senior Living	320	54.0	59.3	No
California Zoroastrian Center	450	54.1	56.3	No
THIRD BUILDING ROW RECEPTORS				
Bandrika Studios	400	56.0	55.8	No

/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
SOURCE: TAHA, 2023.

Construction activity would therefore typically comply with the allowable hours of construction in the LAMC, including 7:00 a.m. to 9:00 p.m. Monday through Friday, 8:00 a.m. to 6:00 p.m. on Saturday or federal holiday, and no construction activity on Sundays. However, some nighttime construction may be required that would occur outside the allowable hours of construction. Per LAMC section 41.40 (d) the provisions of LAMC section 41.40, including the allowable hours of construction, would not apply to major public works construction by the City of Los Angeles or its proprietary departments. LADWP would be granted a variance to construct outside of the allowable hours of construction during nighttime hours if required. The LAMC also limits equipment noise levels to 75 dBA L_{eq} unless technically infeasible. Noise levels would exceed 75 dBA at first row sensitive receptors, and the threshold would typically not be exceeded at distances of 150 feet or greater. Therefore, without mitigation, the proposed project would result in a significant impact related to on-site construction noise.

Microtunneling Construction Noise

Microtunneling would be initiated in certain segments to avoid conflicts with existing substructures, which include major sewer, storm, and water lines. Microtunneling would be required along Topham Street at the intersections with Winnetka Avenue, Tampa Avenue, Corbin Avenue, and White Oak Avenue. Microtunneling would require excavating shafts at either end of the span with work zones of approximately 35 feet around the shafts. Noise generation would be concentrated around the shafts which would be open air and would include some pieces of equipment (e.g., crane, slurry separator plant) aboveground. The underground component of the microtunneling process would use a MTBM. The MTBM would not generate aboveground noise. Microtunneling would typically be represented by the simultaneous operation of a generator, hydraulic pump associated with the pipe jacking plant, slurry separator plant, and a ventilation fan which would generate a combined noise level of approximately 83.1 dBA L_{eq}. **Table 6** through **Table 12** present the estimated noise levels at the sensitive receptors nearest to each microtunneling shaft location. Noise levels would exceed 75 dBA at first row sensitive receptors, and the threshold would typically not be exceeded at distances of 150 feet or greater. Therefore, without mitigation, the proposed project would result in a significant impact related to on-site construction noise.

TABLE 6: MICROTUNNELING CONSTRUCTION NOISE LEVELS – WINNETKA AVE.

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA) /a/	Project Noise Level (dBA)	Exceed Threshold (75 dBA, L_{eq})
FIRST BUILDING ROW RECEPTORS				
Residences to the south along Topham St.	80	71.8	79.0	Yes
Residences to the north between Oso Ave. and Victory Blvd.	120	54.1	70.5	No
LA Pierce College Child Development Center	360	56.0	66.0	No
West Valley Occupational Center	500	56.0	63.1	No
SECOND BUILDING ROW RECEPTORS				
Residences to the south along Penfield Ave.	220	52.2	65.7	No
Residences to the north between Oso Ave. and Victory Blvd.	300	54.1	58.0	No

/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
SOURCE: TAHA, 2023.

TABLE 7: MICROTUNNELING CONSTRUCTION NOISE LEVELS – CORBIN AVE.

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA) /a/	Project Noise Level (dBA)	Exceed Threshold (75 dBA, L_{eq})
FIRST BUILDING ROW RECEPTORS				
St. John's Lutheran Church	50	68.9	83.1	Yes
Residences to the south of Topham St.	60	68.9	81.5	Yes
Residences to the north of Topham St.	100	49.2	72.1	No
SECOND BUILDING ROW RECEPTORS				
Residences to the south of Topham St.	200	52.2	66.6	No

/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
SOURCE: TAHA, 2023.

TABLE 8: MICROTUNNELING CONSTRUCTION NOISE LEVELS AT RECEPTORS – TAMPA AVE.

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA) /a/	Project Noise Level (dBA)	Exceed Threshold (75 dBA, L_{eq})
FIRST BUILDING ROW RECEPTORS				
Residences to the north of Topham St.	70	49.2	75.2	Yes
Residences to the south of Topham St.	80	68.9	79.0	Yes
Woodcrest School	330	68.9	66.7	No
SECOND BUILDING ROW RECEPTORS				
Residences to the north of Topham St.	230	49.2	60.3	No
Residences to the south of Topham St.	240	49.2	65.0	No

/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
SOURCE: TAHA, 2023.

TABLE 9: MICROTUNNELING CONSTRUCTION NOISE LEVELS AT RECEPTORS – WILBUR AVE.				
Sensitive Receptor	**Distance (feet)**	**Existing Noise Level (dBA) /a/**	**Project Noise Level (dBA)**	**Exceed Threshold (75 dBA, L_{eq})**
FIRST BUILDING ROW RECEPTORS				
Residences to the south of Oxnard St.	70	67.2	80.2	Yes
Residences to the north of Oxnard St.	75	49.1	79.6	Yes
Synagogue Beit Midrash Ohel Rachel	100	68.9	77.1	Yes
Discovery School	450	52.2	64.0	No
SECOND BUILDING ROW RECEPTORS				
Residences to the south of Oxnard St.	200	67.2	66.6	No
Residences to the north of Oxnard St.	240	49.1	65.0	No
/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities. **SOURCE**: TAHA, 2022.				

TABLE 10: MICROTUNNELING CONSTRUCTION NOISE LEVELS AT RECEPTORS – RESEDA BLVD.				
Sensitive Receptor	**Distance (feet)**	**Existing Noise Level (dBA) /a/**	**Project Noise Level (dBA)**	**Exceed Threshold (75 dBA, L_{eq})**
FIRST BUILDING ROW RECEPTORS				
Residences to the north of Oxnard St.	260	49.1	63.8	No
SECOND BUILDING ROW RECEPTORS				
Residences to the south of Oxnard St.	450	56.0	59.5	No
/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities. **SOURCE**: TAHA, 2023.				

TABLE 11: MICROTUNNELING CONSTRUCTION NOISE LEVELS AT RECEPTORS – WHITE OAK AVE.				
Sensitive Receptor	**Distance (feet)**	**Existing Noise Level (dBA) /a/**	**Project Noise Level (dBA)**	**Exceed Threshold (75 dBA, L_{eq})**
FIRST BUILDING ROW RECEPTORS				
Residences to the south of Oxnard St.	50	73.3	83.1	Yes
Residences to the north of Oxnard St.	150	73.3	73.6	No
SECOND BUILDING ROW RECEPTORS				
Residences to the south of Oxnard St.	200	73.3	66.6	No
/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities. **SOURCE**: TAHA, 2023.				

TABLE 12: MICROTUNNELING CONSTRUCTION NOISE LEVELS AT RECEPTORS – OXNARD ST.				
Sensitive Receptor	**Distance (feet)**	**Existing Noise Level (dBA) /a/**	**Project Noise Level (dBA)**	**Exceed Threshold (75 dBA, L_{eq})**
FIRST BUILDING ROW RECEPTORS				
Residences to the south of Oxnard St. along Bullock St.	50	61.5	83.1	Yes
Residences to the north of Oxnard St. along Bessemer St.	130	49.1	69.8	No
Childs World School	180	61.5	72.0	No
Residences to the north of Oxnard St.	185	49.1	71.7	No
Residences to the south of Oxnard St.	300	61.5	67.5	No
SECOND BUILDING ROW RECEPTORS				
Residences to the south of Oxnard St.	150	61.5	69.1	No

/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
SOURCE: TAHA, 2023

Off-Site Truck Trips

In addition to on-site construction activities, noise would be generated off-site by construction-related trucks. Construction of the proposed project would require the hauling and export of debris and excavated material from the site and deliver construction materials, such as pipe segments and backfill. The maximum number of truck trips would be approximately five truck trips per day. Conservatively, a maximum of 12 truck trips per day has been assumed for the analysis. Over an eight-hour workday the maximum hourly haul truck volume would be approximately three truck trips per hour. A doubling of traffic volumes is typically needed to audibly increase noise levels along a roadway segment.

Table 13 shows traffic volumes recorded by the City of Los Angeles Department of Transportation along Victory Boulevard, Topham Street, Mason Avenue, Tampa Avenue and Oxnard Street, which would be utilized as the haul route for trucks travelling to and from the project site. Daily traffic along these roadways is greater than 3,000 trips with over approximately 500 peak hour trips or more in the AM and PM peak hour. An additional three truck trips per hour would not double the existing volume along any roadway segment. Off-site vehicle activity would not audibly change average daily noise levels due to the low volume of truck trips per day. Therefore, the proposed project would result in a less-than-significant impact related to construction truck noise.

TABLE 13: EXISTING TRAFFIC VOLUMES			
		Peak Hour Traffic	
Roadway	Daily Traffic	AM	PM
Victory Blvd. at De Soto Ave.	43,164	3,204	3,477
Victory Blvd. at Winnetka Ave.	35,974	2,393	2,927
Topham St. at Corbin Ave.	7,584	659	763
Topham St. at Tampa Ave.	9,771	838	1,019
Mason Ave. at Victory Blvd.	15,449	1,600	1,500
Tampa Ave. at Hatteras St.	14,134	3,894	2,545
Oxnard St. at Donna Ave. and Topeka Dr.	11,206	1,087	1,037
Oxnard St. at Yolanda Ave.	4,197	649	946
Oxnard St. East of Reseda Blvd.	9,411	1,025	839
Oxnard St. at Lindley Ave.	9,760	1,040	1,010
SOURCE: LADOT, *24 Hours Traffic Volume*.			

Mitigation Measures

N1 Construction equipment shall be properly maintained and equipped with mufflers to manufacturer specifications.

N2 Rubber-tired equipment shall be used rather than tracked equipment when feasible.

N3 Equipment shall be turned off when not in use for an excess of five minutes, except for equipment that requires idling to maintain performance.

N4 A public liaison shall be appointed for project construction will be responsible for addressing public concerns about construction activities, including excessive noise. As needed, the liaison shall determine the cause of the concern (e.g., starting too early, bad muffler) and implement measures to address the concern.

N5 The public shall be notified in advance of the location and dates of construction hours and activities.

N6 Barriers, such as, but not limited to, plywood structures or flexible sound control curtains extending eight feet in height shall be erected around perimeter of the microtunneling shafts and the slurry separation plants for the microtunneling segments at Winnetka Avenue, Corbin Avenue, Tampa Avenue, Wilbur Avenue, Oxnard Street, and White Oak Avenue. Noise barriers shall be capable of reducing construction noise levels by at least 10 decibels. Feasibility includes, but is not limited to, ensuring that the enclosures do not create safety hazards associated with vehicle sight lines or pedestrian activities.

N7 Electrically powered equipment shall be used instead of pneumatic or internal combustion powered equipment, where feasible.

Significance After Mitigation

Construction. Mitigation Measures **N1** through **N7** are designed to reduce construction noise levels. The equipment mufflers associated with Mitigation Measure **N1** would reduce construction noise levels by approximately 5 dBA. Mitigation Measures **N2** through **N5** and **N7**, although difficult to quantify, would also reduce and/or control construction noise levels. Mitigation Measure **N6**, noise barriers, when utilized, typically reduce noise by 10 dBA. Potential noise reductions from temporary noise barriers may change due to potential changes in the construction process or possible physical limitation unknown at this time. Mitigated noise levels for previously identified sensitive receptors that would experience construction noise above thresholds are shown in **Table 14**. Mitigation Measures **N1** through **N7** would reduce noise levels to less than 75 dBA at nearby sensitive receptors. Mitigation would be implemented during both daytime and nighttime construction, should it be required. Consistent with the LAMC, all feasible measures would be taken to control construction noise. Therefore, the proposed project would result in a less-than-significant impact related to construction noise with mitigation incorporated.

TABLE 14: MITIGATED CONSTRUCTION NOISE LEVELS AT IMPACTED RECEPTORS

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA) /a/	Unmitigated Noise Levels (dBA)	Mitigated Project Noise Level (dBA) /b/	Exceed Threshold (75 dBA, L_{eq})
OPEN TRENCH – VICTORY BLVD, TOPHAM ST., OXNARD ST., MASON AVE. AND TAMPA AVE					
Residences to the south between Victory Blvd. and Corbin Ave.	50	68.9	79.9	74.9	No
Residences to the south between Boyle Ave. and Calvin Ave.	50	68.9	79.9	74.9	No
Residences to the south between Lindley Ave. and White Oak Ave.	50	61.5	79.9	74.9	No
Residences to the south between White Oak Ave. and Encino Ave.	50	61.5	79.9	74.9	No
Columbia College Hollywood	50	67.2	79.9	74.9	No
St. John's Lutheran Church	50	68.9	79.9	74.9	No
Residences along Tampa Ave. to the west and east between Topham St. and U.S. 101 Hwy.	50	68.9	79.9	74.9	No
Residences along Mason Ave.	50	54.1	79.9	74.9	No
Tarzana Treatment Center, Inc.	60	67.2	78.3	73.3	No
Residences to the north between Sylvia Ave. and Topeka Dr.	70	49.1	72.0	67.0	No
Residences to the north between Boyle Ave. and Calvin Ave.	80	49.2	70.8	65.8	No
Residences to the north between Victory Blvd. and Corbin Ave.	100	54.1	68.9	63.9	No
Residences to the south between Sylvia Ave. and Topeka Dr.	100	68.9	73.9	68.9	No
Synagogue Beit Midrash Ohel Rachel	100	68.9	73.9	68.9	No
Woodcrest School	100	68.9	73.9	68.9	No
Residences to the north between De Soto Ave. and Oso Ave.	120	54.1	67.3	62.3	No
Miss Elizabeth's Piano Studio	120	68.9	67.3	62.3	No
Playa Music Lessons	120	68.9	72.3	67.3	No
Residences to the north between Canby Ave. and Etiwanda Ave.	150	49.1	65.4	60.4	No
Residences to the north between Lindley Ave. and White Oak Ave.	150	54.0	65.4	60.4	No
Residences to the north between White Oak Ave. and Encino Ave.	150	54.0	65.4	60.4	No
Chabad at Pierce Religious Institution	150	56	65.4	60.4	No
Residences to the south between Victory Blvd. and Corbin Ave.	150	52.2	65.9	60.9	No
Renewal Health Group Sanctuary	150	68.9	70.4	65.4	No

TABLE 14: MITIGATED CONSTRUCTION NOISE LEVELS AT IMPACTED RECEPTORS					
Sensitive Receptor	**Distance (feet)**	**Existing Noise Level (dBA) /a/**	**Unmitigated Noise Levels (dBA)**	**Mitigated Project Noise Level (dBA) /b/**	**Exceed Threshold (75 dBA, L_{eq})**
Residences along Tampa Ave. to the south of Ventura Blvd.	160	61.5	69.8	66.4	No
Residences along Tampa Ave. to the east between Topham St. and U.S. 101 Hwy.	170	54.0	64.8	59.8	No
Azar Garden	170	54.0	69.3	64.3	No
Residences to the north between Wilbur Ave. and Yolanda Ave.	180	52.2	68.8	63.8	No
Child's World School	180	61.5	63.8	58.8	No
Residences along Mason Ave.	180	54.1	64.3	59.3	No
Residences to the south between Boyle Ave. and Calvin Ave.	200	49.2	63.4	58.4	No
Residences to the south between Sylvia Ave. and Topeka Dr.	220	49.1	62.5	57.5	No
Residences to the south between Lindley Ave. and White Oak Ave.	220	54.0	62.5	57.5	No
Residences to the south between White Oak Ave. and Encino Ave.	220	54.0	62.5	57.5	No
Gem Educare Daycare/Preschool	250	61.5	61.4	56.4	No
Residences along Tampa Ave. to the west between Topham St. and U.S. 101 Hwy.	250	54.0	61.4	56.4	No
Residences along Tampa Ave. to the south of Ventura Blvd.	320	61.5	59.3	54.3	No
Be Well Senior Living	320	54.0	59.3	54.3	No
Discovery School	320	52.2	63.8	58.8	No
LA Pierce College Child Development Center	360	56.0	62.8	57.8	No
Bandrika Studios	400	56.0	55.8	50.8	No
California Zoroastrian Center	450	54.1	56.3	51.3	No
MICROTUNNELING – WINNETKA AVE.					
Residences to the south along Topham St.	80	71.8	79.0	64.0	No
Residences to the north between Oso Ave. and Victory Blvd.	120	54.1	70.5	55.5	No
Residences to the south along Penfield Ave.	220	52.2	65.7	50.7	No
Residences to the north between Oso Ave. and Victory Blvd.	300	54.1	58.0	43.0	No
LA Pierce College Child Development Center	360	56.0	66.0	51.0	No
West Valley Occupational Center	500	56.0	63.1	48.1	No
MICROTUNNELING – CORBIN AVE.					
St. John's Lutheran Church	50	68.9	83.1	68.1	No
Residences to the south between Corbin Ave. and Melvin Ave.	60	68.9	81.5	66.5	No
Residences to the north between Corbin Ave. and Melvin Ave.	100	49.2	72.1	57.1	No
Residences to the south between Corbin Ave. and Melvin Ave.	200	52.2	66.6	51.6	No
MICROTUNNELING - TAMPA AVE.					
Residences to the north between Calvin Ave. and Sylvia Ave.	70	49.2	75.2	60.2	No

TABLE 14: MITIGATED CONSTRUCTION NOISE LEVELS AT IMPACTED RECEPTORS					
Sensitive Receptor	**Distance (feet)**	**Existing Noise Level (dBA) /a/**	**Unmitigated Noise Levels (dBA)**	**Mitigated Project Noise Level (dBA) /b/**	**Exceed Threshold (75 dBA, L_{eq})**
Residences to the south between Calvin Ave. and Sylvia Ave.	80	68.9	79.0	64.0	No
Woodcrest School	330	68.9	66.7	51.7	No
Residences to the north of Topham St.	230	49.2	60.3	45.3	No
Residences to the south of Topham St.	240	49.2	65.0	50.0	No
MICROTUNNELING – WILBUR AVE.					
Residences to the south of Oxnard St.	70	67.2	80.2	65.2	No
Residences to the north of Oxnard St.	75	49.1	79.6	64.6	No
Synagogue Beit Midrash Ohel Rachel	100	68.9	77.1	62.1	No
Residences to the south of Oxnard St.	200	67.2	66.6	51.6	No
Residences to the north of Oxnard St.	240	49.1	65.0	50.0	No
Discovery School	450	52.2	64.0	49.0	No
MICROTUNNELING - RESEDA BLVD.					
Residences to the north of Oxnard St.	260	49.1	63.8	58.8	No
Residences to the south of Oxnard St.	450	56.0	59.5	54.5	No
MICROTUNNELING - WHITE OAK AVE.					
Residences to the south of Oxnard St.	50	73.3	83.1	68.1	No
Residences to the north of Oxnard St.	150	73.3	73.6	58.6	No
Residences to the south of Oxnard St.	200	73.3	66.6	51.6	No
MICROTUNNELING – OXNARD ST.					
Residences to the south of Oxnard St. along Bullock St.	50	61.5	83.1	68.1	No
Residences to the north of Oxnard St. along Bessemer St.	130	49.1	69.8	54.8	No
Residences to the south of Oxnard St.	150	61.5	69.1	54.1	No
Childs World School	180	61.5	72.0	57.0	No
Residences to the north of Oxnard St.	185	49.1	71.7	56.7	No
Residences to the south of Oxnard St.	300	61.5	67.5	52.5	No

/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
/b/ Includes a 5 dB reduction for equipment mufflers (N1) for general construction, a 10 dB reduction for a temporary noise barrier (N6) around mjcrotunneling shafts.
SOURCE: TAHA, 2023.

b) Would the proposed project result in generation of excessive ground-borne vibration or ground-borne noise levels? (Less-than-Significant Impact)

Construction. Construction activity can generate varying degrees of vibration, depending on the procedure and equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of a construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, and to slight damage at the highest levels. In most cases, the primary concern regarding construction vibration relates to damage.

Based on visual characteristics of adjacent structures (e.g., age), residential building foundations are assumed to be constructed of non-engineered timber and masonry, and the larger structures, such as hospitals are assumed to be constructed of reinforced-concrete, steel, or timber. According to the FTA guidance, buildings constructed of non-engineered timber and masonry can withstand vibration levels up to 0.2 inches per second without experiencing damage. Buildings constructed of reinforced-concrete, steel, or timber can withstand vibration levels up to 0.5 inches per second without experiencing damage. Equipment that would be utilized would be most similar to an excavator, a vibratory pile driver, a small bulldozer, and a caisson drill. Vibration levels for various types of construction equipment with an average source level reported in terms of velocity are shown in **Table 15**. Construction equipment would largely be stationary on the project site and would not regularly traverse the site resulting in the generation of vibration at off-site uses. Structures adjacent to the open-trench or microtunneling sites would typically be at least 50 feet from the construction activity. At a distance of 50 feet, vibration generating equipment would generate vibration levels below the vibration damage threshold of 0.2 inches per second for non-engineered timber and masonry buildings and 0.5 reinforced-concrete, steel, or timber buildings, respectively.

TABLE 15: TYPICAL OUTDOOR CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Equipment	PPV at 25 Feet (inches/second)	PPV at 50 Feet (inches/second)	VdB at 25 Feet (micro-inches/second)	VdBat 50 Feet (micro-inches/second)
Caisson Drill	0.089	0.031	87	78
Excavator	0.040	0.014	80	71
Pile Driver (Sonic)	0.170	0.060	93	84
Small Bulldozer	0.003	0.001	58	49

SOURCE: FTA, *Transit Noise and Vibration Impact Assessment*, September 2018; New Hampshire Department of Transportation, *Ground Vibrations Emanating from Construction Equipment*, September 8, 2012.

One historic use structure has been identified within 220 feet of construction activity involving vibratory pile driving. Historic uses can experience a vibration level of 0.12 inches per second before there is risk of damage to the structure. As shown in **Table 16**. the nearest historic structure is a historical residential structure (6270 North Lubao Avenue, Woodland Hills, CA 91367), which is located approximately 220 feet from where construction activity would occur along Topham Avenue. Vibration at this distance would be approximately 0.0065 inches per second from a vibratory pile driver. In addition to on-site construction activities, construction trucks on the roadway network have the potential to generate vibration. However, rubber-tired vehicles, including trucks, rarely generate perceptible vibration.[5] It is not anticipated that project-related trucks would generate perceptible

[5]FTA, *Transit Noise and Vibration Impact Assessment*, September 2018.

vibration adjacent to the roadway network. Therefore, the proposed project would result in a less-than-significant impact related to structure damage from construction vibration.

TABLE 16: HISTORIC USE VIBRATION ANALYSIS				
Historic Uses/Address	**Distance from Construction Activity (feet)**	**Reference Vibration Level (inches/second)**	**PPV at Historic Use (inches/second)**	**Exceed 0.12 Inches/ Second Threshold**
Historical Residential Structure 6270 Lubao Ave. Woodland Hills, CA 91367	220	0.170	0.0065	No
SOURCE: TAHA, 2023; Los Angeles Department of City Planning Office of Historic Resources, *HistoricPlacesLA*, accessed April 21, 2022.				

Vibration annoyance is another concern related to construction activity. However, perceptible vibration is not typically a concern for human health and is a common occurrence within the urban environment. Special uses such as select medical facilities, research facilities and recording studios would be potentially impacted by construction vibration annoyance due to the presence of sensitive equipment. None of these uses have been identified within the project vicinity. In addition to on-site construction activities, construction trucks on the roadway network have the potential to expose vibration-sensitive land uses. Rubber-tired vehicles, including trucks, rarely generate perceptible vibration.[6] It is anticipated that project-related trucks would not generate perceptible vibration adjacent to the roadway network. Therefore, the proposed project would result in a less than significant impact related to on-site vibration annoyance.

Mitigation Measures

No mitigation measures required.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the proposed project expose people residing or working in the project area to excessive noise levels? (No Impact)

The proposed project is located within two miles of Van Nuys Airport to the east. However, according to the Los Angeles County Airport Land Use Commission, the proposed project area is not within the Airport Influence Area.[7] Therefore, no impact related to airport or airstrip noise would occur.

References

AECOM, *Construction Noise and Vibration - North Harbour 2 Watermain and Northern Interceptor Shared Corridor*, April 2016.

California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.

David White, Tom Finlay, Malcolm Bolton, Grant Bearss, Cambridge University Engineering Department, *Press-in piling: Ground vibration and noise during pile installation*.

[6] *Ibid.*
[7] Los Angeles County Airport Land Use Commission, May 2003.

Federal Highway Administration (FHWA), *Roadway Construction Noise Model*, Version 1.1, 2008.

Federal Transit Administration (FTA), *Transit Noise and Vibration Impact Assessment*, September 2018.

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Los Angeles Department of City Planning Office of Historic Resources, *HistoricPlacesLA*, accessed April 21, 2022.

Los Angeles Department of Transportation (LADOT), *24 Hours Traffic Volume – Victory Bl at De Soto St*, September 27, 2016.

Los Angeles Department of Transportation (LADOT), *24 Hours Traffic Volume – Victory Bl at Winnetka Av*, July 24, 2019.

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Los Angeles Department of Transportation (LADOT), *24 Hours Traffic Volume – Topham St at Tampa Av,* July 9, 2006.

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Los Angeles Department of Transportation (LADOT), *24 Hours Traffic Volume – Oxnard St East of Reseda Bl,* September 17, 2012.

Los Angeles Department of Transportation (LADOT), *24 Hours Traffic Volume – Oxnard St at Lindley Av,* September 9, 2010.

Los Angeles Department of Transportation (LADOT), *24 Hours Traffic Volume – Oxnard St at Lindley Av,* September 9, 2010.

Los Angeles Municipal Code, *Chapter XI (Noise Regulation)*, December 31, 2019.

Los Angeles Municipal Code, *Section 112.04 (Powered Equipment Intended for Repetitive Use in Residential Areas and Other Machinery, Equipment, and Devices)*, December 31, 2019.

Los Angeles Municipal Code, *Section 112.05 (Maximum Noise Level of Powered Equipment or Hand Powered Tools)*, December 31, 2019.

Los Angeles Municipal Code, *Section 116.01 (Loud, Unnecessary, and Unusual Noises)*, December 31, 2019.

Los Angeles Municipal Code, *Section 41.40 (Noise Due to Construction, Excavation Work – When Prohibited)*, December 31, 2019.

New Hampshire Department of Transportation, *Ground Vibrations Emanating from Construction Equipment*, September 8, 2012.

Washington State Department of Transportation, *Airborne Noise Measurements (A-weighted and un-weighted) during Vibratory Pile Installation - Technical Memorandum*, June 2010.

Appendix

Noise and Vibration Calculations

Noise Formulas

Noise Distance Attenuation

Hard Site

$$Ni = No - 20 * LOG(Di/Do)$$

Ni = attenuated noise level of interest
Di = distance to receptor (Di>Do)
No = reference noise level
Do = reference distance

Source: (Bolt, Beranek, and Newman, 1971)

Summation of Noise Levels

Equation: Ns=10 x LOG10((10^(N1/10))+(10^(N2/10))+(10^(N3/10))+(10^(N4/10)))

Ns = Noise Level Sum
N1 = Noise Level 1
N2 = Noise Level 2
N3 = Noise Level 3
N4 = Noise Level 4

Efficient Summation Formula
=10*LOG(SUM(10^(UserRange/10)))

Source: California Department of Transportation, Technical Noise Supplement, 2013

Construction Noise Analysis

Phased Construction Noise Levels	
Construction Equipment	**Noise Level at 50 feet (dBA)**
Open-Trench Site Preparation	
Excavator	76.7
Front End Loader	75.1
Auger Drill Rig	77.4
Concrete Saw	82.6
Crane	72.6
Skid Steer	75.1
Forklift	63.2
Haul Truck	72.5
Vacuum Excavator (Vac-truck)	81.3
Open-Trench Site Preparation Combined	**79.0**
Open-Trench Excavation and Shoring	
Crane	72.6
Excavator	76.7
Front End Loader	75.1
Auger Drill Rig	77.4
Open-Trench Excavation and Shoring Combined	**79.9**
Open-Trench Pipe Installation	
Crane	72.6
Generator	77.6
Concrete Mixer Truck	74.8
Gang Truck	70.3
Carry Deck	70.3
Haul Truck	72.5
Welder	70.0
Vacuum Street Sweeper	71.6
Open-Trench Pipe Installation Combined	**78.8**
Open-Trench Roadway Restoration	
Forklift	63.2
Paver	74.2
Roller Compactor	73.0
Open-Trench Roadway Restoration Combined	**76.7**

Trunk Line Microtunneling Site Preparation	
Excavator	76.7
Front End Loader	75.1
Auger Drill Rig	77.4
Concrete Saw	82.6
Crane	72.6
Forklift	63.2
Haul Truck	72.5
Vacuum Excavator (Vac-truck)	81.3
Trunk Line Microtunneling Site Preparation Combined	**79.0**
Trunk Line Microtunneling Shaft Excavation	
Crane	72.6
Vibratory or Press in Driver	78.9
Excavator	76.7
Front End Loader	75.1
Trunk Line Microtunneling Shaft Excavation Combined	**79.8**
Trunk Line Microtunneling Tunneling/Jacking	
Generator	77.6
Hydraulic Pump in Pipe Jacking Plant	66.3
Slurry Separator Plant	78.0
Ventilation Fan	78.9
Crane	72.6
Micro Tunneling Boring Machine (MTBM)	0.0
Trunk Line Microtunneling Combined	**83.1**
Trunk Line Microtunneling Shaft Backfilling	
Concrete Mixer Truck	74.8
Crane	72.6
Trunk Line Microtunneling Combined	**76.8**
Trunk Line Microtunneling Roadway Restoration	
Forklift	63.2
Paver	74.2
Roller Compactor	73.0
Micro-Tunneling Roadway Restoration Combined	**76.7**

Source: AECOM, *Construction Noise and Vibration - North Harbour 2 Watermain and Northern Interceptor Shared Corridor* , 29 April 2016.
Source: Federal Highway Administration, *Roadway Construction Noise Model* , 2008
Source: *Noise Levels of Lift Trucks* , 25 May 2001, rigolett.home.xs4all.nl/ENGELS/equipment/liftfr.htm.
Source: Washington State Department of Transportation, *Airborne Noise Measurements (A-weighted and un-weighted) during VibratoryPile Installation - Technical Memorandum* , 21 June 2010.

EXISTING AMBIENT NOISE LEVELS	
(Site Number) Noise Monitoring Locations	**Sound Level (dBA, Leq)**
[1] Residences (20645 Hayne Street)	54.1
[2] Mason Avenue and Olympic Drive	56.0
[3] Mason Avenue and Victory Boulevard	70.4
[4] Orange Line Busway and Victory Boulevard	71.8
[5] Residences (6263 Oakdale Avenue)	52.2
[6] 19440 Orange Line Busway Bike Path	68.9
[7] Residences (6200 Tunney Avenue)	49.2
[8] Residences (18924 Bessemer Street)	49.1
[9] Arco Gas Station at 6039 Reseda Boulevard	67.2
[10] Residences (18053 W. Oxnard Street)	61.5
[11] Residences (18731 Bullock Street.)	54.0
[12] Residences (6031 White Oak Avenue)	73.3

CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS (OPEN-TRENCH CONSTRUCTION)								
Sensitive Receptors	**Distance (feet)**	**Intervening Building /a/**	**Existing Orange Line Soundwall /b/**	**Reference Noise Level (dBA)**	**Existing Ambient (dBA, Leq)**	**Max Construction Noise (dBA, Leq)**	**LA City Noise Threshold**	**Exceed Threshold?**
First Row Receptors								
Residences to the south between Victory Blvd. and Corbin Ave.	50	0	0	79.9	68.9	79.9	75	Yes
Residences to the south between Boyle Ave. and Calvin Ave.	50	0	0	79.9	68.9	79.9	75	Yes
Residences to the south between Lindley Ave. and White Oak Ave.	50	0	0	79.9	61.5	79.9	75	Yes
Residences to the south between White Oak Ave. and Encino Ave.	50	0	0	79.9	61.5	79.9	75	Yes
Columbia College Hollywood	50	0	0	79.9	67.2	79.9	75	Yes
St. John's Lutheran Church	50	0	0	79.9	68.9	79.9	75	Yes
Residences along Tampa Ave. to the west and east between Topham St. and US101 Hwy.	50	0	0	79.9	68.9	79.9	75	Yes
Residences along Mason Ave.	50	0	0	79.9	54.1	79.9	75	Yes
Tarzana Treatment Center, Inc.	60	0	0	79.9	67.2	78.3	75	Yes
Residences to the north between Sylvia Ave and Topeka Dr.	70	0	5	79.9	49.1	72.0	75	No
Residences to the north between Boyle Ave. and Calvin Ave.	80	0	5	79.9	49.2	70.8	75	No
Residences to the north between Victory Blvd. and Corbin Ave.	100	0	5	79.9	54.1	68.9	75	No
Residences to the south between Sylvia Ave and Topeka Dr.	100	0	0	79.9	68.9	73.9	75	No
Synagogue Beit Midrash Ohel Rachel	100	0	0	79.9	68.9	73.9	75	No
Woodcrest School	100	0	0	79.9	68.9	73.9	75	No
Residences to the north between De Soto Ave. and Oso Ave.	120	0	5	79.9	54.1	67.3	75	No
Miss Elizabeth's Piano Studio	120	0	5	79.9	68.9	67.3	75	No
Playa Music Lessons	120	0	0	79.9	68.9	72.3	75	No
Residences to the north between Canby Ave. and Etiwanda Ave.	150	0	5	79.9	49.1	65.4	75	No
Residences to the north between Lindley Ave. and White Oak Ave.	150	0	5	79.9	54.0	65.4	75	No
Residences to the north between White Oak Ave. and Encino Ave.	150	0	5	79.9	54.0	65.4	75	No
Chabad at Pierce Religious Institution	150	0	5	79.9	56.0	65.4	75	No

Renewal Health Group Sanctuary	150	0	0	79.9	68.9	70.4	75	No
Residences along Tampa Ave. to the south of Ventura Blvd.	160	0	0	79.9	61.5	69.8	75	No
Azar Garden	170	0	0	79.9	54.0	69.3	75	No
Residences to the north between Wilbur Ave. and Yolanda Ave.	180	0	0	79.9	52.2	68.8	75	No
Child's World School	180	0	5	79.9	61.5	63.8	75	No
Discovery School	320	0	0	79.9	52.2	63.8	75	No
LA Pierce College Child Development Center	360	0	0	79.9	56.0	62.8	75	No
Second Row Receptors								
Residences to the south between Victory Blvd. and Corbin Ave.	150	4.5	0	79.9	52.2	65.9	75	No
Residences along Tampa Ave. to the east between Topham St. and US101 Hwy.	170	4.5	0	79.9	54.0	64.8	75	No
Residences along Mason Ave.	180	4.5	0	79.9	54.1	64.3	75	No
Residences to the south between Boyle Ave. and Calvin Ave.	200	4.5	0	79.9	49.2	63.4	75	No
Residences to the south between Sylvia Ave and Topeka Dr.	220	4.5	0	79.9	49.1	62.5	75	No
Residences to the south between Lindley Ave. and White Oak Ave.	220	4.5	0	79.9	54.0	62.5	75	No
Residences to the south between White Oak Ave. and Encino Ave.	220	4.5	0	79.9	54.0	62.5	75	No
Gem Educare Daycare/Preschool	250	4.5	0	79.9	61.5	61.4	75	No
Residences along Tampa Ave. to the west between Topham St. and US101 Hwy.	250	4.5	0	79.9	54.0	61.4	75	No
Residences along Tampa Ave. to the South of Ventura Blvd.	320	4.5	0	79.9	61.5	59.3	75	No
Be Well Senior Living	320	4.5	0	79.9	54.0	59.3	75	No
California Zoroastrian Center	450	4.5	0	79.9	54.1	56.3	75	No
Third Row Receptors								
Bandrika Studios	400	6	0	79.9	56.0	55.8	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row
/b/ Includes a 5 dB adjustment for the Orange Line Busway Soundwall

CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS (MICROTUNNELING - WINNETKA AVE.)

Sensitive Receptors	Distance (feet)	Intervening Building /a/	Existing Orange Line Soundwall /b/	Reference Noise Level (dBA)	Max Construction Noise (dBA, Leq)	Existing Ambient (dBA, Leq)	LA City Noise Threshold	Exceed Threshold?
First Row Receptors								
Residences to the south along Topham St.	80	0	0	83.1	79.0	71.8	75	Yes
Residences to the north between Oso Ave. and Victory Blvd.	120	0	5	83.1	70.5	54.1	75	No
LA Pierce College Child Development Center	360	0	0	83.1	66.0	56.0	75	No
West Valley Occupational Center	500	0	0	83.1	63.1	56.0	75	No
Second Row Receptors								
Residences to the south along Penfield Ave.	220	4.5	0.0	83.1	65.7	52.2	75	No
Residences to the north between Oso Ave. and Victory Blvd.	300	4.5	5	83.1	58.0	54.1	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row
/b/ Includes a 5 dB adjustment for the Orange Line Busway Soundwall

CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS (MICROTUNNELING - CORBIN AVE.)

Sensitive Receptors	Distance (feet)	Intervening Building /a/	Existing Orange Line Soundwall /b/	Reference Noise Level (dBA)	Existing Ambient (dBA, Leq)	Max Construction Noise (dBA, Leq)	LA City Noise Threshold	Exceed Threshold?
First Row Receptors								
St. John's Lutheran Church	50	0	0	83.1	68.9	83.1	75	Yes
Residences to the south of Topham St.	60	0	0	83.1	68.9	81.5	75	Yes
Residences to the north of Topham St.	100	0	5	83.1	49.2	72.1	75	No
Second Row Receptors								
Residences to the south of Topham St.	200	4.5	0.0	83.1	52.2	66.6	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row
/b/ Includes a 5 dB adjustment for the Orange Line Busway Soundwall

CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS (MICROTUNNELING - TAMPA AVE.)

Sensitive Receptors	Distance (feet)	Intervening Building /a/	Existing Orange Line Soundwall /b/	Reference Noise Level (dBA)	Existing Ambient (dBA, Leq)	Max Construction Noise (dBA, Leq)	LA City Noise Threshold	Exceed Threshold?
First Row Receptors								
Residences to the north of Topham St.	70	0	5	83.1	49.2	75.2	75	Yes
Residences to the south of Topham St.	80	0	0	83.1	68.9	79.0	75	Yes
Woodcrest School	330	0	0	83.1	68.9	66.7	75	No
Second Row Receptors								
Residences to the north of Topham St.	230	4.5	5	83.1	49.2	60.3	75	No
Residences to the south of Topham St.	240	4.5	0	83.1	49.2	65.0	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row
/b/ Includes a 5 dB adjustment for the Orange Line Busway Soundwall

CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS (MICROTUNNELING - WILBUR AVE.)

Sensitive Receptors	Distance (feet)	Intervening Building /a/	Existing Orange Line Soundwall /b/	Reference Noise Level (dBA)	Existing Ambient (dBA, Leq)	Max Construction Noise (dBA, Leq)	LA City Noise Threshold	Exceed Threshold?
First Row Receptors								
Residences to the south of Oxnard St.	70	0	0	83.1	67.2	80.2	75	Yes
Residences to the north of Oxnard St.	75	0	0	83.1	49.1	79.6	75	Yes
Synagogue Beit Midrash Ohel Rachel	100	0	0	83.1	68.9	77.1	75	Yes
Discovery School	450	0	0	83.1	52.2	64.0	75	No
Second Row Receptors								
Residences to the south of Oxnard St.	200	4.5	0	83.1	67.2	66.6	75	No
Residences to the north of Oxnard St.	240	4.5	0	83.1	49.1	65.0	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row
/b/ Includes a 5 dB adjustment for the Orange Line Busway Soundwall

CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS (MICROTUNNELING - RESEDA BLVD.)

Sensitive Receptors	Distance (feet)	Intervening Building /a/	Existing Orange Line Soundwall /b/	Reference Noise Level (dBA)	Existing Ambient (dBA, Leq)	Max Construction Noise (dBA, Leq)	LA City Noise Threshold	Exceed Threshold?
First Row Receptors								
Residences to the north of Oxnard St.	260	0	5	83.1	49.1	63.8	75	No
Second Row Receptors								
Residences to the south of Oxnard St.	450	4.5	0	83.1	56.0	59.5	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row
/b/ Includes a 5 dB adjustment for the Orange Line Busway Soundwall

CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS (MICROTUNNELING - OXNARD ST.)

Sensitive Receptors	Distance (feet)	Intervening Building /a/	Existing Orange Line Soundwall /b/	Reference Noise Level (dBA)	Existing Ambient (dBA, Leq)	Max Construction Noise (dBA, Leq)	LA City Noise Threshold	Exceed Threshold?
First Row Receptors								
Residences to the south of Oxnard St. along Bullock St.	50	0	0	83.1	61.5	83.1	75	Yes
Residences to the north of Oxnard St. along Bessemer St.	130	0	5	83.1	49.1	69.8	75	No
Childs World School	180	0	0	83.1	61.5	72.0	75	No
Residences to the north of Oxnard St.	185	0	0	83.1	49.1	71.7	75	No
Residences to the south of Oxnard St.	300	0	0	83.1	61.5	67.5	75	No
Second Row Receptors								
Residences to the south of Oxnard St.	150	4.5	0	83.1	61.5	69.1	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row
/b/ Includes a 5 dB adjustment for the Orange Line Busway Soundwall

CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS (MICROTUNNELING - WHITE OAK AVE.)

Sensitive Receptors	Distance (feet)	Intervening Building /a/	Reference Noise Level (dBA)	Existing Ambient (dBA, Leq)	Max Construction Noise (dBA, Leq)	LA City Noise Threshold	Exceed Threshold?
First Row Receptors							
Residences to the south of Oxnard St.	50	0	83.1	73.3	83.1	75	Yes
Residences to the north of Oxnard St.	150	0	83.1	73.3	73.6	75	No
Second Row Receptors							
Residences to the south of Oxnard St.	200	4.5	83.1	73.3	66.6	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row

MITIGATED CONSTRUCTION NOISE

Sensitive Receptors	Distance (feet)	Intervening Building /a/	Existing Orange Line Soundwall /b/	Reference Noise Level (dBA)	Mitigation Measure /c/	Mitigation /c/	Existing Ambient (dBA, Leq)	Mitigated Reference Noise Level	Unmitigated Construction Noise Level	Mitigated Max Construction Noise (dBA, Leq)	LA City Noise Threshold	Exceed Threshold?
OPEN TRENCH CONSTRUCTION												
Residences to the south between Victory Blvd. and Corbin Ave.	50	0	0	79.9	N1	5	68.9	74.9	79.9	74.9	75	No
Residences to the south between Boyle Ave. and Calvin Ave.	50	0	0	79.9	N1	5	68.9	74.9	79.9	74.9	75	No
Residences to the south between Lindley Ave. and White Oak Ave.	50	0	0	79.9	N1	5	61.5	74.9	79.9	74.9	75	No
Residences to the south between White Oak Ave. and Encino Ave.	50	0	0	79.9	N1	5	61.5	74.9	79.9	74.9	75	No
Columbia College Hollywood	50	0	0	79.9	N1	5	67.2	74.9	79.9	74.9	75	No
St. John's Lutheran Church	50	0	0	79.9	N1	5	68.9	74.9	79.9	74.9	75	No
Residences along Tampa Ave. to the west and east between Topham St. and US101 Hwy.	50	0	0	79.9	N1	5	68.9	74.9	79.9	74.9	75	No
Residences along Mason Ave.	50	0	0	79.9	N1	5	54.1	74.9	79.9	74.9	75	No
Tarzana Treatment Center, Inc.	60	0	0	79.9	N1	5	67.2	74.9	78.3	73.3	75	No
Residences to the north between Sylvia Ave and Topeka Dr.	70	0	5	79.9	N1	5	49.1	74.9	72.0	67.0	75	No
Residences to the north between Boyle Ave. and Calvin Ave.	80	0	5	79.9	N1	5	49.2	74.9	70.8	65.8	75	No
Residences to the north between Victory Blvd. and Corbin Ave.	100	0	5	79.9	N1	5	54.1	74.9	68.9	63.9	75	No
Residences to the south between Sylvia Ave and Topeka Dr.	100	0	0	79.9	N1	5	68.9	74.9	73.9	68.9	75	No
Synagogue Beit Midrash Ohel Rachel	100	0	0	79.9	N1	5	68.9	74.9	73.9	68.9	75	No
Woodcrest School	100	0	0	79.9	N1	5	68.9	74.9	73.9	68.9	75	No
Residences to the north between De Soto Ave. and Oso Ave.	120	0	5	79.9	N1	5	54.1	74.9	67.3	62.3	75	No

Miss Elizabeth's Piano Studio	120	0	5	79.9	N1	5	68.9	74.9	67.3	62.3	75	No
Playa music Lessons	120	0	0	79.9	N1	5	68.9	74.9	72.3	67.3	75	No
Residences to the north between Canby Ave. and Etiwanda Ave.	150	0	5	79.9	N1	5	49.1	74.9	65.4	60.4	75	No
Residences to the north between Lindley Ave. and White Oak Ave.	150	0	5	79.9	N1	5	54.0	74.9	65.4	60.4	75	No
Residences to the north between White Oak Ave. and Encino Ave.	150	0	5	79.9	N1	5	54.0	74.9	65.4	60.4	75	No
Chabad at Pierce Religious Institution	150	0	5	79.9	N1	5	56	74.9	65.4	60.4	75	No
Renewal Health Group Sanctuary	150	0	0	79.9	N1	5	68.9	74.9	70.4	65.4	75	No
Residences to the south between Victory Blvd. and Corbin Ave.	150	4.5	0	79.9	N1	5	52.2	74.9	65.9	60.9	75	No
Residences along Tampa Ave. to the south of Ventura Blvd.	160	0	0	79.9	N1	5	61.5	74.9	69.8	64.8	75	No
Azar Garden	170	0	0	79.9	N1	5	54.0	74.9	69.3	64.3	75	No
Residences along Tampa Ave. to the east between Topham St. and US101 Hwy.	170	4.5	0	79.9	N1	5	54.0	74.9	64.8	59.8	75	No
Residences to the north between Wilbur Ave. and Yolanda Ave.	180	0	0	79.9	N1	5	52.2	74.9	68.8	63.8	75	No
Child's World School	180	0	5	79.9	N1	5	61.5	74.9	63.8	58.8	75	No
Residences along Mason Ave.	180	4.5	0	79.9	N1	5	54.1	74.9	64.3	59.3	75	No
Residences to the south between Boyle Ave. and Calvin Ave.	200	4.5	0	79.9	N1	5	49.2	74.9	63.4	58.4	75	No
Residences to the south between Sylvia Ave and Topeka Dr.	220	4.5	0	79.9	N1	5	49.1	74.9	62.5	57.5	75	No
Residences to the south between Lindley Ave. and White Oak Ave.	220	4.5	0	79.9	N1	5	54.0	74.9	62.5	57.5	75	No
Residences to the south between White Oak Ave. and Encino Ave.	220	4.5	0	79.9	N1	5	54.0	74.9	62.5	57.5	75	No
Gem Educare Daycare/Preschool	250	4.5	0	79.9	N1	5	61.5	74.9	61.4	56.4	75	No
Residences along Tampa Ave. to the west between Topham St. and US101 Hwy.	250	4.5	0	79.9	N1	5	54.0	74.9	61.4	56.4	75	No
Discovery School	320	0	0	79.9	N1	5	52.2	74.9	63.8	58.8	75	No
Residences along Tampa Ave. to the South of Ventura Blvd.	320	4.5	0	79.9	N1	5	61.5	74.9	59.3	54.3	75	No
Be Well Senior Living	320	4.5	0	79.9	N1	5	54.0	74.9	59.3	54.3	75	No
LA Pierce College Child Development Center	360	0	0	79.9	N1	5	56.0	74.9	62.8	57.8	75	No
Bandrika Studios	400	6	0	79.9	N1	5	56.0	74.9	55.8	50.8	75	No
California Zoroastrian Center	450	4.5	0	79.9	N1	5	54.1	74.9	56.3	51.3	75	No
MICROTUNNELING - WINNETKA AVE.												
Residences to the south along Topham St.	80	0	0	83.1	N1, N6	15	71.8	68.1	79.0	64.0	75	No
Residences to the north between Oso Ave. and Victory Blvd.	120	0	5	83.1	N1, N6	15	54.1	68.1	70.5	55.5	75	No
Residences to the south along Penfield Ave.	220	4.5	0.0	83.1	N1, N6	15	52.2	68.1	65.7	50.7	75	No
Residences to the north between Oso Ave. and Victory Blvd.	300	4.5	5	83.1	N1, N6	15	54.1	68.1	58.0	43.0	75	No
LA Pierce College Child Development Center	360	0	0	83.1	N1, N6	15	56.0	68.1	66.0	51.0	75	No
West Valley Occupational Center	500	0	0	83.1	N1, N6	15	56.0	68.1	63.1	48.1	75	No
MICROTUNNELING - CORBIN AVE.												
St. John's Lutheran Church	50	0	0	83.1	N1, N6	15	68.9	68.1	83.1	68.1	75	No
Residences to the south between Corbin Ave. and Melvin Ave.	60	0	0	83.1	N1, N6	15	68.9	68.1	81.5	66.5	75	No
Residences to the north between Corbin Ave. and Melvin Ave.	100	0	5	83.1	N1, N6	15	49.2	68.1	72.1	57.1	75	No
Residences to the south between Corbin Ave. and Melvin Ave.	200	4.5	0	83.1	N1, N6	15	52.2	68.1	66.6	51.6	75	No
MICROTUNNELING - TAMPA AVE.												
Residences to the north between Calvin Ave. and Sylvia Ave	70	0	5	83.1	N1, N6	15	49.2	68.1	75.2	60.2	75	No
Residences to the south between Calvin Ave. and Sylvia Ave	80	0	0	83.1	N1, N6	15	68.9	68.1	79.0	64.0	75	No
Woodcrest School	330	0	0	83.1	N1, N6	15	68.9	68.1	66.7	51.7	75	No
Residences to the north of Topham St.	230	4.5	5	83.1	N1, N6	15	49.2	68.1	60.3	45.3	75	No
Residences to the south of Topham St.	240	4.5	0	83.1	N1, N6	15	49.2	68.1	65.0	50.0	75	No
MICROTUNNELING - WILBUR AVE.												
Residences to the south of Oxnard St.	70	0	0	83.1	N1, N6	15	67.2	68.1	80.2	65.2	75	No
Residences to the north of Oxnard St.	75	0	0	83.1	N1, N6	15	49.1	68.1	79.6	64.6	75	No
Synagogue Beit Midrash Ohel Rachel	100	0	0	83.1	N1, N6	15	68.9	68.1	77.1	62.1	75	No
Residences to the south of Oxnard St.	200	4.5	0	83.1	N1, N6	15	67.2	68.1	66.6	51.6	75	No
Residences to the north of Oxnard St.	240	4.5	0	83.1	N1, N6	15	49.1	68.1	65.0	50.0	75	No
Discovery School	450	0	0	83.1	N1, N6	15	52.2	68.1	64.0	49.0	75	No
MICROTUNNELING - RESEDA BLVD												
Residences to the north of Oxnard St.	260	0	5	83.1	N1	5	49.1	78.1	63.8	58.8	75	No
Residences to the south of Oxnard St.	450	4.5	0	83.1	N1	5	56.0	78.1	59.5	54.5	75	No
MICROTUNNELING - OXNARD ST.												
Residences to the south of Oxnard St. along Bullock St.	50	0	0	83.1	N1, N6	15	61.5	68.1	83.1	68.1	75	No
Residences to the north of Oxnard St. along Bessemer St.	130	0	5	83.1	N1, N6	15	49.1	68.1	69.8	54.8	75	No
Residences to the south of Oxnard St.	150	4.5	0.0	83.1	N1, N6	15	61.5	68.1	69.1	54.1	75	No
Childs World School	180	0	0	83.1	N1, N6	15	61.5	68.1	72.0	57.0	75	No
Residences to the north of Oxnard St.	185	0	0	83.1	N1, N6	15	49.1	68.1	71.7	56.7	75	No
Residences to the south of Oxnard St.	300	0	0	83.1	N1, N6	15	61.5	68.1	67.5	52.5	75	No
MICROTUNNELING - WHITE OAK AVE												
Residences to the south of Oxnard St.	50	0	0.0	83.1	N1, N6	15	73.3	68.1	83.1	68.1	75	No
Residences to the north of Oxnard St.	150	0	0.0	83.1	N1, N6	15	73.3	68.1	73.6	58.6	75	No
Residences to the south of Oxnard St.	200	4.5	0.0	83.1	N1, N6	15	73.3	68.1	66.6	51.6	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row
/b/ Includes a 5 dB adjustment for the Orange Line Busway Soundwall
/c/ Mitigation Measure N1 includes a 5 dB reduction for equipment mufflers, Mitigation Measure N6 includes a 10 dB reduction for a temporary noise barrier.

Vibration Formulas

Vibration PPV Attenuation

Equation: PPVequip = PPVref x (25/D)^1.5
PPV (equip) is the peak particle velocity in in/sec of the equipment adjusted for distance
PPV (ref) is the reference vibration level in in/sec at 25 feet from Table 12-2
D is the distance from the equipment to the receiver.

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, September 2018.

Vibration VdB Attenuation

Equation: Lv(D) = Lv(25 ft) – 30log(D/25)
D = Distance (feet)
Lv(D) = Vibration Level

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, September 2018.

Vibration Damage and Annoyance Analysis

Construction Vibration Damage Criteria	
Building/Structural Category	**PPV, in/sec**
Reinforced-concrete, steel or timber	0.500
Non-engineered timber and masonry buildings	0.200
Buildings extremely susceptible to vibration damage	0.120

Vibration Velocities for Construction Equipment				
Equipment	**PPV at 25 Feet (Inches/Second)**	**PPV at 50 Feet (Inches/Second)**	**VdB at 25 feet (Micro-Inches/Second)**	**VdB at 50 feet (Micro-Inches/Second)**
Caisson Drill	0.089	0.031	87	78
Excavator	0.040	0.014	80	71
Pile Driver (Sonic)	0.170	0.060	93	84
Small Bulldozer	0.003	0.001	58	49

Historic Uses Vibration Analysis						
Historic Uses	**Address**	**Distance from Construction Activity (feet) /a/**	**Reference Equipment**	**Reference Vibration Level**	**PPV at Historic Use (Inches/Second) - Excavator**	**Exceed Threshold?**
Historic Residential Structure	6270 N. Lubao Street Woodland Hills, CA 91367	220	Pile Driver (Sonic)	0.17	0.0065	No

/a/ The distance between construction activity and property line of Northridge Middle School is 380 feet, but the distance to the nearest structure within the property

Source: FTA, Transit Noise and Vibration Impact Assessment, September 2018; New Hampshire Department of Transportation, Ground Vibrations Emanating from Construction Equipment, September 8, 2012

Noise Monitoring Data

Site 1: 20645 Hayne Street

Session Report

4/18/2022

Information Panel

Name	LADWP_Topham_Site1
Start Time	4/13/2022 3:09:18 PM
Stop Time	4/13/2022 3:24:41 PM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:10

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	54.1 dB	Lmax	1	70.1 dB
Lmin	1	45.9 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

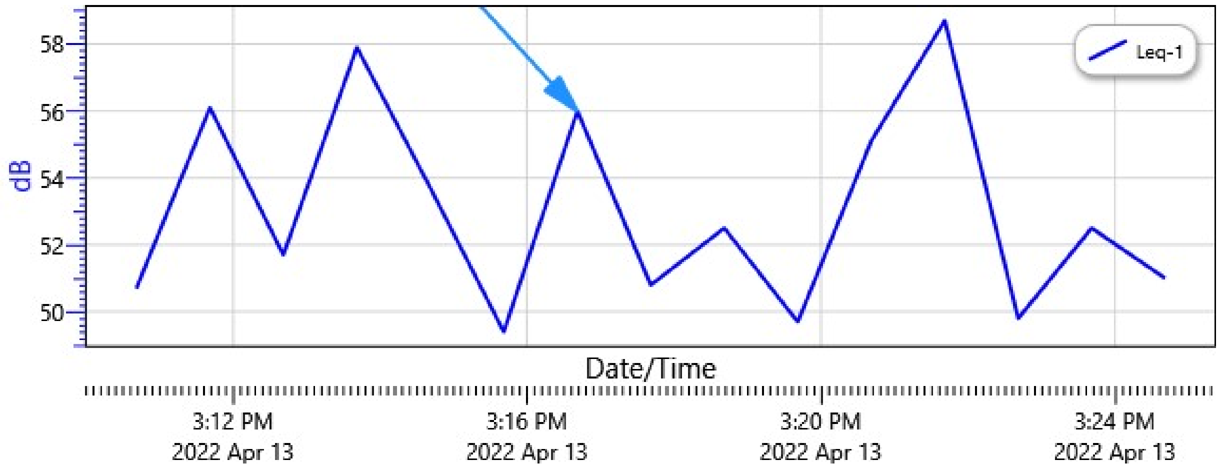
Logged Data Table

Date/Time	Leq-1
4/13/2022 3:10:41 PM	50.7
3:11:41 PM	56.1
3:12:41 PM	51.7
3:13:41 PM	57.9
3:14:41 PM	53.7
3:15:41 PM	49.4
3:16:41 PM	56
3:17:41 PM	50.8
3:18:41 PM	52.5
3:19:41 PM	49.7
3:20:41 PM	55.1
3:21:41 PM	58.7
3:22:41 PM	49.8

3:23:41 PM	52.5
3:24:41 PM	51

Logged Data Chart

LADWP_Topham_Site1: Logged Data Chart



Noise Measurement Report Form

Project: Topham Contract No (s): N/A

Date: 4/13 Day of Week: Wed Time: 3:08 PM

Monitoring Site Number: 1 Monitoring Site Address: 20561 Haynes St

Measurement Taken By: AH

Approximate Wind Speed: 5 mph [km/hr] Approximate Wind Direction: From the W

Approximate distance of Sound Level Meter from Receptor Location: 20 ft

Approximate distance of Sound Level Meter from Project Site:

Receptor Land Use (Check One) ☒ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: Serial Number:

Meter Setting ☒ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15 min

Check the measurement purpose:

☒ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114	n/a	n/a
L_{eq}	54.1		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. Approx 400 ft east of point due to leaf blower

2.

3.

4.

Site 2: Mason Avenue and Olympic Drive

Session Report

4/18/2022

Information Panel

Name	LADWP_Topham_Site2
Start Time	4/13/2022 2:37:20 PM
Stop Time	4/13/2022 2:52:20 PM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	55.6 dB	Lmax	1	70.9 dB
Lmin	1	47.4 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

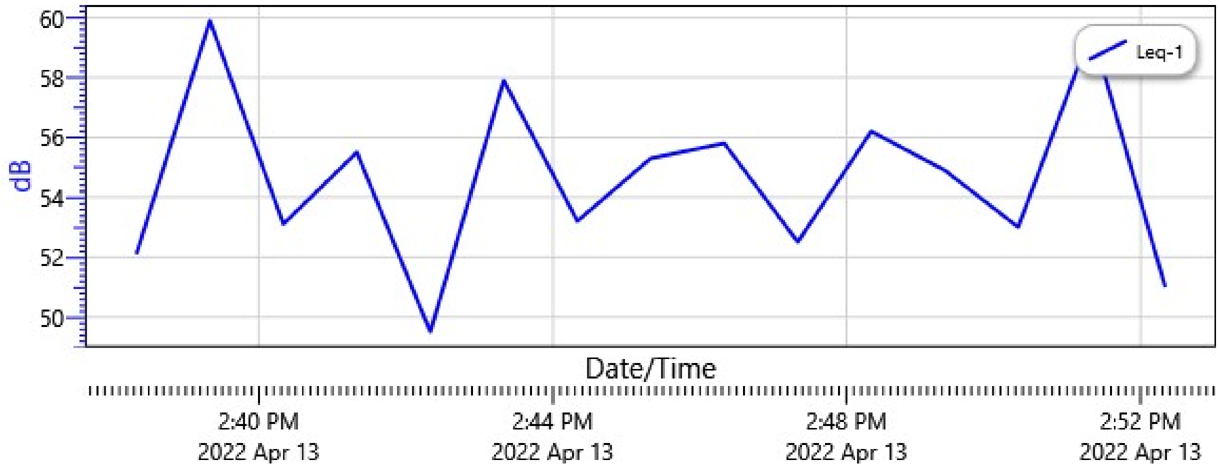
Logged Data Table

Date/Time	Leq-1
4/13/2022 2:38:20 PM	52.1
2:39:20 PM	59.9
2:40:20 PM	53.1
2:41:20 PM	55.5
2:42:20 PM	49.5
2:43:20 PM	57.9
2:44:20 PM	53.2
2:45:20 PM	55.3
2:46:20 PM	55.8
2:47:20 PM	52.5
2:48:20 PM	56.2
2:49:20 PM	54.9
2:50:20 PM	53

2:51:20 PM	59.6
2:52:20 PM	51

Logged Data Chart

LADWP_Topham_Site2: Logged Data Chart



Noise Measurement Report Form

Project: Topham Contract No (s): N/A

Date: 4/13 Day of Week: Wed Time: 2:35 PM

Monitoring Site Number: 2 Monitoring Site Address: 6201 Winnetka Ave

Measurement Taken By: HT

Approximate Wind Speed: 10 mph [km/hr] Approximate Wind Direction: From the E S

Approximate distance of Sound Level Meter from Receptor Location: 30 ft

Approximate distance of Sound Level Meter from Project Site: ______

Receptor Land Use (Check One) ☒ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: ______ Serial Number: ______

Meter Setting ☒ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15 min

Check the measurement purpose:

☒ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114	n/a	n/a
L_{eq}	55.6		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

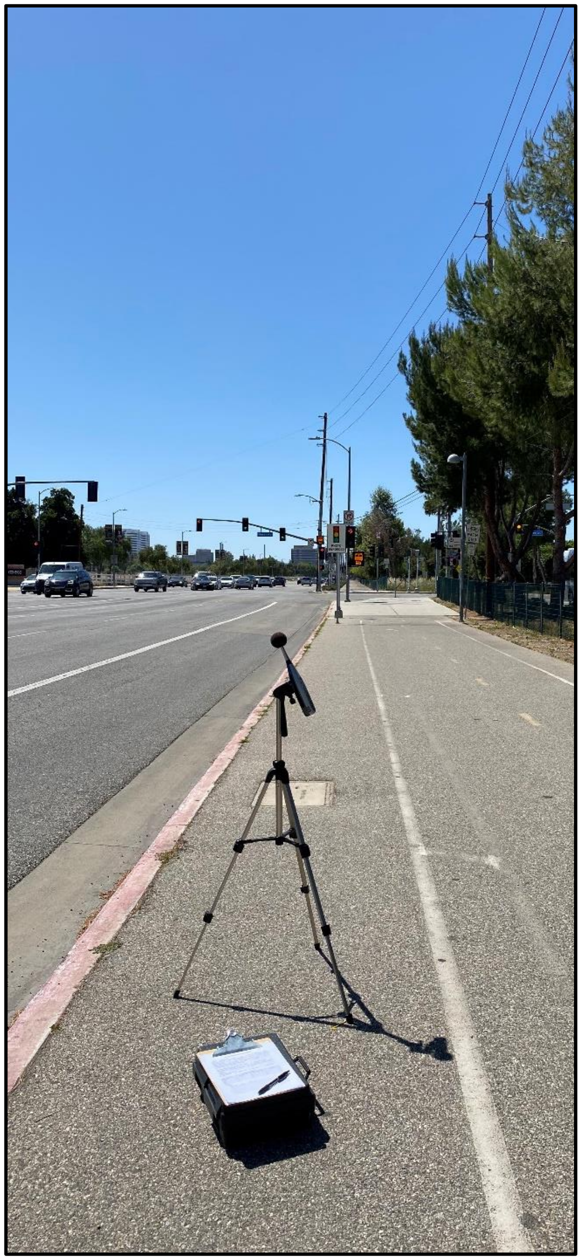
1. Exact point location

2.

3.

4.

Site 3: Mason Avenue and Victory Boulevard



Session Report

4/18/2022

Information Panel

Name	LADWP_Topham_Site3
Start Time	4/13/2022 2:15:39 PM
Stop Time	4/13/2022 2:30:39 PM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	70.4 dB	Lmax	1	79.4 dB
Lmin	1	47.2 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

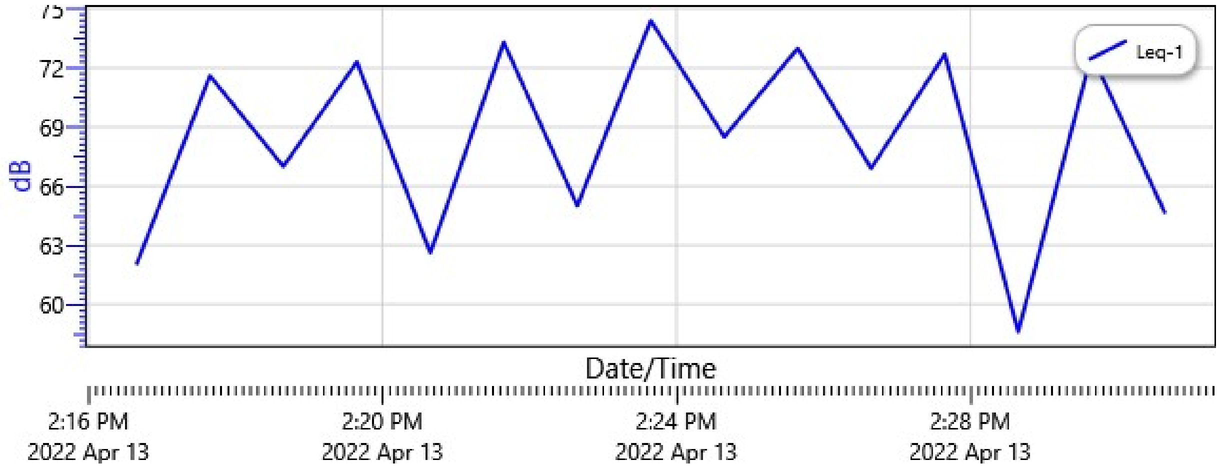
Logged Data Table

Date/Time	Leq-1
4/13/2022 2:16:39 PM	62
2:17:39 PM	71.6
2:18:39 PM	67
2:19:39 PM	72.3
2:20:39 PM	62.6
2:21:39 PM	73.3
2:22:39 PM	65
2:23:39 PM	74.4
2:24:39 PM	68.5
2:25:39 PM	73
2:26:39 PM	66.9
2:27:39 PM	72.7
2:28:39 PM	58.6

2:29:39 PM	72.7
2:30:39 PM	64.6

Logged Data Chart

LADWP_Topham_Site3: Logged Data Chart



Noise Measurement Report Form

Project: Topham	Contract No (s): N/A

Date: 4/13	Day of Week: Wed	Time: 2:13 PM

Monitoring Site Number: 3	Monitoring Site Address: 20498 Victory (North side)

Measurement Taken By: HH

Approximate Wind Speed: 5 mph [km/hr]	Approximate Wind Direction: From the N

Approximate distance of Sound Level Meter from Receptor Location: 40 ft

Approximate distance of Sound Level Meter from Project Site:

Receptor Land Use (Check One) ☒ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model:	Serial Number:

Meter Setting ☒ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15 min

Check the measurement purpose:

☒ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114	n/a	n/a
L_{eq}	70.4		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. Front point location

2.

3.

4.

Site 4: G (Orange) Line Busway and Victory Boulevard

Session Report

4/18/2022

Information Panel

Name	LADWP_Topham_Site4
Start Time	4/13/2022 1:41:55 PM
Stop Time	4/13/2022 1:56:55 PM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	71.8 dB	Lmax	1	82 dB
Lmin	1	49.8 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

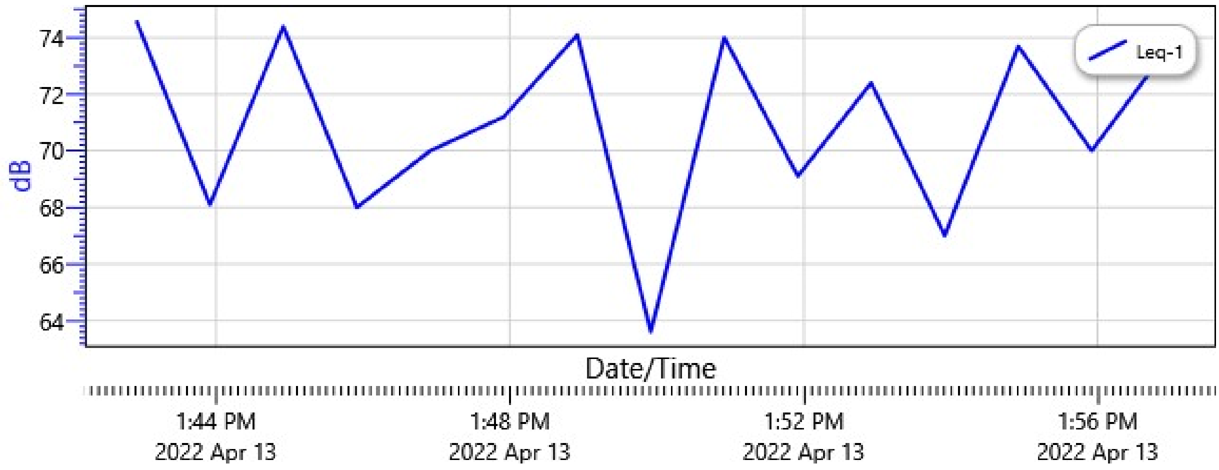
Logged Data Table

Date/Time	Leq-1
4/13/2022 1:42:55 PM	74.6
1:43:55 PM	68.1
1:44:55 PM	74.4
1:45:55 PM	68
1:46:55 PM	70
1:47:55 PM	71.2
1:48:55 PM	74.1
1:49:55 PM	63.6
1:50:55 PM	74
1:51:55 PM	69.1
1:52:55 PM	72.4
1:53:55 PM	67
1:54:55 PM	73.7

1:55:55 PM	70
1:56:55 PM	73.5

Logged Data Chart

LADWP_Topham_Site4: Logged Data Chart



Noise Measurement Report Form

Project: Topham   Contract No (s): N/A

Date: 4/13   Day of Week: Wed   Time: 1:40 PM

Monitoring Site Number: 4   Monitoring Site Address: 19930 Friar St (Victory Side)

Measurement Taken By: HH

Approximate Wind Speed: 5 mph [km/hr]   Approximate Wind Direction: From the N

Approximate distance of Sound Level Meter from Receptor Location: 15 ft

Approximate distance of Sound Level Meter from Project Site:

Receptor Land Use (Check One) ☒ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: Serial Number:

Meter Setting ☒ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15 min

Check the measurement purpose:

☒ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

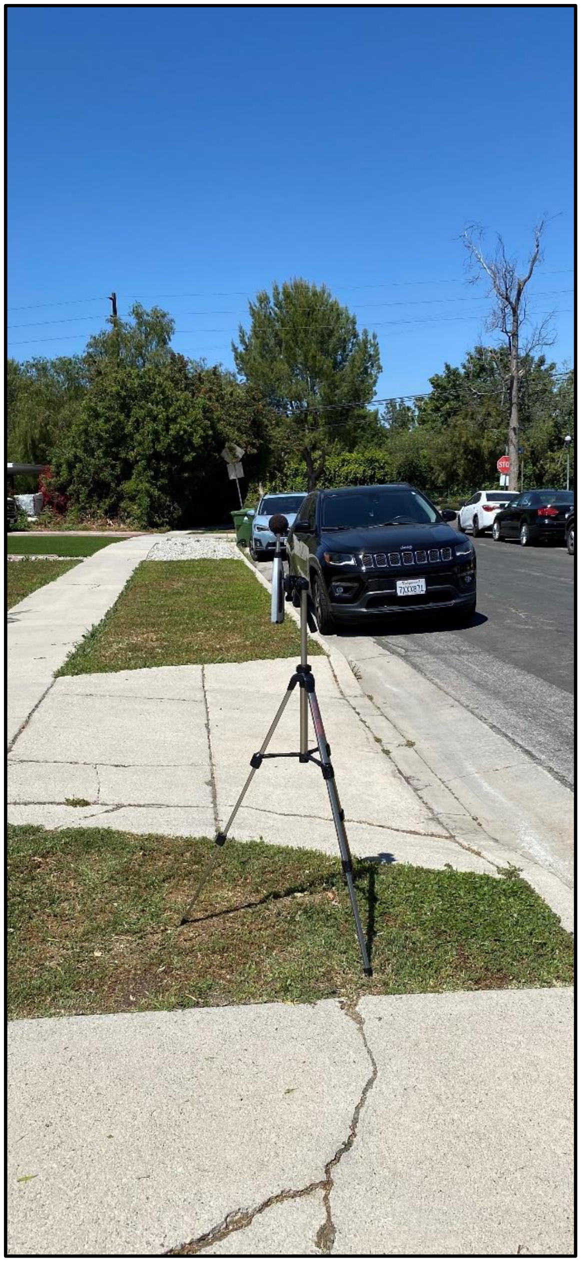
Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114	n/a	n/a
L_{eq}	71.9		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. Exact point location
2.
3.
4.

Site 5: 6263 Oakdale Avenue



Session Report

4/18/2022

Information Panel

Name	LADWP_Topham_Site5
Start Time	4/13/2022 1:18:22 PM
Stop Time	4/13/2022 1:33:22 PM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	52.2 dB	Lmax	1	67.5 dB
Lmin	1	46 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

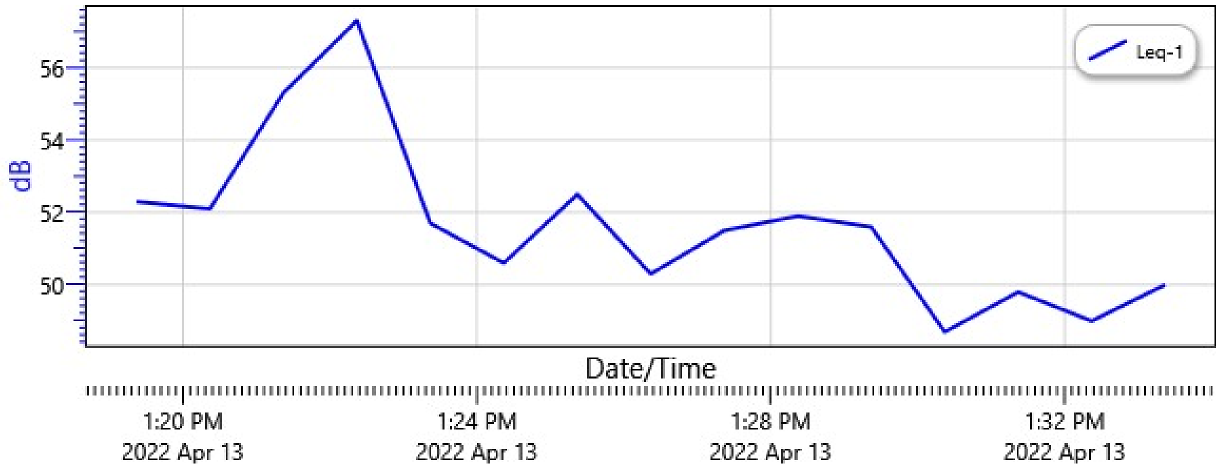
Logged Data Table

Date/Time	Leq-1
4/13/2022 1:19:22 PM	52.3
1:20:22 PM	52.1
1:21:22 PM	55.3
1:22:22 PM	57.3
1:23:22 PM	51.7
1:24:22 PM	50.6
1:25:22 PM	52.5
1:26:22 PM	50.3
1:27:22 PM	51.5
1:28:22 PM	51.9
1:29:22 PM	51.6
1:30:22 PM	48.7
1:31:22 PM	49.8

1:32:22 PM	49
1:33:22 PM	50

Logged Data Chart

LADWP_Topham_Site5: Logged Data Chart



Noise Measurement Report Form

Project: Topham Contract No (s): N/A

Date: 4/13 Day of Week: Wed Time: 1:16 PM

Monitoring Site Number: 5 Monitoring Site Address: 1269 Oakdale Ave

Measurement Taken By: HH

Approximate Wind Speed: 5 mph [km/hr] Approximate Wind Direction: From the N

Approximate distance of Sound Level Meter from Receptor Location: 40 ft

Approximate distance of Sound Level Meter from Project Site: ______

Receptor Land Use (Check One) ☒ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: ______ Serial Number: ______

Meter Setting ☒ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15 min

Check the measurement purpose:

☒ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114	n/a	n/a
L_{eq}	52.3		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. Exact point location
2. 1-2 dogs barking somewhat frequently
Faint leaf blower & housing
3. construction half - block down
~~other side of this~~ the street over
4.

Site 6: G (Orange) Line Busway Bike Path

Session Report

4/18/2022

Information Panel

Name	LADWP_Topham_Site6
Start Time	4/13/2022 11:53:46 AM
Stop Time	4/13/2022 12:08:46 PM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	68.9 dB	Lmax	1	82.1 dB
Lmin	1	44.7 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

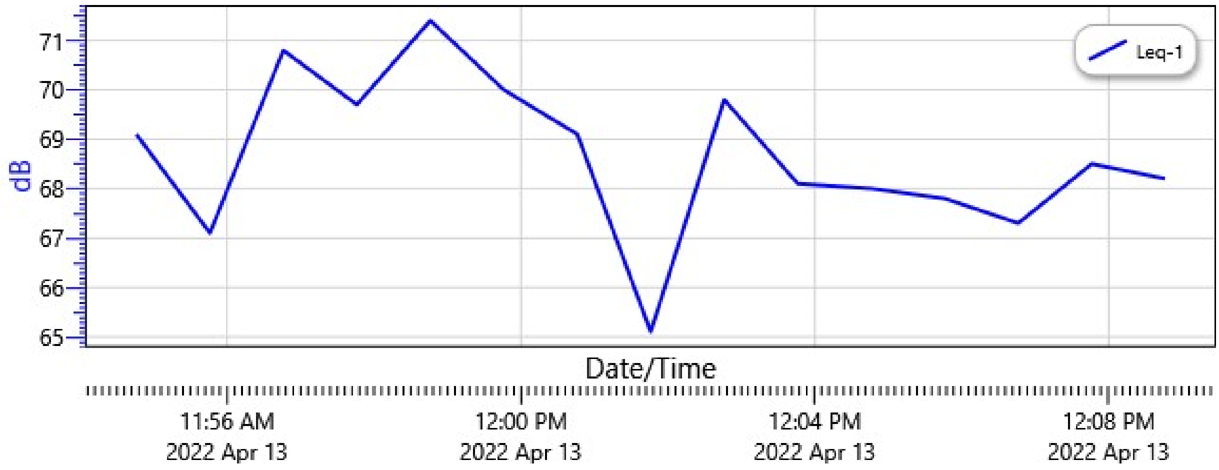
Logged Data Table

Date/Time	Leq-1
4/13/2022 11:54:46 AM	69.1
11:55:46 AM	67.1
11:56:46 AM	70.8
11:57:46 AM	69.7
11:58:46 AM	71.4
11:59:46 AM	70
12:00:46 PM	69.1
12:01:46 PM	65.1
12:02:46 PM	69.8
12:03:46 PM	68.1
12:04:46 PM	68
12:05:46 PM	67.8
12:06:46 PM	67.3

12:07:46 PM	68.5
12:08:46 PM	68.2

Logged Data Chart

LADWP_Topham_Site6: Logged Data Chart



Noise Measurement Report Form

Project: Topham

Contract No (s): N/A

Date: 4/13

Day of Week: Wed

Time: 11:54 AM

Monitoring Site Number: 6

Monitoring Site Address: 19422 Topham St

Measurement Taken By: HH

Approximate Wind Speed: 5 mph [km/hr]

Approximate Wind Direction: From the N

Approximate distance of Sound Level Meter from Receptor Location: 25 ft

Approximate distance of Sound Level Meter from Project Site:

Receptor Land Use (Check One) ☑ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model:

Serial Number:

Meter Setting ☑ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15 min

Check the measurement purpose:

☑ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114	n/a	n/a
L_{eq}	68.9		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. site Moved approx 300 ft east due to leaf blower

2.

3.

4.

Site 7: 6200 Tunney Avenue

Session Report

4/18/2022

Information Panel

Name	LADWP_Topham_Site7
Start Time	4/13/2022 11:22:59 AM
Stop Time	4/13/2022 11:38:27 AM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:20

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	49.2 dB	Lmax	1	64.2 dB
Lmin	1	44.5 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

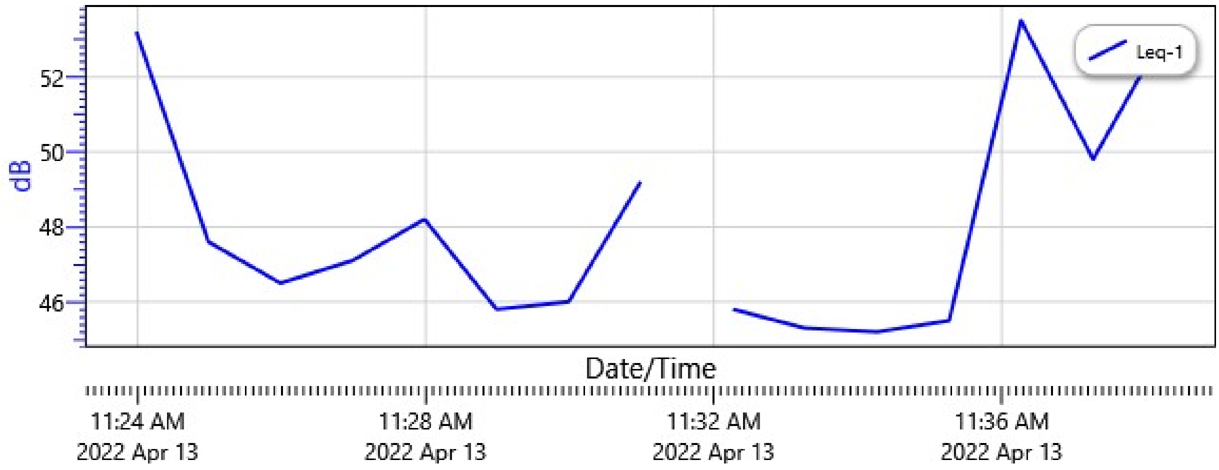
Logged Data Table

Date/Time	Leq-1
4/13/2022 11:23:59 AM	53.2
11:24:59 AM	47.6
11:25:59 AM	46.5
11:26:59 AM	47.1
11:27:59 AM	48.2
11:28:59 AM	45.8
11:29:59 AM	46
11:30:59 AM	49.2
11:32:16 AM	45.8
11:33:16 AM	45.3
11:34:16 AM	45.2
11:35:16 AM	45.5
11:36:16 AM	53.5

11:37:16 AM	49.8
11:38:16 AM	53.2

Logged Data Chart

LADWP_Topham_Site7: Logged Data Chart



Noise Measurement Report Form

Project: Topham Contract No (s): N/A

Date: 4/13 Day of Week: Wed Time: 11:20 AM

Monitoring Site Number: 7 Monitoring Site Address: 6201 Tunney Ave

Measurement Taken By: HH

Approximate Wind Speed: 5 mph [km/hr] Approximate Wind Direction: From the N

Approximate distance of Sound Level Meter from Receptor Location: 20 ft

Approximate distance of Sound Level Meter from Project Site:

Receptor Land Use (Check One) ☒ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: Serial Number:

Meter Setting ☒ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15 Min

Check the measurement purpose:

☒ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114	n/a	n/a
L_{eq}	49.7		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. Exact Point location
2. Pause @ 8:09 for someone asking questions loudly
3.
4.

Site 8: 18924 Bessemer Street

Session Report

4/18/2022

Information Panel

Name	LADWP_Topham_Site8
Start Time	4/13/2022 10:58:27 AM
Stop Time	4/13/2022 11:13:27 AM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	49.1 dB	Lmax	1	59.2 dB
Lmin	1	45.7 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

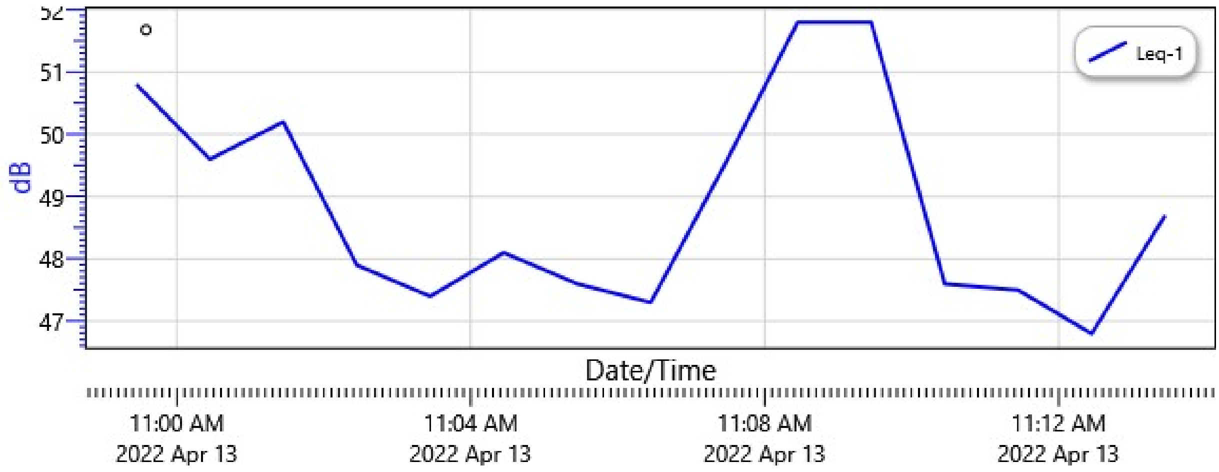
Logged Data Table

Date/Time	Leq-1
4/13/2022 10:59:27 AM	50.8
11:00:27 AM	49.6
11:01:27 AM	50.2
11:02:27 AM	47.9
11:03:27 AM	47.4
11:04:27 AM	48.1
11:05:27 AM	47.6
11:06:27 AM	47.3
11:07:27 AM	49.5
11:08:27 AM	51.8
11:09:27 AM	51.8
11:10:27 AM	47.6
11:11:27 AM	47.5

11:12:27 AM	46.8
11:13:27 AM	48.7

Logged Data Chart

LADWP_Topham_Site8: Logged Data Chart



Noise Measurement Report Form

Project: Topham　　Contract No (s): N/A

Date: 4/13　　Day of Week: Wed　　Time: 10:56 AM

Monitoring Site Number: 8　　Monitoring Site Address: 18930 Bessmer St

Measurement Taken By: HH

Approximate Wind Speed: 10 mph [km/hr]　　Approximate Wind Direction: From the N

Approximate distance of Sound Level Meter from Receptor Location: 20 ft

Approximate distance of Sound Level Meter from Project Site:

Receptor Land Use (Check One) ☒ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: 　　Serial Number:

Meter Setting ☒ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15 min

Check the measurement purpose:

☒ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114	n/a	n/a
L_{eq}	49.2		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. ~~[illegible] point location~~ ~10 ft south of point location, in street up against curb

2.

3.

4.

Site 9: 6039 Reseda Boulevard

Session Report

4/18/2022

Information Panel

Name	LADWP_Topham_Site9
Start Time	4/13/2022 10:33:28 AM
Stop Time	4/13/2022 10:48:28 AM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	67.2 dB	Lmax	1	77.7 dB
Lmin	1	51.2 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

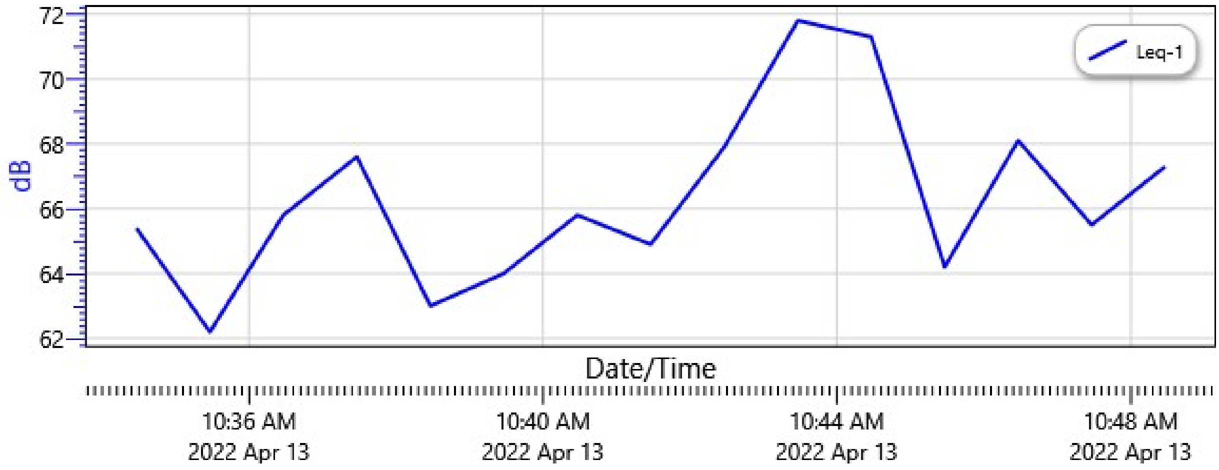
Logged Data Table

Date/Time	Leq-1
4/13/2022 10:34:28 AM	65.4
10:35:28 AM	62.2
10:36:28 AM	65.8
10:37:28 AM	67.6
10:38:28 AM	63
10:39:28 AM	64
10:40:28 AM	65.8
10:41:28 AM	64.9
10:42:28 AM	67.9
10:43:28 AM	71.8
10:44:28 AM	71.3
10:45:28 AM	64.2
10:46:28 AM	68.1

10:47:28 AM	65.5
10:48:28 AM	67.3

Logged Data Chart

LADWP_Topham_Site9: Logged Data Chart



Noise Measurement Report Form

Project: Topham Contract No (s): N/A

Date: 4/12 Day of Week: Wed Time: 10:32 AM

Monitoring Site Number: 9 Monitoring Site Address: 6039 Reseda (Oxnard side)

Measurement Taken By: HH

Approximate Wind Speed: 10 mph [km/hr] Approximate Wind Direction: From the N

Approximate distance of Sound Level Meter from Receptor Location: –

Approximate distance of Sound Level Meter from Project Site:

Receptor Land Use (Check One) ☒ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: Serial Number:

Meter Setting ☒ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15 min

Check the measurement purpose:

☒ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114	n/a	n/a
L_{eq}	67.2		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. Exact point location

2.

3.

4.

Site 10: 18053 W. Oxnard Street

Session Report

4/18/2022

Information Panel

Name	LADWP_Topham_Site10
Start Time	4/13/2022 10:07:21 AM
Stop Time	4/13/2022 10:22:21 AM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	65.1 dB	Lmax	1	83.9 dB
Lmin	1	48.1 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

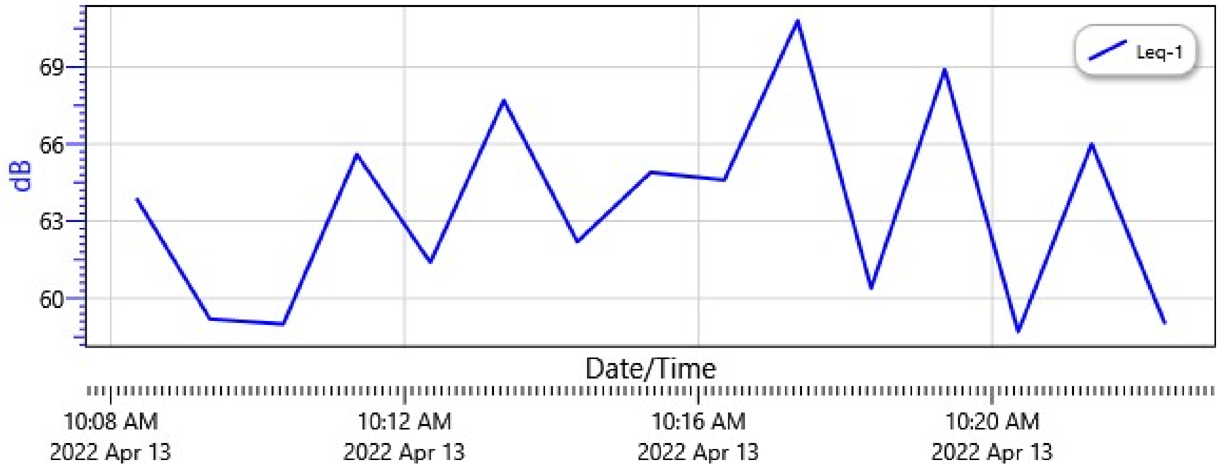
Logged Data Table

Date/Time	Leq-1
4/13/2022 10:08:21 AM	63.9
10:09:21 AM	59.2
10:10:21 AM	59
10:11:21 AM	65.6
10:12:21 AM	61.4
10:13:21 AM	67.7
10:14:21 AM	62.2
10:15:21 AM	64.9
10:16:21 AM	64.6
10:17:21 AM	70.8
10:18:21 AM	60.4
10:19:21 AM	68.9
10:20:21 AM	58.7

10:21:21 AM	66
10:22:21 AM	59

Logged Data Chart

LADWP_Topham_Site10: Logged Data Chart



Noise Measurement Report Form

Project: Topham　　Contract No (s): N/A

Date: 4/13　　Day of Week: Wed　　Time: 10:05 AM

Monitoring Site Number: 10　　Monitoring Site Address: 18039 Bullock St (ground side)

Measurement Taken By: HH

Approximate Wind Speed: 10 mph [km/hr]　　Approximate Wind Direction: From the N

Approximate distance of Sound Level Meter from Receptor Location: 15

Approximate distance of Sound Level Meter from Project Site: ______

Receptor Land Use (Check One) ☒ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: ______　　Serial Number: ______

Meter Setting ☒ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15 min

Check the measurement purpose:

☒ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	~~[illegible]~~ 114	n/a	n/a
L_{eq}	65.2		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. Exact point location

2.

3.

4.

Site 11: 18731 Bullock Street

Session Report

4/18/2022

Information Panel

Name	LADWP_Topham_Site11
Start Time	4/13/2022 9:40:10 AM
Stop Time	4/13/2022 9:55:10 AM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	54 dB	Lmax	1	68.9 dB
Lmin	1	45.7 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

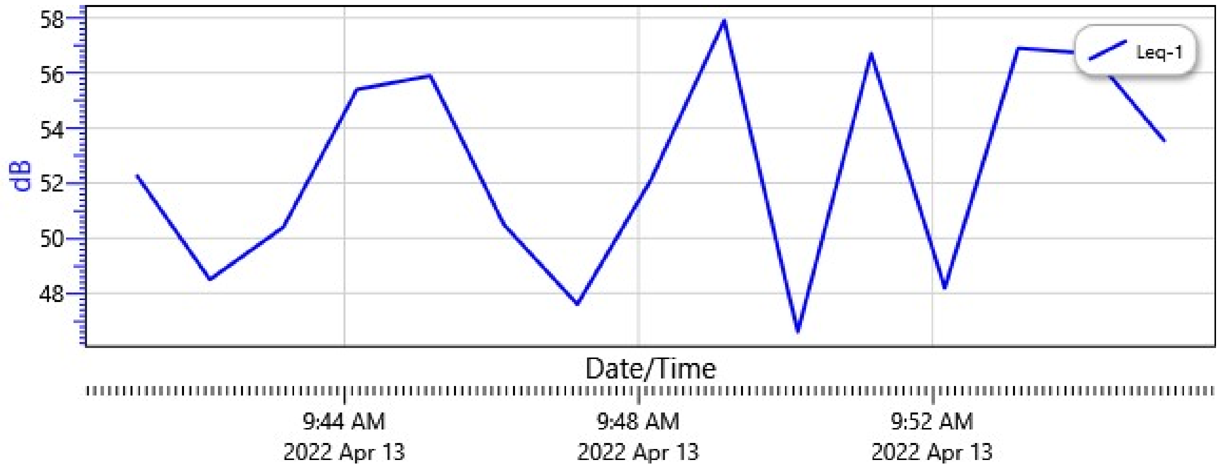
Logged Data Table

Date/Time	Leq-1
4/13/2022 9:41:10 AM	52.3
9:42:10 AM	48.5
9:43:10 AM	50.4
9:44:10 AM	55.4
9:45:10 AM	55.9
9:46:10 AM	50.5
9:47:10 AM	47.6
9:48:10 AM	52.1
9:49:10 AM	57.9
9:50:10 AM	46.6
9:51:10 AM	56.7
9:52:10 AM	48.2
9:53:10 AM	56.9

9:54:10 AM	56.7
9:55:10 AM	53.5

Logged Data Chart

LADWP_Topham_Site11: Logged Data Chart



Noise Measurement Report Form

Project: Topham Contract No (s): N/A

Date: 4/13 Day of Week: Wed Time: 9:38 AM

Monitoring Site Number: 11 Monitoring Site Address: 17837 Bullock

Measurement Taken By: HH

Approximate Wind Speed: 10 mph [km/hr] Approximate Wind Direction: From the N

Approximate distance of Sound Level Meter from Receptor Location: 20 ft

Approximate distance of Sound Level Meter from Project Site:

Receptor Land Use (Check One) ☑ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: Serial Number:

Meter Setting ☒ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15 min

Check the measurement purpose:

☒ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

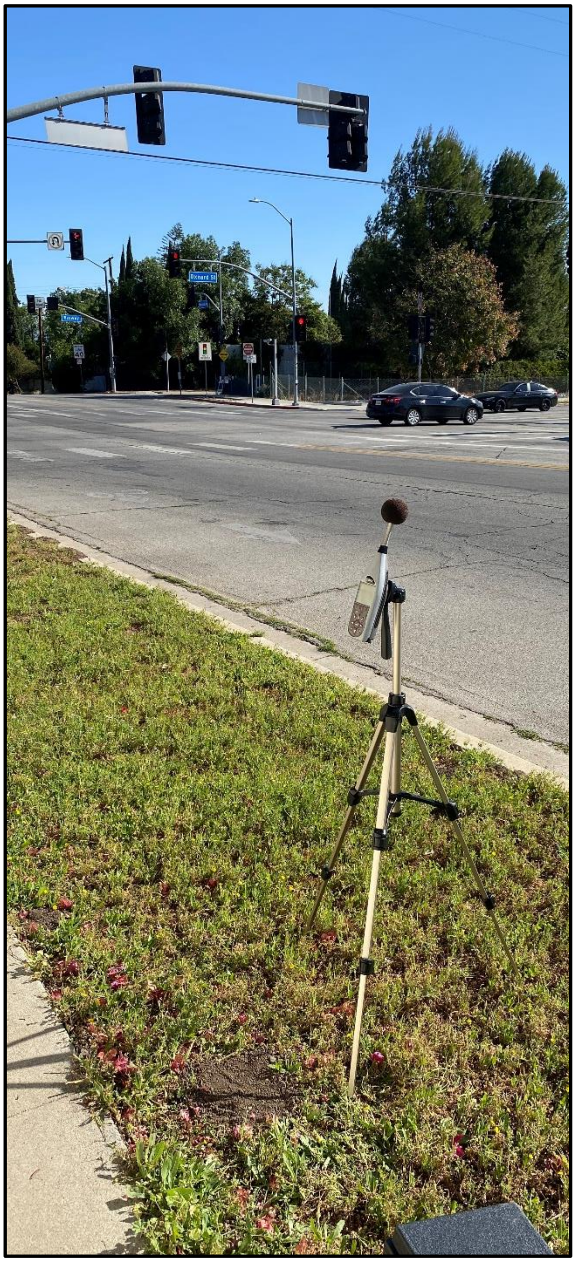
Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114	n/a	n/a
L_{eq}	54.0		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. Exact point location
2.
3.
4.

Site 12: 6031 White Oak Avenue



Session Report

4/18/2022

Information Panel

Name	LADWP_Topham_Site12
Start Time	4/13/2022 9:17:18 AM
Stop Time	4/13/2022 9:32:18 AM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	73.3 dB	Lmax	1	90.2 dB
Lmin	1	51.8 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

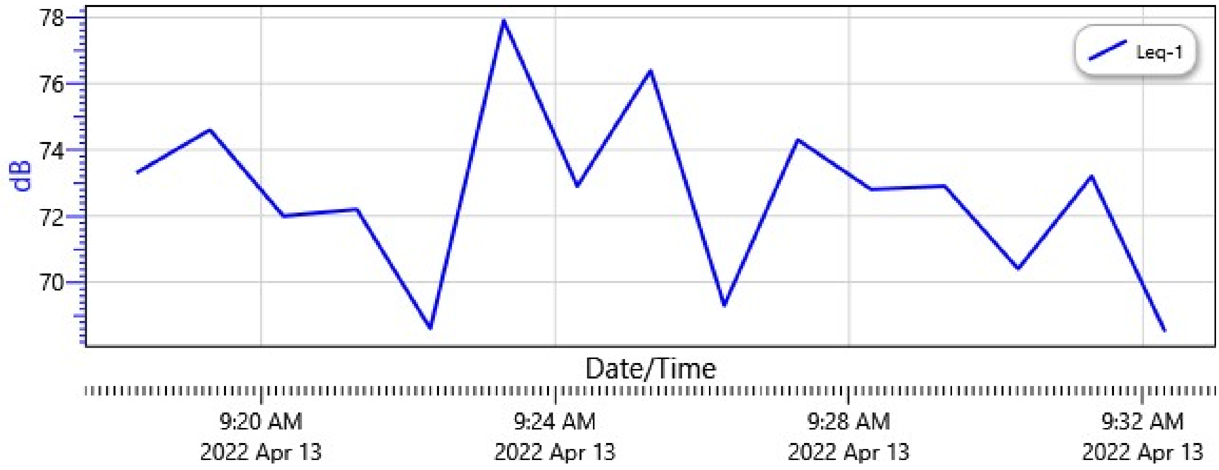
Logged Data Table

Date/Time	Leq-1
4/13/2022 9:18:18 AM	73.3
9:19:18 AM	74.6
9:20:18 AM	72
9:21:18 AM	72.2
9:22:18 AM	68.6
9:23:18 AM	77.9
9:24:18 AM	72.9
9:25:18 AM	76.4
9:26:18 AM	69.3
9:27:18 AM	74.3
9:28:18 AM	72.8
9:29:18 AM	72.9
9:30:18 AM	70.4

9:31:18 AM	73.2
9:32:18 AM	68.5

Logged Data Chart

LADWP_Topham_Site12: Logged Data Chart



Noise Measurement Report Form

Project: Topham Contract No (s): N/A

Date: 4/13 Day of Week: Wed Time: 9:15 AM

Monitoring Site Number: 12 Monitoring Site Address: 1770 Bullock (White oak side)

Measurement Taken By: HH

Approximate Wind Speed: 10 mph [km/hr] Approximate Wind Direction: From the N

Approximate distance of Sound Level Meter from Receptor Location: 15

Approximate distance of Sound Level Meter from Project Site:

Receptor Land Use (Check One) ☒ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: Serial Number:

Meter Setting ☐ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15 min

Check the measurement purpose:

☒ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114	n/a	n/a
L_{eq}	73.4		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. Exact Location as monitoring point

2.

3.

4.